

ASSESSING IMPACTS OF SOCIALLY-MIXED PUBLIC HOUSING REVITALIZATION
ON CHILDREN AND FAMILIES

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ON CHILDREN AND FAMILIES

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A Thesis Submitted to the School of Graduate Studies in Partial Fulfilment of the Requirements
for the Degree Doctor of Philosophy

McMaster University Doctor of Philosophy (2019) Hamilton, Ontario
(Health Research Methods, Evidence, and Impact)

TITLE: ASSESSING IMPACTS OF SOCIALLY-MIXED PUBLIC
HOUSING REVITALIZATION ON CHILDREN AND
FAMILIES

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NUMBER OF PAGES: xiv, 188

Lay Abstract

Public housing developments built in the middle of the 20th century created large spatially-concentrated pockets of poverty in hundreds of cities worldwide. Over the past 20 years, cities in several countries have sought to redevelop, or revitalize public housing by demolishing the existing housing and building mixed income communities. These mixed communities are built to deliberately promote, sustain, and manage, social inclusion in a community of social integration for disadvantaged groups within society. The goal of this dissertation is to better understand how socially-mixed public housing revitalization operate and produce results for disadvantaged children and families. Three original studies were conducted, which provided unique empirical analyses on: 1) the impact of the Regent Park Revitalization Project on child mental health; 2) the scholarly consensus on purported mechanisms and program outcomes of socially-mixed public housing revitalization; and 3) an evidence synthesis to elucidate the mechanisms underlying socially-mixed public housing redevelopment.

Abstract

The negative social and health impacts of living in areas of concentrated poverty have been demonstrated in numerous studies. Residents of old public housing estates experience higher levels of delinquent behaviour and health risks. As a remedy to the challenges associated with living in concentrated poverty, initiatives have been undertaken to ‘revitalize’ such neighbourhoods and at the same time change the population composition to achieve greater social mix. Socially-mixed public housing revitalization initiatives have been widely implemented in the United States, the United Kingdom, the Netherlands, and Australia to improve the living conditions in public housing estates and the well-being of public housing residents. Despite its wide implementation, empirical results on the effect of such initiatives have been inconsistent. Further, very few research efforts have been dedicated to looking at outcomes of children and families. This dissertation consists of three unique mixed-method studies to investigate whether socially-mixed public housing revitalization, through the process of physical and social reconstruction, could improve the health and wellbeing of disadvantaged children and families. The first study is a quantitative analysis on the effect of the Regent Park Revitalization Project – a socially-mixed public housing revitalization initiative – on child mental health outcomes. The second study is a qualitative analysis to investigate the scholarly consensus on the purported mechanisms of socially-mixed public housing revitalization initiatives and their expert opinion on contextual factors and program components that trigger these mechanisms through stakeholder interviews. The third study is a realist synthesis that systematically reviewed

the evidence regarding effects of socially-mixed public housing revitalization initiatives on the health and well-being of low-income children and families. Together, these three studies contributed new knowledge on how socially-mixed public housing revitalizations, through changes to the social and the physical environments of the neighbourhood, reduce health inequalities and improve the life trajectories of low-income children and families.

Acknowledgements

I wish to thank my supervisor, Dr. James Dunn, for all the support and guidance over the past several years. I feel very fortunate to have him as a mentor who is generous with his time and passionate about providing his students with learning opportunities. This speaks volumes about how much he values their personal circumstances and academic/professional experience. I would also like to thank my supervisory committee members, Drs. Magdalena Janus and John Cairney, for their thoughtful advice and willingness to critically review my work. Their inputs over the past several years are often delivered with enthusiasm and wisdom advanced by studies during times of self-doubt and hardship. Most importantly, I wish to thank my family, to my mom, words are not sufficient to express my thanks for your ongoing support, my dissertation would not have been possible without you. All those who held unwavering support and trust for me. Finally, I would like to thank my fellow students and friends for their friendship and companionship. It was a privilege to have undertaken my doctoral studies with all of you. I am particularly grateful to Melodie, Mark, Neil, Francesca, Leign-Anne Kilani, Henny, and Jaeho for their support, friendship and companionship during periods of indecisiveness and self-doubt.

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List of all Abbreviations and Symbols

ANOVA	Analysis of variance
CMO	Context Mechanism Outcome
DID	Difference-in-Differences
HIA	Health Impact Analysis
HOPE VI	Housing Opportunities for People Everywhere
HUD	Department of Housing and Urban Development
MCS	Mental Component Summary
MTO	Moving to Opportunity
PCS	Physical Component Summary
RP	Regent Park
SDQ	Strength and Difficulties Questionnaire
TCHC	Toronto Community Housing Corporation

Declaration of Academic Achievement

This dissertation is comprised of three original research studies (Chapters 2 to 4), as well as an introduction (Chapter 1) and conclusion (Chapter 5). Ellie Yu is the lead author of these chapters. I was responsible for the conception and design of each of the three studies in collaboration with my primary supervisor, Dr. James Dunn. I completed all data collection and analysis for these studies and prepared the drafts for all chapters. Dr. James Dunn contributed to the analysis and provided feedback on the written chapters. My other Ph.D. supervisory committee members – Drs. Magdalena Janus and John Cairney – provided comments and suggestions on various drafts, which were incorporated into subsequent revisions and the final version of the dissertation.

Chapter 1
Introduction

This doctoral thesis is composed of an introductory chapter (chapter 1) which provides an overview of the research topic, a quick review of relevant background, and details the overall objectives of this thesis research; three original research papers (chapters 2-4) relevant to the research topic; and a concluding chapter (chapter 5) which highlights important knowledge contributions and policy implications of this thesis. This chapter introduces the concept of social mix and its function as a health policy intervention to address the effects of concentrated poverty for low-income children and families. This will be the common research topic that guides the three original research papers. The introduction chapter will provide a brief summary of the existing empirical evidence from past initiatives; and highlight current challenges and gaps in research. I will then discuss how my dissertation – *Assessing Impacts of Socially-Mixed Public Housing Revitalizations on Children and Families* – aims to address current knowledge gaps by elucidating existing knowledge as well as providing new empirical evidence.

The Concept of Social Mix

The idea of creating socially-mixed neighbourhoods is not new, according to Sarkissian (1976) who published a historical account of the idea of social mix, the clearest documentation of social mix appeared in Britain at the end of the 19th century. Espousing from the ‘Garden City Movement’ in response to the segregation by rural poor migrants in British cities, social mix promulgated the idea that all classes should reside as interacting neighbours (Galster, 2007; Sarkissian, 1976). These early works provided theoretical foundations on the notion that poverty concentration is not suitable for human development and that social mixing could perhaps correct some of the negative impacts poverty concentration could have

on individuals and families. The efforts to de-concentrate poverty using social mix policies in American neighbourhoods is spurred mainly by the research of Wilson (1987) who documented the disadvantages residents in racially segregated, economically disadvantaged and socially marginalized urban neighbourhoods experienced. The recognition that neighbourhood characteristics could have an impact on human development above and beyond individual characteristics comes from studies in developmental psychology. Key research includes the development of the ecological systems theory of child development by Bronfenbrenner (1979); the review of neighborhood effects by Jencks & Mayer (1990), and extensive publications on neighbourhood level risk and protective factors (Rutter, 1989). A substantial body of evidence now supports the notion that growing up in an economically and socially distressed, disinvested, and segregated neighbourhood is associated with poor educational, health, and labour force outcomes (see for example Brooks-Gunn & Duncan, 1997; Coulton & Spilsbury, 2014; Ellen & Turner, 1997; Leventhal & Brooks-Gunn, 2000, 2005). This knowledge forms the foundation of the theoretical concept of using social mix policies as a form of public health intervention to improve healthy child development and steer the life trajectories of low-income children so that their life opportunities could be improved.

The rationale for focusing on children and families is two-fold. Interventions that aim to improve the life trajectories of disadvantaged children are more effective and less costly. Research shows that the longer society waits to intervene, the more costly it would be to change the life trajectory of a disadvantaged child (Heckman, 2008; Heckman, & Lochner, 2000). This is partially because differences in ability between children of different social classes appear early in life and these inequalities early in life can have profound and long-

lasting consequences into adulthood (Hertzman & Wiens, 1996). Child development research indicates that growing up poor could negatively impact child achievement, health and behaviour (Brooks-Gunn & Duncan, 1997; Duncan & Brooks-Gunn, 2000; Duncan, Brooks-Gunn, & Klebanov, 1994). Research determines that about half of the inequalities in adulthood are determined by factors before the age of 18 (Cunha & Heckman, 2007). Therefore, social mix policies, if proven to be effective at improving the wellbeing of low-income children, could potentially be a cost-effective, high-impact method to partially reduce the level of inequalities in society.

Social mix policies are commonly operationalized through: i) socially-mixed revitalization initiatives that aims to regenerate areas of concentrated poverty, often public housing estates, into mixed-use, tenure-mix communities; ii) low-cost homeownership initiatives that provides low-income residents financial assistance to purchase homes in low-poverty areas or incentives for higher-income earners to purchase in an area dominated by public housing; iii) mobility programs that aims to move low-income residents out of high-poverty neighbourhoods through the use of housing vouchers; and iv) inclusionary zoning practices for greenfield developments that incentivize the developer to dedicate a portion of the housing stock to social housing (Galster, 2010, 2013; Musterd & Andersson, 2005). The focus of this thesis will be to investigate socially-mixed public housing revitalizations which have the general aim of regenerating public housing estates into mixed-use, tenure-mix communities. The rationale for choosing this approach of social mix is explained in more detail in subsequent chapters.

Background and Context

A quick scan of the current knowledge base reveals that evidence regarding a number of purported mechanisms and outcomes of socially-mixed revitalization initiatives remain inconsistent and rather limited. A large portion of existing knowledge related to the effect of social mix on children comes from evaluations of mobility projects in the United States such as Moving to Opportunity¹ (MTO) or Housing Opportunities for People Everywhere² (HOPE VI). Few studies were evaluations of public housing revitalizations and even fewer studies focused on the outcomes of children. Evaluations of MTO revealed interesting findings on child mental health. The studies found significant mental health gains for teenage girls but the opposite effect for boys (Fortson & Sanbonmatsu, 2010; Jackson et al., 2009; Ludwig et al., 2013; Orr et al., 2003; Sanbonmatsu et al., 2012; Schmidt, Glymour, & Osypuk, 2017). Evaluations on MTO did not reveal significant differences in test scores between those who moved from high-poverty to low-poverty areas and those who stayed in high-poverty areas (Sanbonmatsu, Kling, Duncan, & Brooks-Gunn, 2006). An analysis on the long-term impacts of neighbourhoods on intergenerational mobility revealed that the benefits of moving out of concentrated poverty diminishes with age. MTO participants who were below age 13 when relocated to a low-poverty area using a housing voucher showed significant improvements in college attendance rates and earnings whereas the same moves had negative impacts on children who were older than 13 at the time of relocation (Chetty, Hendren, & Katz, 2016).

¹ The MTO demonstration provided housing subsidies to public housing families in high-poverty neighborhoods, which allowed them to move to areas with much less poverty.

² Although HOPE VI was enacted as revitalization efforts for dilapidated public housing projects, many evaluation efforts were focused on comparing the outcomes of public housing residents who moved to private market housing with resident who moved to other public housing to allow for demolition and reconstruction.

Evaluations on HOPE VI showed that children who relocated with vouchers to low-poverty areas fared better compared to children who did not relocate or relocated to other public housing buildings (Clampet-Lundquist, 2007; Popkin, Eiseman, & Cove, 2004). HOPE VI Parents reported lower rates of behaviour problems for girls who relocated (Gallagher & Bajaj, 2007). On the contrary, few studies found few or no improvements amongst HOPE VI residents that relocated to low-poverty areas (Keene & Geronimus, 2011).

Available UK evidence for neighbourhood effect is weak (Lupton, 2003; Tunstall & Fenton, 2006) in comparison to evidence from the US and other countries on education, health, crime and attitudes (Smith, 2002). Some of this could be driven by more subtle tenure segregation by income and race in the UK. Research on social mix from Australia, Canada, and other European countries is sparse; however, has contributed greatly to the understanding of public housing revitalization initiatives. That said, the inconsistencies in the findings from evaluation studies of public housing revitalizations make drawing evidence-informed insights challenging. The purpose of this thesis is to fill this knowledge gap by elucidating existing knowledge while creating new empirical findings.

Current Gaps in Research

In reviewing the literature on social mix from US (Del Conte & Kling, 2001; Fauth, Leventhal, & Brooks-Gunn, 2004; Keels, 2008; Popkin, Harris, & Cunningham, 2002; Popkin, Eiseman, & Cove, 2004; Rosenbaum & Zuberi, 2010), Canada (August, 2014; Rowe & Dunn, 2015), Australia (Arthurson, 2005; Arthurson, Levin, & Ziersch, 2016; Ruming, 2014), UK (Allen, 2000; Egan, Tannahill, Bond, Kearns, & Mason, 2013; Jupp, Sainsbury, & Akers-Douglas, 1999; McKee, 2013) and other European countries (Bacqué, Fijalkow,

Launay, & Vermeersch, 2010; Lawton, 2013; Münch, 2009; van Beckhoven & van Kempen, 2003), several knowledge gaps emerge that merits additional insight and analysis.

First, a large portion of the current literature on social mix discusses theoretical frameworks that postulate how social mix programs might impact health and wellbeing (Arthurson, Levin, & Ziersch, 2015; Galster, 2007; Galster, 2012; Goetz, 2003; Joseph, 2006; Joseph, Chaskin, & Webber, 2007; Ruming, 2011) and less work is produced that empirically evaluates the effects of social mix programs. Evidence on the mechanisms that drive individual and collective outcomes from socially-mixed revitalizations are not well understood. Similarly, the contextual factors and the specific program components that might hinder or facilitate outcomes are not detailed in most research (Bond, Sautkina, & Kearns, 2011).

Second, there is a paucity of research that focus on the outcomes of child and families. To date, only one realist review (Jackson et al., 2009) has been conducted to understand how MTO affects children and youth.

Finally, few evaluations have delved into mechanisms that could help middle-income child and families to thrive in mixed communities. The importance of having families with children participating in mixed communities has been well established (Coleman et al., 1966; Joseph, 2006; Raffel, Denson, Varady, & Sweeney, 2003; Silverman, Lupton, & Fenton, 2006; Varady, Raffel, Sweeney, & Denson, 2005) and therefore helping these families thrive in mixed communities could potentially contribute to the long-term sustainability of these communities.

Overarching research objectives

The overarching aim of this thesis is to better understand how socially-mixed public housing revitalizations initiatives ‘work’ to improve (or not) the health and wellbeing of disadvantages children and families. The dissertation combines three independent studies with complementary research goals that address specific gaps in the literature. Taken together, these studies – outlined below and presented in Chapters 2, 3, and 4 – seek to address the overarching aim of this thesis. The specific objectives of the dissertation are to:

- To generate empirical evidence on the Regent Park Revitalization Project focusing on children’s mental health (Chapter 2);
- To develop a better understanding of the potential impacts of socially-mixed revitalization on children and adults (Chapter 2, 3 and 4);
- To explore which purported mechanisms of socially-mixed revitalizations are triggered in current programs and examine their impacts on children and families (Chapter 3 and 4);
- To examine socially-mixed revitalization program components and contextual factors of the local neighbourhood that could trigger purported mechanisms to generate outcomes for children and families (Chapter 3 and 4);
- To generate evidence regarding the use of socially-mixed public housing revitalizations for improving the health and wellbeing of disadvantaged children and families (Chapter 2, 3 and 4)

The three research studies that comprise this dissertation were conducted between April 2014 and October 2016. Data analysis for Chapter 2 and Chapter 3 was completed by December 2016, and data analysis for Chapter 4 was completed in December of 2018.

Overarching Theoretical Frameworks of the Dissertation

An overarching methodology that permeates this dissertation is the use of realist evaluations (Pawson, Greenhalgh, Harvey, & Walshe, 2005). Specifically, Chapter 3 employs a realist approach to stakeholder interviews and Chapter 4 uses the realist synthesis method to gather and examine research evidence. The basis for this evaluative framework in health and social policy is that the nature of any intervention is complex and is the product of its context. Interventions are open systems that evolve with changing infrastructure, institutions, interpersonal relations and individual behaviours. In Pawson's words, complex interventions are "dynamic complex systems thrust amidst complex systems, relentlessly subject to negotiation, resistance, adaptation, leak and borrow, bloom and fade, and so on" (Pawson et al., 2005, p. 23).

Overview of the Studies

Study 1 (Chapter 2): "Regent Park Revitalization Project and its effects on child mental health"

The second chapter describes the findings from an empirical analysis on the effects of moving from old public housing to new housing amongst households participating in the Regent Park Revitalization Project in Toronto. Households with children who resided within Phase I and II boundaries of Regent Park were invited to participate in the study. Child mental health was assessed using the Strength and Difficulties Questionnaire (SDQ) on three groups of children: i) children whose families moved to new housing units in the same community; ii) children whose families moved to other, existing public housing, on a temporary basis

(‘relocation units’); and iii) a comparison group of children who lived in public housing outside Regent Park and were unaffected by the revitalization. The Kruskal-Wallis H tests and the Chi-Square tests were conducted to determine if there were significant variations in any of the descriptive measures between the treatment groups and the comparison group. The Wilcoxon Signed-Rank Test was used to determine whether the changes in SDQ scores before and after relocation were significant for each participant group. The difference-in-differences (DID) approach was used to evaluate the changes in outcomes associated with the Regent Park Revitalization Project taking into account effects of time and other externalities.

In this study, results that compared mental health outcomes of children in each of the participant group before and after relocation were described. Results from models that investigated the mediating effect of caregivers’ employment status on child mental health were also discussed. This is followed by a discussion of the potential mechanisms for explaining the variation in outcomes across each participant group. Policy and research implications were also discussed.

Study 2 (Chapter 3): “Understanding socially-mixed public housing revitalization – a content analysis from interviews with scholars”

Given what was learned from the Regent Park Revitalization Project, to further investigate the mechanisms that could have been activated to produce the observed outcomes, prominent scholars who have conducted extensive research on social mix were interviewed. The purpose of this study is to understand the scholarly consensus on how socially-mixed public housing revitalization initiatives ‘work’ from a realist perspective. A realist perspective to stakeholder interview was to focus on the Outcomes (O) Mechanisms (M) and the Context

(C) (C+M=O, or CMO) configurations of any intervention (Pawson, 2006). This paper adopts the perspective that understanding these three features are fundamental to explaining the effects of the hundreds of public housing revitalization initiatives that have occurred around the world in the last 20 years. Eleven scholars were interviewed, and interview transcripts were coded using content analysis to understand emerging themes.

In this study, participants' understanding of how social mix is best operationalized is discussed. The interviews were guided by a question template and geared toward understanding how socially-mixed revitalizations produce outcomes for residents, under what conditions, and for whom. The study was designed to provide information on scholars' tacit knowledge about socially-mixed revitalizations and aims to help unravel the interplay between program components, local contextual factors, mechanisms and individual outcomes. The various outcomes that were observed from socially-mixed revitalizations were described and the underlying mechanisms that could explain these outcomes were discussed and summarized. These findings are discussed in connection with implications for researchers and policy-makers.

Study 3 (Chapter 4): "A realist synthesis of socially-mixed public housing revitalization initiatives: how to make it work for low-income children and families?"

The fourth chapter of the thesis describes a realist synthesis that reviewed the evidence regarding the effects of socially-mixed public housing revitalization initiatives on the health and well-being of low-income children and families. The purpose of this chapter was to narrow the gap in knowledge and unpack the 'black box' (Ellen & Turner, 1997) for socially-mixed public housing revitalization initiatives which have the general aim of regenerating

public housing estates into mixed-use, tenure-mix communities. The study focused on refining and building theories through the identification of mechanisms that lead to program outcomes. This realist synthesis systematically reviewed evidence on revitalization outcomes for children and families (what works for whom), program mechanisms that are activated to translate program components to outcomes (how); and contextual factors and program components that lead to outcomes (and under what conditions). In this study, evidence was extracted from 20 primary citations and 42 secondary citations. Evidence regarding the main research question “do socially-mixed revitalization initiatives improve health and well-being for low-income children and their families?” was summarized and key insights about program mechanisms, program components, and contextual factors were discussed. A refined theoretical framework was discussed with extensions to policy, program, and research implications.

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Chapter 2

Regent Park Revitalization Project and its effects on child mental health

Abstract

The Regent Park Revitalization Project, the largest public housing initiative of its kind in Canada, seeks to transform a public housing estate into a high-density, mixed-use, socially-diverse community with new building stock and complete public housing transformation. Using a quasi-experimental study design, child mental health was assessed before and after moving from older, poverty-concentrated public housing in Regent Park to newly constructed housing in a socially-mixed neighbourhood in Toronto, Ontario. This study examines the impacts of this public housing revitalization initiative on children from households that were relocated as part of the revitalization. Children's mental health were assessed using the Strength and Difficulties Questionnaire (SDQ) both pre-relocation and one-year post-relocation among three groups of children: i) children whose families moved to new housing units in the same community; ii) children whose families moved to other, existing public housing, on a temporary basis ('relocation units'); and iii) a comparison group of children who lived in public housing outside Regent Park and were unaffected by the revitalization. Difference-in-differences (DID) analysis showed that children who moved from old public housing directly to new public housing displayed significant improvements in overall mental health, conduct problems, emotional symptoms, peer relationship problems, and hyperactivity problems. Children who moved into 'relocation units' showed moderate improvements in overall mental health and hyperactivity problems. Children in the comparison group did not demonstrate any improvements in mental health. Caregiver's employment status was found to be a significant mediator of overall child mental health. The combination of improvements in the physical conditions of the housing unit, improvements in the built environment, increased neighbourhood safety, more abundant family financial resources, and the availability of social

programs likely contributed to the improvements in child mental health. How much improvement is attributable purely to living in a socially-mixed neighbourhood require further research.

Keywords: Regent Park, public housing, revitalization, child mental health, health policy, SDQ, social mix

Introduction

In this paper, we investigate the impact of moving from old public housing to socially-mixed public housing on child mental health in Toronto's Regent Park neighbourhood. The spatial separation of the poor in public housing estates contributed to high crime rates, poor health status and high rates of other social problems in neighbourhoods such as Regent Park. Revitalization of public housing estates into socially-mixed, mixed-tenure communities with greater land-use mix, new building stock, better urban design and higher housing density was proposed as an antidote to the negative impacts of concentrated poverty. The Regent Park Revitalization Project is the largest ever public housing revitalization initiative in Canada. The initiative provides a unique opportunity to study the physical and social transformation of the community on three fronts: 1) the effects of improved housing stock, 2) the effects of improved neighbourhood design and amenities, and 3) a change from concentrated neighbourhood poverty to a mixed-tenure neighbourhood. Aside from physical reconstructions of the neighbourhood, the project also aims to produce a "socially cohesive, socially inclusive" community that will create "higher employment rates, higher incomes, better health outcomes, better educational results, and lower crime rates" (Toronto Community Housing, 2007, p. 56). The result of this study will address the lack of empirical evidence on the effects of social mix on child mental health.

Using questionnaire-based data collected from public housing residents who resided, prior to demolition, within the Regent Park Revitalization Project Phase I and II footprint, we investigated: (i) the impact of moving from older public housing into newly constructed socially-mixed housing on the mental health, behavioural, and developmental competencies of

children ages 3-10; (ii) the impact of moving from older public housing into similar aged ‘relocation units’ on the mental health, behavioural, and developmental competencies of children ages 3-10; and (iii) the impact of caregiver mental and physical health on child mental health, behavioural and developmental competencies in the various housing and relocation situations.

This paper begins with a brief review of the background knowledge and rationale of the study, followed by a general description of the Regent Park Revitalization Project, as well as a brief review of evidence from similar previous studies. The next section provides a detailed account of the study design, sampling methodology, data collection, and data analysis procedures. The results section summarizes relevant descriptive statistics and the results from the difference-in-differences analysis. The paper concludes with a discussion of the results, limitations of the current study, and future research implications.

Background

The concept of social mix as a positive aspect of urban neighbourhoods stems from the idea that concentrated poverty creates disadvantage for the people who live within that environment (Wilson, 1987) and that socially-mixed neighbourhoods do not experience the same disadvantages. Socially-mixed neighbourhoods can be intentionally created using social mix policies. Social mix policies are deliberate efforts to intentionally promote, sustain and manage positive interactions between people of different socio-economic and/or ethno-cultural backgrounds within a confined geographical space (Arthurson, Levin, Ziersch, 2015; Chaskin & Joseph, 2010). The operationalization of social mix policy in programs to deconcentrate poverty and redevelop neighbourhoods can differ along a number of

dimensions, including scale, degree of mix, and design (Chaskin & Joseph, 2010; Joseph, 2006; Joseph, Chaskin, & Webber, 2007; Levy, McDade, & Bertumen, 2010). Although social mix policies have been operationalized across countries such as the United States, England, Australia and Canada, variability in program design across specific contexts makes the measurement and generalization of program effects extremely difficult. The literature on social mix programs documents an array of hypothesized benefits. Purported benefits include access to employment opportunities, social networks, and access to middle-class role-models for lifestyle and behaviour (Chaskin & Joseph, 2010; Chaskin & Joseph, 2015; Kearns & Mason, 2007). Physical reconstruction can lead to improved quality of housing, neighbourhood amenities, local services; a safer neighbourhood environment; and improvements in amenities beyond the immediate neighbourhood such as transit and schools (Briggs, 1997; Chaskin & Joseph, 2010; Epp, 1996; Kearns & Mason, 2007; Khadduri & Martin, 1997; Kleit, 2005; Popkin, Buron, Levy, & Cunningham, 2000; Rosenbaum, Stroh, & Flynn, 1998; Rowe & Dunn, 2015; Schwartz & Tajbakhsh, 1997). Additionally, an important social benefit is the anticipated decrease in stigmatization against the place and the residents of the place (Dunn, 2012). However, few of these hypothesized benefits have been realized or demonstrated empirically in the evaluation of social mix programs. Some scholars have pointed out that certain mechanisms are more likely to be activated than others (Joseph, 2006) and social mix policies should leverage these mechanisms to create more meaningful conversations (Dunn, 2012).

Past research has documented associations between neighbourhood characteristics and residential environments with individual health outcomes above and beyond personal-level characteristics. A subset of this literature that focused on children has shown that

neighbourhood conditions can be important for children’s health, developmental and educational outcomes (Minh, Muhajarine, Janus, Brownell, & Guhn, 2017). Children who live in areas of concentrated poverty experience elevated levels of behavioural and health risks (Brooks-Gunn, Duncan, & Aber, 1997; Brooks-Gunn, Duncan, Klebanov, & Sealander, 1993; Duncan, Brooks-Gunn, & Klebanov, 1994; Halpern-Felsher et al., 1997; Klebanov, Brooks-Gunn, & Duncan, 1994; Leventhal & Brooks-Gunn, 2000; Wilson, 1996). Empirical studies demonstrated that children’s opportunities for economic mobility are shaped by the neighbourhoods in which they grow up (Chetty & Hendren, 2018). Therefore, social mix policies that seek to deconcentrate poverty in underprivileged areas can potentially promote healthy child development. Studies that have demonstrated an association between census-based neighbourhood measures and unfavourable child developmental outcomes are often limited by the complexity to define neighbourhood boundaries and the ability to control for reverse causality, and macro-economic effects. Experimental neighbourhood studies where residents were randomized to move out of high-poverty neighbourhoods have provided researchers an opportunity to assess “neighbourhood effects” in a more ‘controlled’ manner. The experimental design of these studies can reduce the effect of confounding and biases that lead to over- or under-estimation of “neighbourhood effects” on child development. Social mix programs such as Moving to Opportunity (MTO) or Housing Opportunities for People Everywhere (HOPE VI) are examples of interventions that have been harnessed for experimental or quasi-experimental research to examine the impact of reducing concentrated poverty (and other neighbourhood attributes) on children’s health, developmental and educational outcomes (Kling, Liebman, & Katz, 2006; Leventhal & Brooks-Gunn, 2003; Orr et al., 2003; Popkin et al., 2002).

Past social mix programs

The evidence base on the effects of social mix policies on low income residents has borrowed heavily from programs implemented in the US. Three such programs were studied extensively by scholars: the US Department of Housing and Urban Development's (HUD) Moving to Opportunity (MTO) for Fair Housing program, the HOPE VI program, and the Gautreaux residential mobility program. The Gautreaux program resulted from a Supreme Court order to desegregate neighbourhoods in Chicago based on race (Mendenhall, DeLuca, Duncan, 2006). The MTO program was an experimental research demonstration designed to investigate the effects of moving from a high-poverty neighbourhood to a lower-poverty neighbourhood on low-income families (Goering, 1999). Families were randomized into three groups: traditional voucher group (geographically unrestricted), low-poverty voucher group (usable only in low-poverty areas), and control (Orr et al., 2003). The HOPE VI program grew out of the work of the National Commission on Severely Distressed Public Housing with the mission to improve conditions in these public housing developments with physical revitalization, management improvements and the addition of supportive services for residents (Popkin et al., 2004b).

Both Gautreaux and MTO are mobility programs that moved families who were in public housing or on waiting lists for public housing to neighbourhoods with more favourable conditions; however, there are some key differences. First, unlike MTO, the Gautreaux does not employ a randomized design. Secondly, where Gautreaux employed a race-based dispersal strategy, the MTO program was focused on poverty rates in the relocation neighbourhood. Unlike MTO or Gautreaux, HOPE VI programs are *in-situ* revitalization projects and the

eclectic nature of the HOPE VI program makes investigating program effects challenging (Popkin et al., 2004b).

Past results on child mental health

Several mechanisms have been postulated to explain how improvements in the neighbourhood environment, including interventions bundled as part of a public housing revitalization initiative, can improve child mental health, behavioural and developmental outcomes. A realist review of MTO results (Jackson et al., 2009) suggested two primary mechanisms with respect to the effect of social mix programs on child mental health. Improvements in the physical environment that leads to an increased sense of safety and subsequently, an increased sense of safety that leads to a reduction in social isolation. Improvements in neighbourhood conditions because of the revitalization, especially in the form of increased neighbourhood safety were shown to result in large improvements in mental health for teenage girls but not for boys (Fauth, Leventhal, & Brooks-Gunn, 2005; Kling et al., 2006; Orr et al., 2003; Osypuk, Schmidt, et al., 2012; Osypuk, Tchetgen, et al., 2012; Popkin, Leventhal, & Weismann, 2010). Girls are subjected to persistent sexual harassment and violence in areas with poorly maintained public housing. Moving to low-poverty neighbourhoods dramatically decreased the amount of sexual victimization and with that, the stress and fear they experience. This could help to explain the gender divergent findings on mental health between girls and boys (Fauth et al., 2005; Popkin et al., 2010). Past research has demonstrated that social communication may increase in the neighbourhood with decreased feelings of fear and mistrust (Kling et al., 2006). Research on MTO children points

to increased social involvement and engagement in the new neighbourhood for female youth (Kling et al., 2006).

Extensive research on housing and child development has demonstrated positive associations between housing quality and child mental health (see review by Leventhal & Newman, 2010). Improvements in the physical conditions of the living unit could improve child mental health conditions by reducing the presence of harmful substances such as lead paint (Krieger & Higgins, 2002). In addition, improvements in housing quality may indirectly influence child outcomes *via* family processes. Poor housing conditions can undermine the mental well-being and parenting behaviour of caregivers, which adversely affects the mental health of children in the household (Shuey & Leventhal, 2017). The impact of parental behaviour on child mental health can be direct or mediated by housing quality and neighbourhood conditions (Bartlett, 1998; Leventhal & Newman, 2010). Parents who experience elevated levels of economic hardship are subjected to higher levels of psychological distress which diminishes their capacity for supportive, consistent, and involved parenting (McLloyd, 1990). In addition, when parental perception of neighbourhood risk is high, children reported greater levels of stress (Roosa et al., 2005).

Although the evidence is sparse and inconsistent, research from the MTO project found contrasting effects for males and females on child behaviours. Improvements in neighbourhood safety increased the levels of social connectedness and decreased delinquent behaviours for girls (Clampet-Lundquist, Edin, Kling, & Duncan, 2011); however, boys were reported to experience less positive social integration and community engagement in the new neighbourhood (Duncan, Clark-Kaufmann, & Snell, 2004).

The Regent Park Revitalization Project

Developed in the late 1940s, Regent Park is one of Canada's oldest and largest public housing developments. Located in downtown Toronto, Regent Park was home to approximately 7,500 low-income residents when the demolition for the Regent Park Revitalization Project began in 2005. The original design of Regent Park was inspired by the Garden City movement, which is known for the 'towers in the park' concept and where street automobile traffic was removed from the neighbourhood (Dunn, 2012). Over a number of years, the conditions of living in Regent Park became a concern, specifically its deteriorating buildings, poorly planned public spaces, and the concentration of urban poverty, violence, drug use, as well as poor health and educational outcomes of its residents (Dunn, 2012). The well-intended Garden City design has provided welcoming micro-environments for illegal activities such as drug use and violence as many parts of the neighbourhood are hidden from traffic creating significant challenges in maintaining a safe community. The stigma of Regent Park contributing to the isolation of its residents had long been acknowledged as a problem in the neighbourhood (Brail & Kumar, 2017). In 2001, just prior to the commencement of the redevelopment, over half of the Regent Park population was less than 18-years-old and the average income for Regent Park residents was approximately half of the Toronto average (Dunn, 2012).

The revitalization of Regent Park into a socially-mixed community, with subsidized public housing units situated next to private condominiums is a 15- to 20-years, more than \$1B (Canadian) project (Augsten, Babin, Bennington, Kelling, & Procopio, 2014). Once the redevelopment is complete, Regent Park will be a mixed-tenure community with roughly 70%

market rate units and 30% subsidized public housing units (Augsten et al., 2014). One-to-one replacement of 100% of the subsidized units was required by provincial legislation. All residents who were living at Regent Park before the redevelopment had the right to return to a new unit being built as part of the project. Significant notice and intensive tenant education and engagement were provided to all residents prior to the start of the relocation process (Toronto Community Housing, 2014). The bricks-and-mortar redevelopment of Regent Park is to replace about 70% of the existing public housing units with newly developed units within the traditional boundary of Regent Park and dispersing the remainder 30% of the public housing units in nearby locations. To date, redevelopment has provided over 2,000 subsidized units, over 200 new affordable rental units in Regent Park and 100 units in nearby neighbourhoods, over 5,000 market units, as well as new amenities including an aquatic centre, a new park, athletic grounds and various new retail and commercial establishments operating on site (Toronto Community Housing, 2018). Aside from the physical reconstruction, the social infrastructure redevelopment of Regent Park is seen as being a key component of successful revitalization. A Regent Park Social Development Plan (SDP) was drafted and published incorporating jurisdictional reviews and primary research with Regent Park residents. The SDP outlined strategies and approaches, governance models, and community services and facilities needed to improve the social inclusion and cohesion of the Regent Park community (Toronto Community Housing, 2007).

The Regent Park Revitalization Project is being accomplished through partnerships between multiple levels of government, private-sector developers, non-profit agencies and community partners (Brail & Kumar, 2017). The combination of declining government funding for social housing and the increasing value of downtown Toronto real estate has

provided a policy opportunity for Regent Park to redevelop its old public housing stock and de-stigmatize the reputation of the neighbourhood by leveraging its prime location and real estate assets.

Methods

Study Participants

As part of a larger study examining the health and social impacts of the Regent Park Revitalization Project, we collected data from Regent Park Health Study participant households with children aged 3-10 years at baseline, prior to residents' relocation from their old Regent Park housing units. Regent Park Health Study participants are those that were within Phase I or II of the redevelopment footprint (see Figure 1). In order to allow the demolition of old public housing buildings, the study participants were relocated from their old public housing units. In some cases, participants were moved to a 'relocation unit' (with the right to a new unit in Regent Park at some later time), which are similar aged public housing in nearby neighbourhoods. In other cases, participants were able to move directly into newly constructed public housing units built as part of the revitalization project. These two groups formed the treatment groups in our study: the 'new housing' group and the 'relocation housing' group. We recruited and surveyed a comparison group of public housing residents with similar characteristics to the treatment groups. The comparison group was matched to the treatment groups based on family type, age, and languages spoken. This comparison group consisted of households who were living in public housing in a nearby Toronto neighbourhood (Don Valley Beaches) unexposed to the Regent Park Revitalization Project.



Figure.1 Regent Park Revitalization Footprint illustrates the boundaries of the different phases of the revitalization. <https://www.torontohousing.ca/capital-initiatives/revitalization/Regent-Park/Pages/default.aspx>

Sampling Procedure

Study participants were recruited initially by mail. Overall 741 recruitment letters were mailed out to the Regent Park residents and 701 recruitment letters were mailed out to the comparison group. Recruitment letters were translated into the 8 most commonly spoken languages in Regent Park. The recruitment letter introduced the study and informed any potential participants that if they were interested in participating, they should contact the Study Coordinator. Both a contact phone number and postage-paid reply card addressed to the Project Coordinator were provided in the mail. Project staff completed follow-ups by phone with participants who called or sent in reply cards indicating that they were interested in participating. A reminder letter was mailed two weeks later and followed the same process as the first recruitment letter. Five weeks after the second recruitment letter, project staff followed up by telephone with the potential participants who had not responded, had not

previously declined, or had not already been interviewed to complete the survey. In-person recruitment was also conducted for residents who lived within Phase II footprint. Baseline recruitment rate for the treatment groups was 17% (131 out of 741) and 12% (51 out of 701) for the comparison group.

Interview Procedures

All study groups were interviewed twice, at baseline and one-year after baseline. We followed participants in the treatment groups after their pre-demolition baseline interview and surveyed them again one year after their move to either new housing in Regent Park or a ‘relocation unit’, to understand the health impacts of the Regent Park Revitalization Project. All study participants in the treatment groups were eligible for a follow-up survey one year after relocation so long as they had completed a baseline survey. Even if a participant had moved out of Toronto Community Housing Corporation (TCHC) housing or was transferred to TCHC housing outside of Regent Park, they were still invited to participate for a follow-up and their data were flagged accordingly. Participants in the comparison group were eligible to complete a follow-up survey if they resided in the same address as they did when they completed the baseline survey. It is worth noting that the time from when the baseline survey was conducted to when the relocation took place varied amongst participant households, and this was beyond the control of the investigation team. We chose to anchor the timing of the follow-up surveys to one year after each household’s relocation date and the time between relocation and the follow-up survey was tested in our models.

Study participants completed the survey one-on-one with an interviewer from the Survey Research Unit at St. Michael’s Hospital. The interviews were conducted in English

and made available in all other languages by either a third party or an in-house interpreter. The survey data collection process took an average of 1.5 hours. The data were collected using paper and subsequently entered into SPSS and SAS for analysis. Each completed interview was reviewed for errors, missing data and inconsistencies during the data entry process by office staff. When required, call-backs to participants were completed to resolve any identified data issues. Consent was completed with the participants by the interviewers and research ethics was granted by the St. Michael's Hospital Research Ethics Board. All participants received thirty dollars as compensation for each interview completed.

Outcome Variables

Child mental health and behavioural competencies in the present study were measured using the SDQ. The SDQ is a brief behavioural screening questionnaire for 3-16 year-olds looking at emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems as well as prosocial behaviour (Goodman, 1997). The SDQ contains 25 items divided between five scales with five items each. Each scale generates a score ranging from 0 to 10. The scales include conduct problems, hyperactivity, emotional symptoms, peer problems and prosocial behaviour (Goodman, 1997). The scores of conduct problems, hyperactivity, emotional symptoms, peer problems can be summed to generate the total difficulties score ranging from 0 to 40. The total difficulties score has been found to be a psychometrically sound measure of overall child mental health problems (Goodman, Lamping, & Ploubidis, 2010). The prosocial behaviour score is not in the calculation of the total difficulties score because the scale measures positive behaviour rather than psychological difficulties (Goodman, Meltzer, & Bailey, 1998).

In this study, we used the version of SDQ that was designed for children with parents (caregivers) or educators as respondents. Caregivers of children from the two treatment groups and the comparison group completed the SDQ on behalf of the children if the child lived in the home at least 4 days per week. Caregivers could include a parent, step-parent, or an older sibling; however, siblings were ineligible as caregivers for the comparison group. Since more than one caregiver could complete the survey for each eligible child, in cases of multiple surveys completed, the one with the most complete set of answers was selected³. The caregiver who provided the most completed data was then selected and matched with the child data to provide caregiver mental health measures. Caregivers of children completed the appropriate age specific components of the SDQ (i.e., for 2-4 year-olds or for 4-10 year-olds). Following SDQ recommendation and instruction (Goodman et al., 2010), caregivers of children aged 2-4 years and children aged 4-10 years completed different sections of the SDQ. If a child at the time of the follow-up survey was older than 10 years, the caregiver was given the SDQ version for 4-10 year-olds.

Adjusted Covariates

To capture potential affects from caregivers on child mental health, we adjusted for caregiver's mental health, caregiver's physical health, caregiver's gender, immigrant status, education status, marital status, employment status. The models also adjusted for children's age at follow-up, time spend in treatment (i.e., the time between relocation and follow-up interview), whether the household moved across Toronto District School Board boundaries for

³ It was decided not to average the duplicated child records because it would lead to duplicate caregiver status measures.

different schools, which was used as a proxy measure for potential school change, and whether children potentially started school between baseline and follow-up surveys.

Caregiver's mental health was measured using the CES-D scale which provides a measure of depressive symptomology (Eaton, Smith, Ybarra, Muntaner, & Tien, 2004). Caregiver physical wellbeing was measured using the physical component summary (PCS) of Medical Outcome Study 8-Items Short Form Health Survey (SF-8). The SF-8 is a health-related quality of life assessment consisting of eight subscales and generates two summary measures, a physical component summary (PCS) score and a mental component summary (MCS) score. The PCS score contains the following subscales from the SF-8: physical functioning, role-physical, bodily pain, and general health (Lefante, Harmon, Ashby, Barnard, & Webber, 2005). CESD and PCS scores were collected for each caregiver at both baseline and follow-up, the change in the scores were used in the adjusted models. Child age at follow-up was calculated from the child's birthday to the follow-up interview date. Time in treatment was calculated using the follow-up interview date and the relocation date. Adult gender (1=female, 0=male), immigrant status (1=immigrant, 0=born in Canada), marital status (1=single, 0=not single), education (1=high school or more, 0=less than high school), and employment status (1=employed, 0=unemployed) were collected at both baseline and follow up, data quality checks were conducted and discrepancies within the data were reconciled by going back to the original survey. The change in school boundary indicator (1=change in school boundary, 0=no change in school boundary) is used as a proxy for a potential change in school and started school (1=yes, 0=no) is included to capture this potential significant change in a child's daily routine.

Analytic Strategy

The Kruskal-Wallis H test was used to determine if there were significant variations in any of the continuous descriptive measures (i.e., age at follow-up, change in CESD score, change in PCS score, and time in treatment) between the treatment groups and the comparison group. Specifically, we tested for child age at follow-up, changes in caregivers' mental and physical wellbeing, and time in treatment. The test statistic reported for the Kruskal-Wallis H test is the Chi-Square statistics with an associated statistical significance of the test. For the categorical descriptive measures (i.e., caregiver's gender, immigration, education, marital, employment status, started school, and change in school boundary) were tested using Pearson's chi-squared test to determine if there are significant variations between the treatment groups and the comparison group. The test statistics reported for the Pearson's chi-squared test is the Chi-Square statistics with an associated statistical significance for the test. The Wilcoxon Signed-Rank Test was used to determine whether the changes in SDQ total difficulties score and SDQ subscale scores before and after relocation were significant for each participant group. The Wilcoxon signed-rank test does not assume normality in the data, and it is used to compare two sets of scores that come from the same participants. It is worth noting that multiple transformations (i.e., $\text{Log}_{10}(x)$, Ln) were attempted on the dependent variables before using the Wilcoxon method. We reported the Wilcoxon signed-ranks test using the Z-statistic. The difference-in-differences (DID) analysis was used to evaluate the changes in outcomes associated with the Regent Park Revitalization Project taking into account effects of time and other externalities. This method allows researchers to subtract out the background changes in outcomes by comparing pre- and post- program implementation between the treatment group(s) and the control group (Dimick & Ryan, 2014). The DID analysis allows for the estimation of changes in child mental health outcomes related to the

project by subtracting the change in SDQ score pre- and post-relocation of the comparison group from change in SDQ score pre- and post-relocation scores of the treatment groups as follows:

$$(\text{NewHousing}_{\text{baseline}} - \text{NewHousing}_{\text{follow-up}}) - (\text{Comparison}_{\text{follow-up}} - \text{Comparison}_{\text{baseline}});$$

$$(\text{Relocation}_{\text{baseline}} - \text{Relocation}_{\text{follow-up}}) - (\text{Comparison}_{\text{follow-up}} - \text{Comparison}_{\text{baseline}}).$$

Adjusted and unadjusted DID analyses were performed using for each possible pairing of tenure groups using related measures linear regression models with mixed effects while adjusting for within household clustering of children. The first set of models were unadjusted and the second set of models adjusted for the following measures: child age at follow-up in years, time in treatment, change in caregiver's mental health, change in caregiver's physical wellbeing, caregiver's gender, caregiver's immigrant status, caregiver's education status, caregiver's marital status, caregiver's employment status, change in school boundaries, and whether children started school. Zero-order correlations between covariates were conducted to check for multicollinearity between covariates.

Results

Sample Description

Figure 2 provides a description of the study sample. Overall, 131 surveys were completed at baseline by caregivers of the two treatment groups (recruitment rate 17%) 85 surveys were completed by caregivers of the comparison group (recruitment rate 12%). At follow-up, 55 surveys were completed by caregivers that moved into newly constructed public housing units ('new housing' group) one year ago, 58 surveys were completed by caregivers that moved into relocation housing ('relocation housing' group). The total number of

completed follow-up surveys for both treatment groups is 113 (retention rate 86%). The number of follow-up surveys completed by the comparison group is 51 (retention rate 60%).

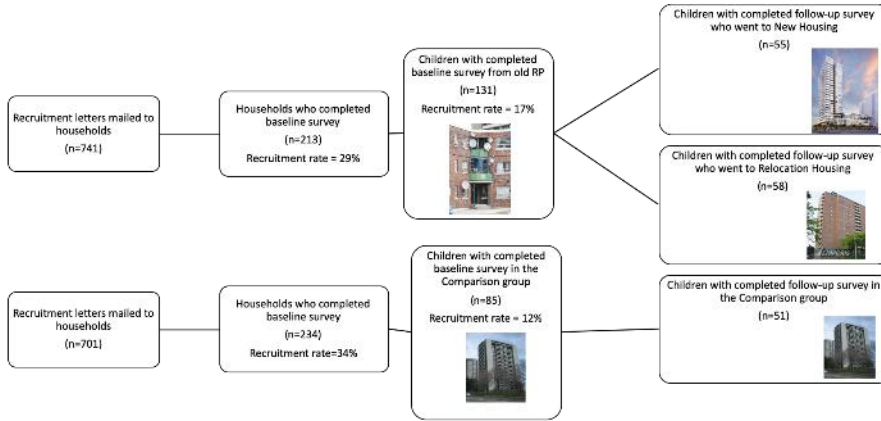


Figure 2. Study participant sample description

Table 1 provides a descriptive summary of the study cohort based on children’s age at follow-up, changes in caregivers’ CESD score, changes in caregivers’ PCS score, time in treatment, caregiver’s gender, employment status, education status, marital status, immigrant status, an indicator variable that denotes a change in school boundary based on reported address between baseline and follow-up, as well as an indicator variable that denotes possible change in the child’s routine by starting school (i.e., if the child was age 5 at baseline and above age 6 at follow-up). Test statistic for the continuous variables are from the Kruskal-Wallis Test and test statistics for the categorical variables are from the Chi-Square analysis ($\alpha=0.05$). The average age of the children in the cohort was just under 9 years of age ($M=8.99$ years; $SD=2.296$; range=4-13 years) at the time of the follow-up assessment. Children in the comparison group are on average slightly younger than both treatment groups. A negative change in CES-D score indicates an improvement in caregiver mental health, this was observed in both treatment groups. A positive change in the PCS-8 score indicates an

improvement in caregiver physical health. Caregivers in the ‘comparison group demonstrated the biggest positive change in physical health from baseline to follow-up. Time in treatment was shorter for the ‘new housing’ group compared to the ‘relocation’ group. Length of time in treatment was found to be significant between tenure groups ($X^2=10.34$, $p<0.01$). As mentioned earlier, although follow-ups were scheduled to be conducted one-year after relocation, the timing of when the follow-up surveys were conducted was out of the control of the research team. Post-hoc analysis showed that all three groups are significantly different from one another in terms of time in treatment. Education status was also found to be significant between tenure groups ($X^2= 12.64$, $p<0.01$). Caregivers from the ‘new housing’ group reported the highest level of education with 93% reporting having a high school diploma or better. Post-hoc analysis reveals that the education status between ‘new housing’ group and the comparison group is statistically significant ($X^2= 12.63$, $p<0.01$) whereas education between ‘new housing’ and ‘relocation housing’ and between ‘relocation housing’ and comparison groups were not statistically significant.

Table 1

Table provides descriptive summary of continuous and categorical covariates with standard errors (*SE*) and standard deviations (*SD*) for continuous variables and % and 95% CI for categorical variables for the new housing group, the relocation housing group and the comparison group.

	‘New housing’ group			‘Relocation housing’ group			Comparison group			Chi-Square	Prob *
	n=55			n=58			n=51				
Continuous covariates	Mean	SE	SD	Mean	SE	SD	Mean	SE	SD		
Categorical covariates	%	95% CI		%	95%CI		%	95% CI		Chi-Square	Prob **
Age at follow-up (years)	9.53	0.32	2.35	9.00	0.31	2.35	8.53	0.3	2.12	5.12	0.08
Change in CESD score (baseline to follow-up)	-0.24	2.19	16.27	-0.9	1.01	7.68	1.04	1.61	11.47	1.66	0.44
Change in PCS score (baseline to follow-up)	1.09	1.25	16.27	-0.27	0.96	7.28	1.53	1.35	9.67	1.45	0.48
Time in treatment (years)	1.50	0.03	0.24	1.60	0.04	0.29	1.47	0.03	0.20	10.34	0.00
Gender (Female)	76%	[63%, 87%]		71%	[57%, 82%]		82%	[69%, 92%]		2.04	0.36
Immigrant status (Yes)	82%	[69%, 91%]		72%	[59%, 83%]		71%	[56%, 83%]		2.10	0.35
Education status (high school or more)	93%	[82%, 98%]		79%	[67%, 89%]		65%	[50%, 78%]		12.64	0.00
Marital status (Single)	42%	[29%, 56%]		40%	[27%, 53%]		53%	[39%, 67%]		2.18	0.34
Employment status (employed)	35%	[22%, 49%]		40%	[27%, 53%]		41%	[28%, 56%]		0.55	0.76

Change in school boundary*** (Yes)	62%	[49%, 74%]	59%	[46%, 70%]	NA		0.12	0.73
Started School (Yes)	11%	[5%, 22%]	12%	[6%, 23%]	12%	[5%, 24%]	0.04	0.98

*probability from Kruskal-Wallis Analysis **probability from Pearson Chi-Square analysis

*** This was only tested between the new housing group and the temporary housing group; the study design prevented the comparison group to change residential locations between baseline and follow-up.

Children’s Mental Health

Overall, we found significant reductions in the mean SDQ total difficulties score and four of the five SDQ scale scores for children in the ‘new housing’ group. We found significant reductions in the mean SDQ total difficulties score and the mean hyperactivity scale score for children in the ‘relocation housing’ group. We did not find significant reductions in the mean SDQ total difficulties score nor any of the five SDQ scales scores for children in the comparison group. Table 2 summarizes the results of the Wilcoxon signed-rank test as well as the mean SDQ scores for the study cohort at baseline survey and follow-up survey. For the entire study sample, we observed a statistically significant decrease in the mean SDQ total difficulties score from baseline to follow-up ($Z_{total}=-3.58$; $p<0.001$). Mean SDQ total difficulties scores decreased significantly from baseline to follow-up for both treatment groups. The greatest reduction in mean SDQ total difficulties score post relocation was observed for the ‘new housing’ group (2.13 points; $Z_{new}=-3.822$; $p<0.001$). In comparison, the reduction in mean SDQ total difficulties score for the ‘relocation housing’ group (1.14 points; $Z_{relocation}=-2.070$; $p<0.05$) was moderate.

The results of the Wilcoxon signed-rank test shows that reductions in the mean SDQ scale scores for children in the ‘new housing’ group are significant for the Emotional Symptoms Scale (0.69 point decrease; $Z=-2.996$; $p<0.05$), Conduct Problems Scale (0.73 point decrease; $Z=-3.339$; $p<0.001$), and Peer Problems Scale (0.44 point decrease; $Z=-2.082$;

$p < 0.05$). In comparison, no statistically significant reductions were observed for children in the ‘relocation housing’ group or the comparison group. A statistically significant reduction in the mean Hyperactivity Scale score was observed for both the ‘new housing’ group (0.54 point decrease; $Z = -1.679$; $p < 0.10$) and the ‘relocation housing’ group (0.74 point decrease; $Z = -2.709$; $p < 0.05$).

Figure 3 illustrates the change in mean SDQ total difficulties score from baseline to follow-up for both treatment groups and the comparison group. The dotted line indicates the cohort average of SDQ total difficulties score of all three groups: ‘new housing’ group, ‘relocation housing’ group, and comparison group. The reduction in the mean SDQ total difficulties score for the ‘new housing’ group is the steepest and the reduction in the mean SDQ total difficulties score for the comparison group is mostly flat. The reduction in the mean SDQ total difficulties score for the ‘relocation housing’ group is in between the trend lines of the ‘new housing’ group and the comparison group.

Table 2

Table reports SDQ total difficulties and subscale mean scores of the treatment groups and the comparison group at baseline and at follow-up with standard errors (SE) and skewness.

		‘New housing’ group <i>n</i> =55		‘Relocation housing’ group <i>n</i> =58		Comparison group <i>n</i> =51		Total <i>N</i> =164	
		Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
SDQ total difficulties score (0-40)	Mean (SE)	15.11 (0.531)	12.98*** (0.402)	15.19 (0.549)	14.05** (0.520)	15.41 (0.540)	15.31 (0.551)	15.23 (0.311)	14.09*** (0.293)
	Standard Deviation	3.94	2.98	4.18	3.96	3.86	3.94	3.97	3.79
	Skewness	.001	.851	.452	.633	.333	.333	.140	.718
SDQ subscales									
Emotional Symptoms Scale (0-10)	Mean (SE)	1.96 (0.242)	1.27** (0.207)	1.88 (0.257)	1.59 (0.228)	2.29 (0.294)	2.39 (0.360)	2.04 (0.151)	1.76 [†] (0.159)
	Standard Deviation	1.80	1.53	1.96	1.74	2.10	2.57	1.94	2.04
	Skewness	1.12	.437	.976	.921	.685	.906	.819	1.20
	Mean (SE)	3.44 (0.227)	2.71*** (0.131)	3.16 (0.179)	3.00 (0.165)	3.27 (0.151)	3.39 (0.143)	3.29 (0.109)	3.02** (0.088)

Conduct Problems Scale (0-10)	Standard Deviation	1.686	.975	1.36	1.26	1.08	1.02	1.40	1.12
	Skewness	.643	.376	.574	1.32	.333	.333	.585	1.06
Hyperactivity Scale (0-10)	Mean (SE)	4.87 (0.266)	4.33 [±] (0.198)	5.24 (0.265)	4.50 ^{**} (0.212)	4.61 (0.217)	4.61 (0.173)	4.92 (0.147)	4.48 (0.113)
	Standard Deviation	1.97	1.47	2.02	1.61	1.55	1.23	1.88	1.45
	Skewness	.229	1.01	.134	.635	-.042	.605	.223	.722
Peer Problems Scale (0-10)	Mean (SE)	5.11 (0.199)	4.67 ^{**} (0.172)	4.91 (0.167)	4.97 (0.143)	5.24 (0.220)	4.92 (0.194)	5.08 (0.112)	4.85 (0.098)
	Standard Deviation	1.46	1.28	1.27	1.09	1.57	1.38	1.43	1.26
	Skewness	.777	.926	.957	.322	.465	.429	.732	.535
Prosocial Scale (0-10)	Mean (SE)	8.15 (0.271)	8.11 (0.283)	8.76 (0.222)	8.71 (0.197)	8.49 (0.271)	8.65 (0.237)	8.47 (0.147)	8.49 (0.140)
	Standard Deviation	2.01	2.10	2.85	2.25	1.93	1.70	1.88	1.78
	Skewness	-.913	-.775	-1.26	-1.03	-1.499	-1.443	-1.22	-1.12

[±] $p < 0.10$. ^{**} $p < 0.05$. ^{***} $p < 0.001$; Wilcoxon Signed-Rank Test. N=164

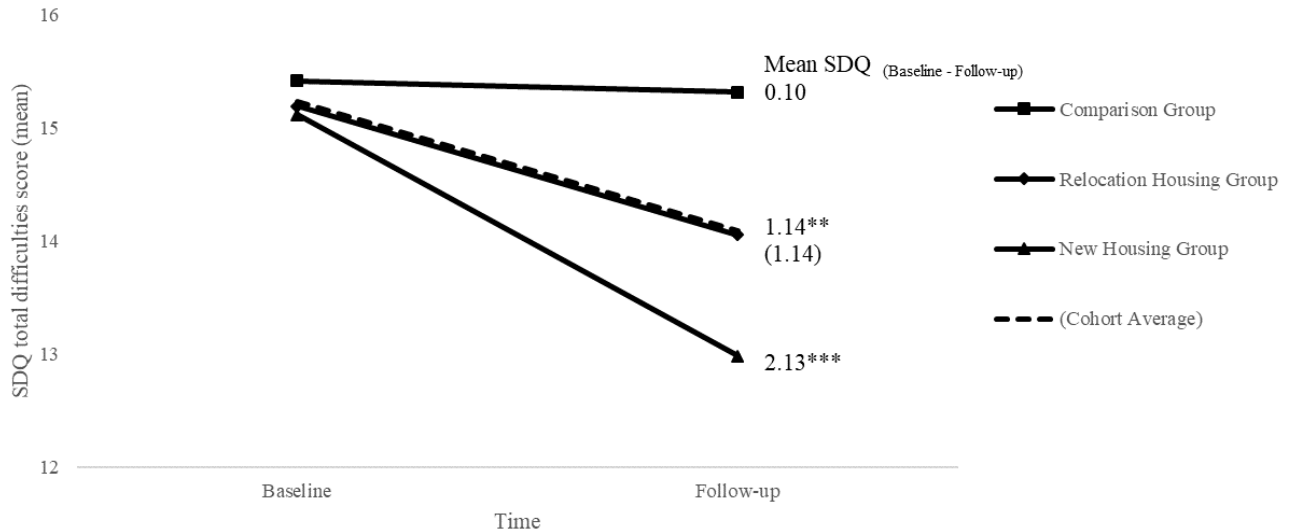


Figure 3. Graph shows the difference between mean SDQ total difficulties scores at baseline and at follow-up. N=164. ^{**} $p < 0.05$. ^{***} $p < 0.001$; Wilcoxon Signed-Rank Test.

Table 3 summarizes the unadjusted and adjusted model estimates from the Difference in Differences analysis using repeated measures linear regression models. The estimation

method for the covariance parameters is residual maximum likelihood. In both the adjusted model and the unadjusted model, we found that the DID estimators between the ‘new housing’ group and the comparison housing group were significant (unadjusted coefficient=-2.03; $p<0.01$; adjusted coefficient=-2.12; $p<0.01$;). The estimators are similar which indicates that the covariates that were adjusted did not affect the model fit to a great extent. The DID estimators between the ‘relocation housing’ group and the comparison group were not significant (unadjusted coefficient=-1.04; $p=0.19$; adjusted coefficient=-1.06; $p=0.17$;.) nor are the DID estimators between the ‘new housing’ and the ‘relocation’ housing group (unadjusted coefficient=-0.99; $p=0.18$; adjusted coefficient=-1.05; $p=0.16$;). These findings are consistent with the Wilcoxon Signed-Rank Test results described in Table 2. These findings suggest that the treatment effect that the ‘new housing’ group experienced was significant. On the other hand, the treatment effect that the ‘relocation housing’ group experienced was not significant. The difference in the treatment between ‘new housing’ group and ‘relocation housing’ group was also not significant. Overall, DID model results suggest that compared to no intervention (i.e., comparison group), moving from old public housing to new housing (i.e., ‘new housing’ group) produced a program effect drastic enough for a significant change that was observed in the mean SDQ total difficulties scores from baseline to follow-up.

Table 3.

Table reports unadjusted DID coefficients and adjusted DID coefficients with standard errors (*SE*) in parentheses for the study cohort.

Model Coefficients	New Housing vs. Comparison						Relocation housing vs. Comparison						New Housing vs. Relocation					
	Unadjusted Model df=104			Adjusted Model df=104			Unadjusted Model df=107			Adjusted Model df=104			Unadjusted Model df=111			Adjusted Model df=104		
	<i>Esti mate s</i>	<i>SE</i>	<i>Pr</i>	<i>Esti mate s</i>	<i>SE</i>	<i>Pr</i>	<i>Esti mate s</i>	<i>SE</i>	<i>Pr</i>	<i>Esti mate s</i>	<i>SE</i>	<i>Pr</i>	<i>Esti mate s</i>	<i>SE</i>	<i>Pr</i>	<i>Esti mate s</i>	<i>SE</i>	<i>Pr</i>
Intercept	15.4 1	.55	.00	16.0 4	3.19	.00	15.4 1	.56	.00	13.8 9	3.43	.00	15.1 9	.53	.00	16.5 3	3.29	.00
Time	-.10	.53	.85	-.10	.53	.85	-.10	.57	.86	-.10	.57	.86	-1.14	.51	.03	-1.14	.51	.03
Treatment	-.30	.76	.69	-.09	.92	.93	-.22	.77	.77	-.11	1.05	.92	-.08	.76	.92	-.41	.82	.61
Time*Treatment interaction (Diff-in-Diff)	- 2.03	.73	.01	-2.03	.73	.00	-1.04	.78	.19	-1.04	.78	.18	-.99	.73	.18	-1.00	.73	.18
95% CI	[-3.48 -0.57]			[-3.48 -0.57]			[-2.59 0.51]			[-2.59 0.51]			[-2.43 0.45]			[-2.43 0.49]		
covariates																		
Age at follow-up (years)				.04	.17	.80				.23	.18	.20				-.05	.16	.74
Change in CESD (baseline to follow-up)				.01	.02	.65				-.01	.04	.72				-.03	.03	.29
Change in PCS (baseline to follow-up)				.02	.04	.64				-.05	.04	.24				.01	.04	.87
Time in treatment (years)				1.10	1.50	.47				-.20	1.50	.90				-1.19	1.34	.38
Adult gender (Female)				-1.36	.94	.15				-.54	1.04	.60				-.98	.90	.28
Immigrant status (Yes)				-.73	.87	.40				-.20	.89	.83				.96	.92	.30
Education status (high school or more)				-.63	.89	.48				.41	.81	.61				1.05	1.00	.29
Marital status (Single)				.22	.82	.79				1.13	.91	.22				1.19	.91	.19
Employment status (employed)				-1.55	.71	.03				-1.07	.78	.17				-1.55	.75	.04
Started school (Yes)				-.69	1.20	.57				.67	1.24	.59				.99	1.20	.41
Change in school boundary (yes)				-.58	1.02	.57				-.53	1.08	.62				.32	.82	.70

Repeated measures linear regression models.

Caregiver & household characteristics

Table 3 also presented the adjusted coefficients of covariates that were included in the three repeated measures linear regression models. In the first model comparing the ‘new housing’ group to the comparison group, caregiver’s employment status was significant (adjusted coefficient=-1.55; $p=0.03$). Caregivers in the ‘new housing’ group were less likely (although not significantly) than caregiver’s in the comparison and ‘relocation housing’ group to be employed (Table 1). However, caregiver’s employment status was not found to be a significant covariate in the ‘relocation housing’ group and comparison group adjusted model (adjusted coefficient=-1.07; $p=0.17$) but was found to be significant again in the adjusted model comparing ‘new housing’ group with ‘relocation housing’ (adjusted coefficient=-1.55; $p=0.04$). These results may suggest that caregiver employment is an important factor that could impact child mental health. Aside from caregiver’s employment status, no other covariates were found to be significant in the three adjusted models.

Discussion

As part of a larger study, the present study investigates the impacts of the Regent Park Revitalization Project in Toronto on children’s mental health outcomes measured using the caregiver-completed SDQ. The study compared two treatment groups to a comparison group and followed them until one-year after baseline. Children who moved to new housing directly from old public housing experienced a statistically significant improvement in mental health since baseline controlling for child age, time from baseline to follow-up survey, and caregiver’s mental health and physical wellbeing at baseline. Children from the ‘relocation housing’ group, who moved from old public housing in Regent Park to old public housing in other parts of the Toronto Community Housing Corporation system, showed moderate, non-significant improvements in overall mental

health and hyperactivity problems. Children in the comparison group did not demonstrate any changes in their mental health as expected.

These findings are broadly consistent with similar studies that examined the effects of moving from concentrated poverty public housing estates to a lower poverty neighbourhood. In the Yonkers Project⁴ - a quasi-experimental study that relocated residents out of public housing estates using lottery – children between 8-9 year of age who moved from high-poverty to low-poverty neighborhoods reported fewer behaviour problems, family relationship problems, and less delinquency compared to children who did not move (Fauth et al., 2005). Findings from the HOPE VI Panel Study which tracked children aged 6 to 14 at baseline who moved from distressed public housing reported higher satisfaction with housing quality, increase neighbourhood safety, and better mental health compared with children who moved to old public housing units (Comey, 2007; Gallagher & Bajaj, 2007; Popkin & Cove, 2007; Popkin, Eiseman, & Cove, 2004). HOPE VI Parents reported lower rates of behaviour problems; however, this decline was only significant for girls (Gallagher & Bajaj, 2007). It is worth noting that most of the participants in the HOPE VI panel study did not relocate back to their original public housing neighbourhood after the revitalization was complete (Popkin et al., 2002).

Studies from MTO – a randomized social experiment using housing vouchers – showed that children under the age of 18 in the experimental group who moved from high-poverty to low-poverty neighbourhoods demonstrated improved mental health, reduction in risky behaviours, and improved school achievements (Goering et al., 1999; Leventhal &

⁴ a quasi-experimental study in which low-income in the Yonkers neighbourhood in New York were relocated to middle-class neighbourhoods via lottery.

Brooks-Gunn, 2003; Ludwig et al., 2013; Orr et al., 2003; Popkin, Harris, & Cunningham, 2002). Evaluation on the New York MTO site found that children under the age of 18 who moved to low-poverty neighbourhoods were significantly less likely than children who did not move to report anxious/depressive problems. Children who moved to other high-poverty neighbourhoods were only marginally less likely than children who stayed to report dependency and temperament problems (Leventhal & Brooks-Gunn, 2003).

Other studies have shown some detrimental effects for sub-groups of children and youth. Youth 16-18 years of age from the Yonkers Project that moved to low-poverty neighbourhoods reported more behaviour problems, family relationship problems, and delinquency relative to youth who stayed (Fauth et al., 2005). HOPE VI Panel Study results on children aged 6 to 14 demonstrated detrimental effects on child mental health after relocation from old public housing to other public housing units (Popkin et al., 2004a). In our study we could find no evidence of harm on any of the sub-groups of children.

Parenting behaviour could explain part of the positive mental health outcomes we observed in our study. Parent-child interactions have been documented as a mediating factor in the relationship between housing and child mental health (Evans, Wells, & Moch, 2003). Studies that investigated the impact of family processes on the socioemotional functioning of children in low socioeconomic status families shows that parental stress derived from economic hardship and undesirable life conditions is a major mediator of parenting behaviour (McLloyd, 1990). Studies that looked at relocation from high-poverty to low-poverty neighbourhoods document improvements in adult mental health and improved parenting behaviours. Past studies show that moving to a low-poverty, safer neighbourhood has been linked to reduced mental distress in mothers (Garg et al., 2013), changes in attitudes in adult caregivers such as allowing more outdoor play for children

(DeLuca, Duncan, Keels, & Mendenhall, 2010), and less disciplinary and punitively parenting towards their children (Leventhal & Brooks-Gunn, 2005). Younger children are more susceptible to fluctuations in their caregivers' behaviour because the family environment plays a prominent role in influencing their behaviour. It is possible that part of the improvements in child mental health observed in the 'new housing' group and the 'relocation housing' group are derived from improved family processes.

Results from this study indicates a positive contribution of caregiver employment to the decrease in mental health problems for children. Early findings from the Gautreaux housing mobility program provided some evidence on improvements in time employed post relocation from public housing (Mendenhall, DeLuca, & Duncan, 2006); however, child outcomes were not investigated and the study and program design of Gautreaux differs quite dramatically from Regent Park. Theoretically, the family stress model posits that parents experiencing economic hardships are less affectionate and employ harsher discipline techniques than parents without economic hardships (Conger, Ge, Elder, Lorenz, & Simons, 1994). The change in employment could have altered either parenting behaviour or the amount of available family resources which led to improved child mental health outcomes. That said, the precise mechanisms that connects neighbourhood revitalization to employment, and from employment to child outcomes is unclear from this study.

In our study, changes in caregiver's mental and physical were found not to have a significant association with children's mental health outcomes. However, qualitative findings point to evidence on improvements in adult mental health for Regent Park residents post revitalization. Qualitative interviews with Regent Park adult participants indicate that crime in the neighbourhood had been significantly reduced and stigmatization on public residents has been normalized (Rowe & Dunn, 2015). Specifically, Regent Park

adults reported feeling safer in their neighbourhood (CRUNCH, 2014). Improvements in neighbourhood safety could very likely have altered caregiver's behaviours for both the 'new housing' group and 'relocation housing' groups and benefited children in the treatment groups as a result. Future research is required to understand the interplay with caregiver mental/physical health and other household characteristics such as employment status.

Improved physical conditions of the housing units could be another pathway by which child mental health was affected. For children aged 3-10 years old, the home environment is likely where most daily activities occur. Improved built environment can eliminate hazardous conditions such as poor sanitation, crowding and inadequate ventilation. Improvement in housing quality and reduction in crowding increases cognitive stimulation and psychosocial well-being for children (Thomson, Thomas, Sellstrom, & Peticrew, 2009). Young children living in more crowded conditions tend to exhibit more behavioural problems compared to children living in less crowded conditions (Leventhal & Newman, 2010). Although we did not measure the physical conditions of housing units before or after relocation in the present study, a recent qualitative study on Regent Park adults reported high degrees of satisfaction with the improved appearance of the neighbourhood and the addition of local amenities post regeneration (Rowe & Dunn, 2015). In addition, residents who moved from old units in Regent Park to new units also reported increased level of satisfaction with cleanliness of unit, sanitation (free from insects and pests), safety and security, and noise levels from both inside the building and outside the building (CRUNCH, 2014).

Social engagement and programs could also have affected child mental health as part of the Regent Park Revitalization Project. The Regent Park Revitalization Project

features an extensive social programming aspect. Aside from the obvious physical reconstruction and the mix of tenure types, the revitalization program included social programs such as employment workshops and youth engagement strategies. Tremendous efforts were put in to ensure that a Regent Park SDP was in place to guide the building of a successful, cohesive, and inclusive community in Regent Park throughout the process of redevelopment and after (TCHC, 2007). The SDP was created by an informed process centered on extensive consultation and engagement with stakeholders (TCHC, 2007). The Regent Park community was extensively consulted and engaged throughout the redevelopment process (TCHC, 2018). According to Fullilove (1996), one's sense of belonging in their community is important for mental health. Adult participants in Regent Park reported feeling a stronger sense of the community since redevelopment started (CRUNCH, 2014). Households in the 'relocation housing' group who were relocated in other buildings within the Regent Park community had access to programs under the Social Development Plan. Children in the 'relocation housing' group may have benefited because of these social programs in Regent Park such as youth engagement activities and the mental health plan, either directly or indirectly via caregivers. Overall, improvements in child mental health observed in the 'relocation housing' group could suggest that more attentive parenting behaviour, better neighbourhood quality, and social programs had positive impacts on children; however, our study does not support this claim empirically.

A limitation of this study is that some participant characteristics were not collected, particularly gender of the child. Past research has demonstrated gender effects on mental health from MTO where it was found that in general, girls enjoyed large gains in mental health whereas boys did not (Clampet-Lundquist et al., 2011; Fortson & Sanbonmatsu, 2010; Kling et al., 2006; Orr et al., 2003; Popkin et al., 2010). However, it is worth noting

that these results were based on results from youth and the sample size in our study might be too small to detect gender differences in mental health outcomes. Another limitation is that the change in residential location could have led to changes in schools for children which may have had either beneficial or disruptive effects on them. Based on home addresses pre and post-relocation, we were able to see whether there was a change in school boundaries as indicated by Toronto District School Board from baseline to follow-up; however there could be various scenarios where a change in school boundary does not indicate a change in school which is not captured in our models. The variation in the time interval between relocation and follow-up surveys amongst participant in was beyond the control of the investigation team. However, our models demonstrated that the effect of time in treatment was not significant (Table 3). Third, it is important to note that throughout the study, participants were aging and undergoing developmental changes. Children may have entered adolescence by the time the follow-up surveys were completed and this developmental advancement may have brought changes in mental health that could not have been separated from the observed program effects. Fourth, a number of variables contributing to potential pathways that could explain the improvements in child mental health were not in-scope for this study. Variables that point to changes in parenting behaviour pre- and post-relocation as well as measure that indicate potential effects of social programs could shed light on whether these elements impacted child mental health outcomes. As these measures were not empirically measured in this study, these potential pathways could not be tested. Finally, the length of the Regent Park Revitalization Project needs to be considered. Since the entire development project was planned to take up to 20 years, it is difficult to assess the degree of social mix in the present Regent Park community as it is constantly undergoing change.

The result of this study indicates that a socially-mixed public housing revitalization initiative can potentially influence child mental health positively. Consistent with past research, data from the Regent Park Revitalization Project suggest that the combination of improved housing quality, neighbourhood safety, and social inclusion in the neighbourhood environment positively impact children's mental health outcomes. The results of this study suggest that improvements in the physical environment along with social programs are potentially effective measures to promote child mental health and behaviour.

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Chapter 3

Understanding socially-mixed public housing revitalization – a content analysis from interviews with scholars

Abstract

The purpose of this study is to investigate how scholars in the fields of urban and housing policy understand socially-mixed public housing revitalization initiatives from a realist perspective. The realist perspective on evaluation begins from the proposition that the Outcomes (O) of any intervention or program are partly a function of the triggering of Mechanisms (M) and the Context (C) in which an intervention takes place (C+M=O, or CMO) (Pawson, 2006). This paper adopts the perspective that understanding these three features are fundamental to explaining the effects of the hundreds of public housing revitalization initiatives that have occurred around the world in the last 20 years. To explore the knowledge of CMOs held by scholars who have worked closely with socially-mixed public housing revitalization initiatives, realist-driven in-depth interviews were conducted. Eleven scholars were interviewed, and interview transcripts were coded using content analysis to understand emerging themes. Study results demonstrated that the use of the term ‘social mix’ is inconsistent and can generate confusion in the design, implementation, and evaluation of socially-mixed programs/policies. Study participants agreed that in the context of social mix programs, socially-mixed public housing revitalization initiatives are more consistent with the ideologies of social mix than other programs such as moving the poor using housing vouchers as it aims to deliberately introduce socio-economic and/or ethno-cultural diversity into a formerly homogenous neighbourhood. In terms of the outcomes of these initiatives, participants agreed that the most commonly observed benefits were improvements in the physical conditions of the housing unit and the neighbourhood as well as improved neighbourhood safety. A reduction in stigma against the neighbourhood and its residents was also mentioned as a positive outcome of revitalization. The most promising mechanisms of socially-mixed revitalization initiatives are the institutional resources pathway and the de-stigmatization pathway. Tenure-blind design principles and

intentional housing allocation emerged as program components that were important for the social cohesion of the neighbourhood. Three policy recommendations emerged from our study. First, a revitalization approach that is sensitive to local context is needed. Contextual analysis should be conducted prior to the implementation of every socially-mixed public housing revitalization initiative. Second, socially-mixed public housing revitalization initiative is no panacea to the issue of poverty. Residents with high-needs and complex-needs require additional resources and social programs to thrive. Finally, a more holistic approach to poverty de-concentration and reduction requires continual financial commitments from local and national authorities to support the effective implementation and operation of revitalization initiatives.

Keywords: interview, socially-mixed, public housing, revitalization, children, health policy, realist

Introduction

A large number of studies have established that neighbourhoods characterized by spatially concentrated poverty experience higher than average levels of unemployment, low income and reliance on welfare benefits, poor educational outcomes, poor mental and physical health, higher than average crime and anti-social behaviour (Arthurson, 2005). Many neighbourhoods that experience these disadvantages are aging public housing estates. As a remedy to these challenges in a number of countries, initiatives have been undertaken to ‘revitalize’ such neighbourhoods and at the same time change the population composition to achieve greater social mix. Social mix policies can be understood as deliberate efforts to promote, sustain, and manage, social inclusion and create a community of social integration for disadvantaged groups within society (Arthurson, Levin, & Ziersch, 2015; Chaskin & Joseph, 2010). Social mix policies have been widely implemented to improve the living conditions in public housing estates and the well-being of public housing residents (Bond, Sautkina, & Kearns, 2011; Dunn, 2012; Galster, 2007; Goetz, 2010; Kleinhans, 2004; Rose et al., 2013; Sarkissian, 1976; Sautkina, Bond, & Kearns, 2012; Tunstall & Fenton, 2006). Social mix policies have also been used to reintegrate public housing residents into society and to reduce the social isolation and stigma that these people experience, either *via* dispersal strategies or *in-situ* revitalization (Bond, Sautkina, & Kearns, 2011; Dunn, 2012; Kleinhans, 2004; Sarkissian, 1976; Sautkina, Bond, & Kearns, 2012; Tunstall & Fenton, 2006). One type of social mix policy is socially-mixed public housing revitalization where dilapidated public housing buildings are revitalized *in-situ* through reconstruction, often along with additional investments in social programs to improve the lives of residents and the social cohesion of the community. Purported benefits of socially-mixed public housing revitalization initiatives include: improved living conditions; improved access to social networks and job opportunities; the provision of middle class role models on acceptable

social behaviours; increased education outcomes for children; better access to health and social services; improvements in health and wellbeing; and reduction in stigma attached to the place (Atkinson & Kintrea, 2001; Chaskin & Joseph, 2010; Dunn, 2012; Joseph, 2006; Joseph, Chaskin, & Webber, 2007; Kearns & Mason, 2007; Kleit, 2001). Based on these purported benefits, revitalization initiatives have been widely implemented in the United States (Chaskin & Joseph, 2010), the United Kingdom (Kleinhans, 2004), Australia (Arthurson, 2002), other European countries (Musterd & Andersson, 2005), and Canada (Dunn, 2012). Despite the uptake of the concept of revitalization by various countries, the empirical evidence on the policy's purported benefits has been limited and inconsistent (for example see Atkinson, 2005; Bailey & Manzi, 2008; Dunn, 2012; Galster, 2010; Joseph, 2006; Sautkina, Bond, & Kearns, 2012; Tunstall & Fenton, 2006). A more precise understanding of how revitalization initiatives are best operationalized in urban policy is needed to improve the effectiveness of such initiatives.

The purpose of this paper is to investigate how scholars in the fields of urban policy and housing policy understand socially-mixed public housing revitalization. The premise for this study is that scholars hold a wealth of knowledge on this subject matter and only a fraction of that knowledge is published, making a large portion of their tacit knowledge left unexplored. This study seeks to explore this tacit knowledge using a realist approach to stakeholder interviews to 'inspire/validate/falsify/modify' (Pawson, 1996, p. 295) explanations of the ways in which revitalization initiatives work. Study participants are first asked how they conceptualize the term 'social mix'. This is to establish and limit the scope of 'social mix' policies addressed in this study. From study participants' responses, the scope of this study was limited to socially-mixed public housing revitalization initiatives where established social housing estates undergo redevelopment with substantial changes made to the tenure mix of the areas to obtain a more balanced residential social mix.

Dispersal strategies and inclusionary zoning policies were determined to be out-of-scope for this study. The study participants are then asked a series of questions regarding hypothesized realist explanations about how revitalization initiatives work under three key features: Context(C), Mechanism(M), and Outcome(O) (Pawson, 2006). These three features are woven together to form realist fundamental explanatory propositions (i.e., CMO configurations) about revitalization initiatives (Pawson, 1996). To our knowledge, this study is the only one to investigate scholars' understanding of socially-mixed public housing revitalization initiatives.

This paper begins with a review of highlighted theoretical propositions of socially-mixed public housing revitalization initiatives followed by a synthesis of past research evidence. The method section will provide a detailed account of the participant selection process, question design, and content analysis procedures. The results section will summarize main themes from the content analysis according to Context, Mechanism, and Outcome with one or more themes in each of the sections. The paper will conclude with a discussion of the results, key policy implications, study limitations and future research implications.

Background

Wilson's (1996) analysis of inner-city ghetto formation is a key theoretical foundation for beliefs about the harms of concentrated poverty and the possible benefits of social mix policies (Wilson, 1987). Wilson argues that the disadvantages of being poor can be amplified by living in neighbourhoods of high concentrations of poverty, such as public housing estates. This has stimulated research interests on public housing revitalization strategies aimed at changing the social mix of the area for the betterment of its residents (Cole & Goodchild, 2000; Joseph, 2006; Kleinmans, 2004). Previous research on social mix

policies highlights several purported pathways by which social mix could affect the health and well-being of disadvantaged people. We will review four fundamental explanatory propositions that have been highlighted in the literature (Dunn, 2012; Joseph, 2006; Kleinhans, 2004) to guide the interviews and the content analysis that follows.

The *social network* pathway asserts that social mix and integration between low-income and middle-income residents⁵ in the same community can facilitate the establishment of effective social networks and social capital, which could provide low-income residents with access to information essential for upward mobility, especially employment opportunities (Joseph, 2006). Access to employment opportunities can lead to a cascade of downstream benefits for low-income residents and their families.

The *institutional resources* pathway suggests that the market demand and political influence of middle-income residents brought into the community by social mix policies will improve the quality, availability, accessibility, and affordability of different types of institutional resources in the community (Joseph, 2006; Leventhal & Brooks-Gunn, 2001). Revitalization initiatives introduce middle-income residents into a neighbourhood so that low-income residents can arguably benefit from the effective advocacy on behalf of them (Joseph, 2006). The premise of this pathway is that areas of concentrated poverty are wilfully neglected and marginalized by the market and political forces, and the residents of these areas are unskilled at effectively advocating for high quality amenities and services. Middle-income residents have more spending power and can attract retail and commercial development and services (e.g., banking, grocery). Middle-income residents are also more likely to be owner-occupiers with a long-term financial commitment to their dwelling and its maintenance, and thus more likely and can more successfully complain about estates or

⁵ We use the term ‘middle-income’ to generalize residents who are not low-income residents in a mixed community.

neighbourhood problems and initiate prevention strategies (Beekman, Lyons, & Scott, 2001; Jupp, Sainsbury, & Akers-Douglas, 1999).

The *role-modeling & social control* pathways posit that the presence of middle-income residents will restore social order and provide local supervision to prevent and address social problems (Joseph, 2006). Middle-income residents will enforce norms, rules and behaviours to increase social order and safety in the neighbourhood. On an individual level, middle-income residents can influence low-income residents to adopt more socially acceptable behaviour such as showing respect for property, seeking work, and going to school. Role-modelling can happen between middle-income and low-income residents *via* personal social interactions or *via* distal observations of behaviours and actions (Joseph et al., 2007).

Lastly, public housing revitalization initiatives can work through the *de-stigmatization* pathway. Physical reconstruction of public housing along with tenure-mix can de-stigmatize the public housing estate and its residents (Dunn, 2012; Galster, 2012). Place de-stigmatization can happen through the brick-and-mortar reconstruction, the addition of local retails and services, improved neighbourhood safety and the reduction of criminal activities in the neighbourhood. These efforts reduce the level of stigma exerted by society on the place and its residents by blurring the lines between public housing estates and surrounding commercial and private establishments. De-stigmatization can reduce the stress and dissonance public housing residents feel and increase their sense of ownership and pride of their community.

Many critiques of socially-mixed public housing revitalization have questioned these purported pathways and the benefits associated, describing these expected benefits as a *fait accompli* (Chaskin & Joseph, 2015; Galster, 2002; Kearns & Mason, 2007; Kleinhan,

2004; Kleit, 2005; Tunstall & Fenton, 2006). Based on a number of studies investigating the effects of such revitalization initiatives, the available evidence base seems weak and inconsistent (Bond et al., 2011; Kearns & Mason, 2007). Some scholars have voiced their concerns of such heavy use of government power and equated such revitalization initiatives as state-led gentrification schemes under a broader sweep of neoliberal ideologies (August, 2014; Jama & Shaw, 2017; Lees, 2008). Given such concerns from scholars and the sizable financial investments into revitalization initiatives, a more nuanced understanding of how these initiatives may work is needed. In-depth interviews with scholars may address this gap in knowledge by illuminating common successes and failures of current initiatives that may or may not be formally published in literature.

Methodology

Study Procedure

Potential study participants were scholars who possessed knowledge expertise on social mix and have conducted research on socially-mixed revitalization initiatives. Potential participants were identified *via* a literature search and study invitations were sent out to 28 scholars. A letter of information and consent (Appendix A) that explained the purpose of the study were sent along with the study invitation to all the potential participants. Once a participant had agreed to participate in the study, an interview time was set and the question template (Appendix B) and a consent form that included permission to use audio recording (Appendix C) were sent in advance to the study participant for review. In total, we interviewed 11 participants, 6 female and 5 male, one from Canada, two from Australia, and 8 from the United States. All participants were professors or academic researchers with tremendous experience in social mix policies. All interviews were conducted remotely *via* telephone or Skype by the author.

The interviews were semi-structured and guided by a question template (Appendix B). The question template was designed to understand the three key features (i.e., context, mechanisms, and outcomes) of socially-mixed public housing revitalization that forms its explanatory propositions. These features were informed by the realist perspective of program evaluation which tries to understand explanatory propositions of programs through the interplay between these elements. The study participants were given space to explain and elaborate on their responses and the sequence in which the questions were answered did not matter. The interview was mainly concerned with the range of topics covered to reflect the objectives of the study. The interviewer probed the study participants on their experiences with revitalization initiatives so that the interview could be designed around the participant's experiences. Constant member-checking was conducted throughout the interview process where the interviewer repeatedly asked participants whether their thoughts were captured correctly. The interviews lasted between 45 minutes to an hour and were audio recorded and transcribed verbatim. The audio recordings were transcribed by a third-party agency that specialized in audio transcriptions and the transcripts were reviewed for accuracy by the author. Interviewees were assigned pseudonyms to ensure their anonymity. Research ethics approval was obtained from McMaster University's Research Ethics Board.

Analytical Procedure

Content analysis was performed to analyze the interview transcripts. Content analysis focuses on the characteristics of language as communication with attention to the content or contextual meaning of the text (Weber, 1990). This method of qualitative data analysis is especially useful for classifying large amount of text into an efficient number of categories that represent similar meanings (Weber, 1990). The interview transcripts were

subjectively interpreted and then systematically classified through the process of coding and identification of common themes or patterns. Using a directed approach of content analysis, existing theory and prior research guided the identification of key concepts as initial coding categories (Hsieh & Shannon, 2005; Potter & Levine - Donnerstein, 1999). The transcripts were reviewed and sections belonging to the same phenomenon/category were highlighted in the same colour and then coded using the predetermined codes. The codes were subsequently revisited and modified as appropriate to accommodate emerging new themes.

Results

The first part of the results section presents findings on how study participants described the different ways the term ‘social mix’ has been used in research and policy. Through conversations with study participants, a conceptual framework of the definition of ‘social mix’ was established. This process was critical in establishing the scope of the study and narrowed the concept of ‘social mix’ to only include socially-mixed public housing revitalization initiatives. The remainder of the results section presents the content analysis findings following the three key features of a realist theoretical proposition: outcome, mechanism, and context with one or more themes in each domain. Through content analysis, this study tested and refined the four hypothesized CMO configurations of revitalization initiatives. The following sections will examine each key feature in detail.

Defining the concept of ‘social mix’

Ambiguities in the way ‘social mix’ has been used in policy and research forms part of the challenge with understanding how social mix policies work and what are its benefits. Creating a common understanding of the different ways the term ‘social mix’ has been used

can narrow the gap of inconsistency and misunderstanding in its evaluation. Study participants were asked how they conceptualize or define the term “social mix”. Created based on inputs from study participants, Figure 1 illustrates a conceptual framework that organised the various ways ‘social mix’ has been used in research and policy.

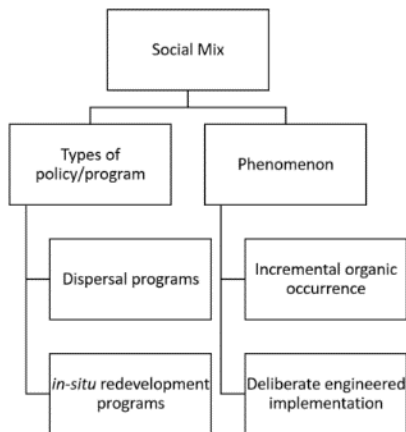


Figure 1. A framework to aid the understanding of the concept of ‘social mix’.

According to study participants, the term ‘social mix’ could be understood as a phenomenon, either occurring incrementally over long periods of time or deliberately ‘engineered’ through redevelopment initiatives. As a phenomenon, social mix can be understood as *“an intentional or unintentional effort to promote, sustain, and manage positive interactions among people of different mixed backgrounds.”* (Participant 5) The term ‘social mix’ could also be understood as a policy or program. For example, ‘social mix’ can be operationalized through income mix, racial mix, or tenure mix initiatives. These objectives could either be achieved through dispersing poor people to non-poor areas (i.e., dispersal program) or through the revitalization of places with high concentrations of poverty into socially mixed communities (e.g., redevelopment programs). Although not illustrated in Figure 1, it is possible for these concepts to overlap. When asked, all study participants responded that they considered ‘social mix’ to mean socially-mixed public

housing revitalization initiatives in the context of a policy or a program. This is illustrated by the passage below from one participant:

I think of social mix as the second of those (i.e., redevelopment programs), ... in my writing and in - mostly in my thinking, I make a distinction between the kind of disbursal approaches and then a kind of redevelopment to try to achieve social mix. Now I know in the end, in the end the objective is the same of both, ...(but) the objective of the disbursal programme is not necessarily to produce a - very much of a social mix in the receiving neighbourhoods. I mean, whereas the place-based redevelopment approach really is an attempt to create a certain type of income mix within a fairly defined place (Participant 4).

The vast majority of study participants also commented on the complexities in the design of revitalization initiatives and how initiatives can differ based on the degree of mix:

There's a huge diversity of definitions for social mix or mixed income housing. Sometimes they are ... really shallow mix ... And then there are mixes that are much more drastic ...often ... is the most drastic difference between the folks (when) there's a high and a low but not a middle (Participant 6).

Although study participants agreed that socially-mixed public housing revitalization initiatives are what they consider to be 'social mix' programs, they also commented on the inconsistencies in the way the term 'social mix' has been used in research, policy, and by front-line staff of socially mixed initiatives. As one participant noted, the diversity in the understanding of the term 'social mix' can lead to miscommunication:

So it's very difficult when we are talking – because I'm working with some community groups, so they don't know exactly what they are talking about when they are talking about social mix (Participant 1).

Outcomes from socially-mixed public housing revitalization initiatives

We asked study participants to discuss what potential outcomes socially-mixed public housing revitalization initiatives can achieve for low-income children and adults, and describe which outcomes are supported by empirical evidence and which outcomes have largely been unrealized. Participant responses were used to refine the purported theoretical propositions and hypothesized outcomes of revitalization initiatives. Improvements in the quality of housing and the neighbourhood built environment were mentioned by all of study participants as one of the most empirically supported revitalization outcomes. This is evident in the passages below:

I think the biggest advantage of mixed income housing or social mix, especially income mixing, is that it tends to produce a high quality of housing (Participant 6).

The environment may be somewhat more orderly than what there was before, greater stability, less crime, residents might feel safer, be more comfortable going to work, going out, letting the kids outside (Participant 3).

Some study participants added that physical reconstruction of public housing estates can have ripple effects on other social domains of an resident's life including mental health, parental stress, physical activity, and overall stigma:

(social mix) has been very successful at physically transforming public housing developments from deteriorating, poorly maintained, crime ridden, social problem ridden, places, environments into quality housing, quality design, stronger poverty managements, more stable communities, safer communities, less crime communities. And I think that's important for adults in that it has had an impact on their stress levels and their mental levels. They feel calmer, safer, I think it also has an impact on kids specifically that kids in these low-income households are now able to go out and play in their communities much more freely than they were in their old communities. They can just be kids, be children, be free much more. The parents let them play outside and so on (Participant 5).

Improvements in neighbourhood safety, and as a result, mental health due to the presence of more affluence resident produce benefits for low-income residents (Participant 6).

The stigma has definitely lowered, you know, the overall stigma (Participant 2).

Improvements in school quality was mentioned by one study participant. According to this participant, because school funding is associated with the local taxation system in the United States, redevelopment of public housing estates will lead to increased market value of local properties and more funding in the local school system:

A little bit for education too because it provides poorer kids better schools because the system of education is related to the system of taxation, local tax ... (Participant 1).

The displacement of public housing residents during the relocation process as a consequence of public housing revitalization initiatives was a real concern for scholars. About half of the participants believe that revitalization facilitates gentrification while others think it's an unintentional but unavoidable consequence of revitalization. According

to about a quarter of the participants, public housing revitalization could cause gentrification ‘intentionally’ in scenarios where the total quantity of public housing units was reduced post-revitalization. Revitalization could cause gentrification unintentionally due to the long construction period during which residents are forced to move to relocation housing awaiting revitalization to be completed.

A few of the study participants also discussed the concept of ‘positive gentrification’ as a necessary component of the neighbourhood revitalization process. According to these participants, gentrification can have positive impacts on public housing estates by stimulating local commercial activities, increase investment in local resources, and broaden opportunity for public housing residents to seek more appropriate housing if they prefer. In particular, the concept of gentrification without displacement highlights the positive aspects of public housing revitalization. These ideas are expressed by three study participants below:

(In) the beginning it's (Gentrification) good because you will for example diversify commercial activities, increase a little bit the local taxes, meaning that more investment from the city to develop parks and everything (Participant 1).

Gentrification doesn't have to always be detrimental so long that original residents of the neighbourhood are offered opportunities to seek more appropriate housing if they prefer (Participant 6).

positive gentrification. I think that's a real thing, ...us as practitioners and policy makers and scholars ...the task is not to be for gentrification or be against gentrification, the task is to say we need gentrification, namely neighbourhood revitalization, but we need it without displacement (Participant 5)

While positive gentrification could improve the quality of local goods and services, the increased commercial activities resulting from positive gentrification could potentially raise the cost of living to a point that is unaffordable for low-income residents. While rents for social units are protected from increases driven by gentrification, commercial rents do not have the same protections. This can negatively affect low-income residents by driving low-cost commercial services public residents depended on out of the gentrifying neighbourhood (i.e., commercial gentrification). In the long-run, without government intervention, low-income residents would be forced to move due to unaffordable commercial services (e.g., grocery, clothing). Many scholars interviewed acknowledges this aspect of gentrification and this sentiment is articulated below by one participant:

But at the same time if you bring people with a higher socioeconomic status that will invest in their housing, this will increase the value and this will with time increase ...the average value of housing in all the neighbourhood. So this will accelerate the gentrification process.... So this is the negative aspect of the gentrification (Participant 1).

Despite the commonly heralded potential for revitalization to improved employment and ultimate economic prosperity for public housing residents, the none of the study participants were optimistic about achieving employment outcomes through public housing revitalization. Participants explained that current initiatives were not designed to change the trajectories of low-income residents and help them achieve “self-sufficiency”. This can be seen in what one study participant discussed:

... a big failure is in promoting better economic mobility among the residents. And in theory we're not just doing mixed income development so that poor people can live in nice housing. We're doing mixed income development so that poor people can get on a better

trajectory and move toward what we refer to as self sufficiency. But we're just not seeing the evidence that that's happening on any kind of systematic large scale... Even after many years in the mixed income development, residents are still very, very poor and not on a different trajectory. one of the biggest failures of mixed income development is to not be a stronger platform for positive youth development (Participant 5).

Mechanisms of socially-mixed public housing revitalization initiatives

The study participants were asked to comment on purported mechanisms for socially-mixed public housing revitalization, and which mechanisms were most frequently observed and supported by evidence. Further, they were asked which hypothesized mechanisms were idealistic and largely unrealized according to empirical research and field observations. The institutional resources pathway was identified by all study participants to be the most promising pathway by which revitalization initiatives operated through. This mechanism is triggered by the demand for action by higher-income residents to improve the quality, availability, and accessibility of different types of institutional resources in the community (Joseph, 2006; Leventhal & Brooks-Gunn, 2001). This is evident from one study participant's comment below:

I think the most promising pathway is what we call the politically (*economy of place*) it's just a reality that when you have higher income (*residents*) in a place, they're going to have market demand and political demand. It's going to make that place treated better by external (*parties*) And there's going to be better policing, better stores, better lights, better trash pick, better security, better building maintenance, better flowers, it's all going to be better because of that demand...I think that pathway is very important (Participant 5).

Another study participant made a similar comment regarding this mechanism:

Having access to better grocery stores, for example, or other kinds of stores. The maintenance of public facilities may be better. So that, I think, is a benefit that has been documented at least to some degree (Participant 3).

From the comments above, it is evident that the political and market demands from middle-income residents are important drivers for the introduction and the ongoing maintenance of higher quality resources/services. Some study participants discussed the use of tenure-blind designs⁶ for social integration. According to participants, creating a tenure-blind community is a fundamental component of socially-mixed revitalization. The design principle of tenure blindness is the concept that the provision of amenities, architectural designs and construction standards are consistent between tenures to minimize their distinctions to the public. If implemented according to the needs of the community, tenure-blind designs could become an important lever for mixed communities to achieve its intended goals. In our realist review (see Chapter 4), tenure-blind design principles between market rate and public housing buildings were found to be essential for social cohesion in the community. Eliminating distinguishing features of public housing is hypothesized to reduce the stigma attached to public housing estates and its residents (Dunn, 2012).

Another mechanism that study participants discussed was the social network pathway. Almost all of the study participants described this pathway as “overrated”, “unrealistic” and largely unfounded based on empirical research. These sentiments are illustrated below:

⁶ Tenure-blind design principles purposefully emphasizes the similarities and minimizes the differences between housing units of different tenure types (e.g., public housing vs. market-rate housing) to mask the presence of public housing and assist better social integration of the community.

I think that the idea that there are social network effects...is highly overstated and it's really more of a naïve perspective... don't think it's realistic or it should be expected (Participant 6).

It (social network effect) was a hope, but there was no evidence that that was going to happen (Participant 9).

...to expect the kind of bridging social capital that the theory suggests is - ends up being unrealistic and - and so it just tends to be a fact of these kinds of communities that they don't operate in that way and we have to stop thinking and stop using that as a justification and stop thinking about it as a plausible set of expectations to come from these kinds of efforts (Participant 4).

These comments by study participants demonstrated their lack of confidence in this pathway and in its hypothesized benefits. These criticisms were predominantly drawing on the lack of evidence observed in empirical studies, and the unrealistic expectations attached to the potentials of the social network pathway. Instead of dismissing this pathway completely, study participants recommend avoiding the use of potential benefits from the social network pathway as a justification for the implementation of public housing revitalization initiatives.

Another mechanism that was discussed is the role-modeling & social control pathways. Similar to the comments made regarding the social network pathway, all of the study participants thought these pathways are unconvincing and could be interpreted as condescending to low-income residents. The comment below illustrates this point:

The so-called role model effect, or that higher income people will give lower income residents, you know, job tips and sort of connect them to their social networks. That has not for the most part panned out at all in the evaluation research (Participant 3).

Overall, the vast majority of the study participants expressed support for the institutional resources pathway and the de-stigmatization pathway drawing from their research experience and evidence demonstrated by empirical studies. The role-modeling, social control and social network pathways did not receive support from interviewed participants due to the lack of evidence demonstrated by previous studies.

Contextual factors and program components of socially-mixed public housing revitalization initiatives

Contextual factors can enhance or hinder the success of a socially mixed public housing revitalization initiative. Contextual factors can include the political and economic environments that surround the site to be revitalized, the demographic characteristics of the community to be revitalized, and the amount of social development experience local authorities and the housing developer responsible for the revitalization possess. Program components can also facilitate program effects. For example, the number and variety of partnerships involved in the design and implementation of the revitalization, as well as the distribution, spatial separation, and allocation of tenure types in a mixed community. Mostly all of the interviewed participants subscribed to the notion that public housing revitalization initiatives are context-dependent and that a universal approach is likely inappropriate. The following comments illustrate this point:

You cannot take your approach that you use in one neighbourhood, level of mix types of policies, types of units, design of the building, types of amenities, types of programs, what you do at the schools, what you do at the pool, what you do at the community centre, what kind of stores, there's no blueprint. You really have to look at the particular context of a community and you have to look at the institutional context ...every local context is different. And I don't even just mean by city, by city, by city, I mean neighbourhood to neighbourhood to neighbourhood. And so therefore the gentrification approach and the mixed income social mix approach needs to be customized to every single neighbourhood (Participant 5).

So I think that by and large the legacy of these programmes is mixed...I think it (program effect) probably ends up being very contextual, it ends up being based on - that it's simply not universal (Participant 4).

The viewpoint that public housing revitalization needs to be customized to each and every single site was then discussed in detail by study participants with specific examples. One study participant suggested that it would be inappropriate to intervene and revitalize a high-poverty community that is well-connected and functional. In such a community, a revitalization initiative may do more harm than good by destroying the established social connections within the community.

About half of the study participants discussed the spatial separation of residents from different tenure groups in a mixed community and how it can impact the social cohesion of the community. Several study participants supported the use of the segregated approach to tenure-mix (also known as the silo design where market-rate and public housing units occupy different buildings) as opposed to a more intimate or mid-distance design (also known as the salt-and-pepper design where market-rate and public housing units are mixed within the same building, sometimes on the same floors) (van de Nouwelant & Randolph, 2016). The segregated approach to tenure mix was supported by study

participants on the basis that it could avoid potential conflicts and reduce social comparison between public housing and market-rate residents:

Having all renters and all owners at different places makes sense for many reasons... because renters and owners have different experiences in their housing and usually their motivations, ... so if you have fewer conflicts and you have quality housing and there's no labelling or stigma then maybe that's great, right (Participant 6).

I don't believe that it's comfortable for people to live beside people who are dramatically more advantaged than they are. I think that causes jealousy and unhappiness. Keeping up with the Joneses is not a nice feeling if you can't keep up with Joneses (Participant 7).

One participant recommended the segregated approach but goes on to say that reduced financial investments into public housing revitalization by the government often leads to developers opting for the salt-and-pepper design because it is less costly to implement in some cases.

Another factor that generated some discussion amongst study participants is how best to spatially integrate low-income public housing residents with incoming middle-income residents in a confined geographical space. Resident of different social groups could have very distinct demographic characteristics such as household size (single person vs. large families), ethno-racial background (immigrant vs. native), or occupation (working professional vs. social assistance), amongst others. These differences in household composition and lifestyle could generate potential conflicts or resentment if residents were to be placed in close proximity. One study participant highlighted the conflicts that could happen between young professionals and large families due to divergent expectations about the use of public spaces (children using it as a playground) and the use of the balcony

(families using the space to dry clothes). Tensions that arise due to lifestyle choice differences between young professionals and large families provide a compelling example for more careful design and intentional placement of housing units. The study participant stressed that failure to appropriately place residents can impede the process of social integration in the revitalized neighbourhood.

A vast majority of the study participants agreed that beyond the brick-and-mortar reconstruction of public housing estates, the availability of a variety of social programs is a determining factor of program success. Social programs, according to study participants, refer to tangible ways that revitalization can build social cohesion and support low-income residents to achieve better health and wellbeing. These programs can include resources aimed at tackling social and economic issues including employment assistance, adult education, mental health support, parenting support, drug-abuse assistance, youth support and beyond. Social programs that build social cohesion are also needed; these can include social events, block gatherings, sports activities and beyond. One study participant explained that because many low-income households experience a multitude of highly-complex needs, individualized social support is essential for these households to get the help they need. Social programs are essential in public housing revitalization initiatives because social interactions need to be deliberately created between residents that would otherwise not interact. Participants suggested that these social activities should facilitate the building of social bridges without accentuating social class different (e.g., activities that require expensive equipment). For example, one study participant recommended using food as a natural and positive way to bring residents together.

Another study participant highlighted the potential to collectively build social cohesion with community partners, housing developers, property managers and local

authorities. This study participant talked about how the “operating culture” of a revitalization initiative and the partners involved can shape the process of social integration amongst residents. This participant then goes on to suggest that the “operating culture” should be driven by the aspiration to create a socially-cohesive mixed community, and not market success. This is expressed in the passage below:

I think we can raise our expectations for what developers and property managers, serving providers and community builders and leaders of community organizations and faith organizations and housing authority leaders and city workers, all the actors involved in making a mixed income development work. I think we should raise expectations for what they can accomplish if they have the right mindset. What is needed in community development is ... the operating culture of a development, which means the mindset and practices and routines and goals and every day to day operating of that development team. And I think a big part of the problem is that there's an operating culture that is driven by compliance with rules and driven by fear of what could go wrong in the development. (Participant 5).

This scholar then goes on to provide an example of how developers can operate with a culture that celebrates the creation of social integration in the community:

Each of these developments has a developer, it has somebody who's making decisions about how that space is going to work. And so, therefore in my view, those decisions could be used far more effectively to promote a different kind of environment. I don't think the right decisions and actions are being taken to avoid an us versus them dynamic. For example, when you have a property manager who puts welcome baskets for the owners but no welcome baskets for the public housing residents, that's a big, big problem and that's a

problem that's solvable tomorrow. All you need is the developer to say ...Either everyone gets welcome baskets or no one gets welcome baskets. (Participant 5).

Another theme that participants described was how the objective of the revitalization initiative can influence how it was designed, perceived, and funded. The political and social motivations behind a revitalization initiative could determine how it is operationalized. Several study participants discussed the role recent disinvestment in public housing shaped how revitalization of public housing estates have been implemented. Limited public funding has led to increased use of public-private partnerships to fund public housing renewal, a process that also often leads to the loss of public housing units. One participant suggested that socially-mixed revitalizations has been used to fill certain political intentions, such as “expectations for crime prevention” (Participant 7). Another participant commented on how socially-mixed revitalizations are often operated in ways to “reassure the market rate residents that they can feel comfortable” about their financial investments in the neighbourhood (Participant 4). Study participants stressed the importance for policy-makers to place improving the lives of low-income households as the number one objective of public housing revitalization.

Discussion

In this study, we interviewed 11 scholars to investigate the scholarly consensus on the purported mechanisms of socially-mixed public housing revitalization initiatives and their expert opinion on contextual factors and program components that trigger these mechanisms. Based on results of the content analysis, we validated and refined purported CMO configurations of socially-mixed public housing revitalization initiatives. Study results highlighted the complexity and context-dependency of socially-mixed

revitalizations. In the following sections we will discuss the CMO configurations of three of the four purported mechanisms including the institutional resources pathway, the de-stigmatization pathway, and the social network pathway. Study participants suggested that the *role-modeling & social control* mechanisms have largely been unrealized in research. For this reason, the *role-modeling & social control* mechanisms will not be discussed in detail.

Study participants thought socially-mixed revitalizations were effective at improving the physical infrastructure of the neighbourhood, and increasing the availability and access to institutional resources for low-income residents. Participants also seem to believe that positive outcomes experienced by low-income residents are a result of the institutional resources pathway and that the institutional resources pathway is a promising mechanism for socially-mixed public housing revitalizations. This finding is consistent with past evaluations of socially-mixed revitalization initiatives that reported improved satisfaction with the surrounding physical environment post-revitalization amongst low-income residents (Arthurson et al., 2016; Atkinson & Kintrea, 2001; Kleinhans & van Ham, 2013; Popkin, Katz, Cunningham, Brown, & Margery Turner, 2004; Rowe & Dunn, 2015; van Beckhoven & van Kempen, 2003). Some study participants believe that improvements in the physical environment and local resources can happen in isolation of social mix while other study participants believe that social mix is required for the long-term maintenance of the physical environment. Past research evidence provides support for the institutional resources pathway by showing that middle-income residents can more effectively lobby for goods and services and that socially mixed communities are maintained to a higher standard than public housing estates (for example see Arbaci & Rae, 2013; Bailey & Manzi, 2008; Bond et al., 2013; Bretherton & Pleace, 2011; Crawford, Byun, & Sainsbury, 2015; Graves, 2011; Groves, Middleton, Murie & Broughton, 2003;

Joseph, 2008; Kearns, McKee, Sautkina, Cox, & Bond, 2013; Keita, Hannon, Buys, Casazza, & Clay, 2016; Knox, Alcock, Roderick, & Iles, 2002; McKee, 2013; Meen, Gibb, Goody, McGrath, & Mackinnon, 2005). Overall, participants seem to suggest that the institutional resources pathway is effective at producing positive outcomes in its current state and minimal refinement is needed for this pathway.

Another purported mechanism that was verified and refined in this study is the de-stigmatization pathway. Participants agreed that socially-mixed revitalizations reduced the stigma against low-income residents and improved the overall reputation of the neighbourhood. This finding is consistent with past research (Atkinson & Kintrea, 2001; Dunn, 2012; Kearns & Mason, 2007). Participants discussed the use of tenure-blind designs as an important aspect of de-stigmatization. Consistent with this finding, past research that looked at the use of tenure-blind designs in revitalizations reported reduced tenant prejudice about other socio-economic groups (Kearns, McKee, Sautkina, Cox, et al., 2013) and increased sense of pride among public housing residents (Arthurson, 2013). A contextual factor that was discussed by study participants is the proximity between middle-income and low-income public housing residents in a mixed community. The proximity between low- and middle-income tenants is something that housing officials and developers have control over; however, not frequently documented in research (van de Nouwelant & Randolph, 2016). This program component of socially-mixed revitalization was mentioned by study participants as one that requires special considerations, perhaps through the application of contextual analysis. It was suggested that residents with drastically different lifestyles should not cohabit in proximity and a careful analysis of the neighbourhood context will allow developers and policy-makers to better understand the appropriate approach for mixing. More research and evaluation on this aspect of mixed community could perhaps shed light on how proximity between residents of different tenure could affect the social

cohesion in a mixed community. Our results suggest that the de-stigmatization mechanism improved the area reputation but requires a careful analysis and thorough understanding of the neighbourhood context, especially local demographic composition and lifestyle differences between residents of different social classes.

The final mechanism that was refined and verified in this study is the social network pathway. Our findings suggest that intimate social interactions between tenants of different social groups are limited and any assumed benefits to arise from close social interactions is likely unrealistic. This is consistent with research evidence which suggested that patterns of social life are significantly different for different social groups (e.g., socio-economic, racial or tenure groups), owners tend to have social circles beyond their immediate residential neighbourhood (Atkinson & Kintrea, 2001), and generally little social interactions take place between tenure groups in mixed communities (Cole & Goodchild, 2000; Goetz, 2003). Study participants interviewed in this study unanimously agreed that the intended benefits from the social network pathway have not been observed empirically; however, some participants agreed that this pathway holds the potential to be ‘triggered’ to benefit low-income residents given careful planning. Specifically, participants mentioned the use of social events to encourage the building of social bridges between residents of different social class. In addition, participants stressed the importance to engage with community partners, housing developers, property managers and local authorities to collectively provide resources that would build social cohesion for mixed communities.

Policy implications for future revitalization initiatives

Several policy implications emerged from this study. Our findings suggest that program success of socially-mixed public housing revitalization initiatives could be improved by i) a contextual analysis at the onset of every initiative such that the

revitalization can be designed specifically to the needs of the local residents; ii) a greater focus on the provision of social programs to help high-need, complex-need residents; and iii) continual financial commitments from local authorities to ensure that socially-mixed revitalizations are designed and implemented according to need, not financial capacity.

Despite the primacy of contextual analysis in revitalization program design, in practice, rigorous context specific research to allow for place-specific design rarely happens due to budget and time constraints. Research showed that policy documents at the national and local levels contain little if any specification as to how, or under what conditions, any of the various social-interactive mechanisms associated with mixed communities are meant to operate (Galster, 2012). As a result, a generic approach is often implemented with little to no regard for the local context (Galster, 2012). The operationalization of social mix should not be a one-size-fits-all solution nor should this type of initiatives be implemented ubiquitously across all neighbourhoods in the same fashion. More policy guidance is needed for housing authorities and developers to determine how best to operationalize social mix during public housing revitalizations, if at all.

Another policy implication that interviewed participants identified is the lack of social programs. Research shows that public housing residents are disadvantaged in multiple dimensions of life such as high mental and physical health needs, multi-generational unemployment, and fragile connections to the labour market (Cunningham, Popkin, & Burt, 2005). Study participants believe that it is likely these residents require a multitude of social programs for assistance. The brick-and-mortar reconstruction of public housing estates is unlikely the silver bullet to help public housing residents with upward mobility. For example, one study participants pointed out that assistance on employment have either not been tackled or weakly implemented. According to research, this gap in

social programming is likely the result of failures to engage with the private sector, a lack of strategic, estate-level governance, and not envisioning the redevelopment of neighbourhood and community as more than a physical renewal process (Kearns, McKee, Sautkina, Weeks, & Bond, 2013). Participants suggested that the delivery of supportive programs for complex-need, high-need public housing residents is essential in helping them achieve health and wellbeing.

A final consideration is need for financial capacity to support the adequate design and appropriate implementation of revitalization initiatives. Multiple participants suggested that public sector disinvestment in affordable housing has resulted in changes to how socially-mixed revitalizations are designed and executed. Therefore, participants recommended more public financial investments into public housing revitalization so that program design is not affected by the amount of funding available.

Limitations and research implication

The knowledge source of this study is limited to the views, experiences, and opinions of scholars from the United States, Canada, and Australia. The views of all the participants, if not quoted, are incorporated into the ideas expressed in this research paper. The purpose of this research study was not to be exhaustive, but rather act as a stepping stone to provoke conversation and discussion on the effectiveness of revitalization initiatives thus far. Refined theoretical propositions based on results from interviews with scholars could be used to inform future revitalization initiatives so they can potentially be more effective at promoting the growth of low-income neighbourhoods. The explanatory propositions discussed here illustrated the weaknesses of the one-size-fits-all approach to program design, implementation, evaluation. The knowledge shared by scholars on current

strengths and weaknesses of socially-mixed revitalizations could be applied in practice as new revitalization initiatives are designed and implemented. Future research will be needed to investigate these refined theories of change as socially-mixed public housing revitalizations continue to evolve.

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Appendix A. Letter of Information & Consent



DATE: 02-08-2016

Title of Study: Exploring the concept of social mix: A descriptive account from field expert

Investigators:

Faculty Supervisor:

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Ph.D. Candidate, McMaster University
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and Biostatistics

Hamilton, Ontario, Canada
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Purpose of the Study

You are being invited to participate in this thesis research study led by Ellie Yu under the supervision of Dr. James Dunn at McMaster University. The purpose of this study is to explore and understand how experts in the field of social mix conceptualize the term, how it is used in urban policies, and its effects on concentrated poverty.

Procedures involved in the Research

You are being invited to participate in a semi-structured in-person or virtual interview scheduled at our mutual convenience that will last approximately 60 minute. Consenting to participate means that the interview will be audio recorded and hand-written notes will be taken. You will be asked questions about social mix policies as a poverty de-concentration measure. For example, “From your experience, what do you think social mix has been able to achieve for disadvantaged households (eg., health outcomes, education outcomes)?”; “What do you hope or expect social mix to achieve in terms of reducing concentrated poverty and its effects on low-income households?”; and “What mechanisms or pathways do you think are most important in terms of producing these results?” To provide consent, please sign the consent forms and send back via email. If you have questions regarding the study, you are welcome to send them via email anytime or ask before the interview.

Potential Harms, Risks or Discomforts

It is unlikely that there will be any harms or discomforts associated with participating in this study. Described below are steps that will be taken to protect your privacy. You will be provided with the interview questions prior to your interview. The interview will be scheduled at a time of our mutual convenience and may be either in-person, or via the telephone or Skype. You are free to refuse to answer any question that is not relevant or makes you feel uncomfortable. Your name will not be linked with direct quotes; however, there is a slight chance that you may be recognizable by your comments due to your prominence in the research area. The interview will be recorded and will be transcribed by the Principle Investigator, and pseudonyms will be assigned in the transcript. Only the Principle Investigator and her Supervisor will be able to link your identity to the pseudonyms. All files will be stored either in locked cabinets or in a password protected computer and/or USB disk.

Potential Benefits

This research will not benefit you directly; however, indirectly it will contribute towards theory development and knowledge dissemination. In addition, the study could benefit society by gaining a deeper understanding of social mix policies as a poverty de-concentration strategy to help vulnerable populations living in poverty. This knowledge can aid decision-makers in future policies and programs.

Confidentiality

You will be provided with the option to have your name identified in the Acknowledgement section as a Knowledge Contributor or to be completely anonymous; this option will remain open until October 31, 2016 which is when the manuscripts will be prepared for distribution. As a Knowledge Contributor, no direct quotations will be linked to your name; your name will only appear in the Acknowledgement section. Pseudonyms will be used to present quotations or specific ideas within the body of the paper.

Transcripts and any confidential documents will be kept in a locked cabinet; digital files will be stored on a password protected computer and transferred using a password protected USB. Transcripts and confidential documents will be destroyed 10 years after the last publication of findings. Every effort will be made to report information in a way which will not identify individual respondents or departments.

Participation and Withdrawal

Your participation in this research study is voluntary. You can withdraw for any reason whatsoever, up until October 31, 2016. If you decide to withdraw, there will be no

consequences to you. In cases of withdrawal, any data you have provided will be destroyed unless you indicate otherwise. If you do not want to answer some of the questions you do not have to, but you can still be in the study.

Information about the Study Results

This study will be completed by October 2016. You will have a chance to review the draft manuscript of the Results section and voice your concerns or clarify specific ideas that you have contributed. If you would like a draft manuscript of the Results, please let me know how you would like it sent to you. A deadline to respond will be stated in the email or mail with the manuscript attached.

Questions about the Study

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If you have questions or need more information about the study itself, please contact me at:

This study has been reviewed by the McMaster University Research Ethics Board and received ethics clearance. If you have concerns or questions about your rights as a participant or about the way the study is conducted, please contact:

McMaster Research Ethics Secretariat Telephone: (905) 525-9140 ext. 23142
c/o Office of Research Services E-mail: ethicsoffice@mcmaster.ca

Appendix B. Question Guide

Semi-structured, open-ended interview: (~60 minutes)

Participant ID _____

Date _____ Location _____

Questions

1. To begin, could you tell me how you conceptualize/ define the term commonly known as “social mix”, and about your involvement in the study of social mix/ socially mixed programs? (eg., past or current projects related to the concept of social mix or social mix programs)
2. My research seeks to understand whether “social mix” has a positive, negative or neutral affects on disadvantaged populations. From your experience, what do you think “social mix” has been able to achieve (or lack thereof) for disadvantaged households (eg., health outcomes, education outcomes)
 - a. For children?
 - b. For adults?
3. From your experience, what do you think are realistic expectations for "social mix" in the reduction of concentrated poverty and its effects on low-income households?
4. Given the status quo on urban policies and programs for poverty de-concentration related to "social mix", what are the potential outcomes
 - a. For children?
 - b. For adults?
5. What mechanisms or pathways do you think are most important in terms of producing results for poverty de-concentration? What mechanisms or pathways could work for socially mixed programs/policies?
6. Which mechanisms do you think researchers and policy makers should focus on in order to help disadvantage households?
7. Of the social mix policies/programs that you know of, which (if any) do you think are effective at producing results, and which program(s) is the most successful at creating social mix?
8. Is there anything else you'd like to tell me about social mix? And are there additional questions you think I should be asking, to get a more complete picture?
9. Who else would you recommend as an expert in the field of social mix who has published extensively on this topic?

Appendix C. Consent Form

Exploring the concept of social mix: A descriptive account from field experts

Please check yes or no to the questions below to indicate whether you consent or not:

I agree to have my name listed in the Acknowledgment section as a Knowledge Contributor to this study:

Yes

No

I would like to receive a draft manuscript of the Results section:

Yes

Please send them to this email address _____

Or to this mailing address _____

No, I do not want to receive a draft manuscript of the Results section.

I have read the information presented in the information letter about a study being conducted by Sharon Yu, of McMaster University.

I have had the opportunity to ask questions about my involvement in this study and to receive additional details I requested.

I understand that if I agree to participate in this study, I may withdraw from the study at any time or up until October 31, 2016.

I understand that the interview will be audio recorded and hand-written notes will be taken.

I will be given a signed copy of this form. I agree to participate in the study

Click here to enter text.
text.

Click here to enter text.

Click here to enter

Name of Participant (Printed)

Signature

Date

Chapter 4

A realist synthesis of socially-mixed public housing revitalization initiatives: how to make it work for low-income children and families?

Abstract

A broad range of policies have been enacted across developed nations with the intent to promote greater social mix in areas of poverty concentration. The objective of social mix policies is to deliberately promote, sustain and manage positive interactions between residents of different socio-economic and/or ethno-cultural backgrounds in neighbourhoods with high poverty concentration. Our study focuses on one types of social mix policies – socially-mixed public housing revitalization initiatives – to broaden the evidence base on how this type of revitalization initiative works, for whom, and under what conditions. This realist synthesis systematically reviews the evidence regarding the effects of socially-mixed public housing revitalization initiatives on the health and well-being of low-income children and families. Using Pawson’s realist synthesis method (Pawson, Greenhalgh, Harvey, & Walshe, 2005), we reviewed evidence from 20 primary citations and 42 secondary citations with the intent to 1) summarize the child and family outcomes from revitalization initiatives for low-income residents, 2) understand prominent mechanisms that produced these outcomes, and 3) gain insights on the contextual factors and program components that facilitate these mechanisms. Consistent with past research, this review demonstrates that the most common revitalization benefits for low-income families are improvements in housing and neighbourhood satisfaction, decreased stigma, reduced parental stress, and improved neighbourhood safety. The results of the review provide support for the institutional resources and the de-stigmatization mechanisms as prominent pathways by which current

socially-mixed revitalizations lead to resident outcomes. There is support for the social network pathway to harness greater potential, if certain contextual conditions are met. The results of this review highlight the importance of stakeholder engagement, community collaboration, and contextual analysis throughout the program cycle of revitalization initiatives.

Keywords: realist synthesis, social mix, public housing, revitalization, health policy, children, families

Introduction

Social mix policies are deliberate efforts to promote, sustain, and manage, social inclusion and create a community of social integration for disadvantaged groups within society (Arthurson, Levin, & Ziersch, 2015; Chaskin & Joseph, 2010). Over the past few decades, there have been widespread use of social mix policies across countries in North American, Australia, and Europe to improve the living conditions of those in areas of concentrated poverty, such as public housing estates (Bond, Sautkina, & Kearns, 2011; Dunn, 2012; Galster, 2007; Goetz, 2010; Kleinhans, 2004; Rose et al., 2013; Sarkissian, 1976; Sautkina, Bond, & Kearns, 2012; Tunstall & Fenton, 2006). Social mix policies have been implemented based on its potential to restore dilapidated living conditions in high-poverty areas, improve the health and wellbeing of its residents, reintegrate low-income residents into society, and reduce the social isolation and stigma that these people experience (Bond, Sautkina, & Kearns, 2011; Dunn, 2012; Galster, 2007; Goetz, 2010; Kleinhans, 2004; Rose et al., 2013; Sarkissian, 1976; Sautkina, Bond, & Kearns, 2012; Tunstall & Fenton, 2006).

Social mix can be operationalized through: i) socially-mixed revitalization initiatives that aim to regenerate areas of concentrated poverty, often public housing estates, into mixed-use, tenure-mix communities; ii) low-cost homeownership initiatives that provide low-income residents financial assistance to purchase homes in low-poverty areas or incentives for middle-income earners⁷ to purchase in an area dominated by public housing;

⁷ We use the term ‘middle-income’ to generalize residents who are not low-income residents

iii) mobility programs that aim to move low-income residents out of high-poverty neighbourhoods through the use of housing vouchers; and iv) inclusionary zoning practices for greenfield developments that incentivize the developer to dedicate a portion of the housing stock to social housing (Galster, 2010, 2013; Musterd & Andersson, 2005). For example, European countries typically focus on creating mixed-tenure (mix of owners and renters) communities (Tunstall & Fenton, 2006) whereas the United States more frequently uses housing vouchers to move residents into non-poor areas (Joseph, 2006). Social mix programs such as Moving to Opportunity (MTO) or Housing Opportunities for People Everywhere (HOPE VI) have been thoroughly investigated by scholars leading to advancements in empirical evidence that provides a better understanding of the complexities in the linkages between social mix policies and resident outcomes (Beck et al., 2010; Joseph, 2008; Popkin et al., 2002; Rowe & Dunn, 2015). Past research has highlighted the influence of contextual factors on social mix initiatives (Silverman, Lupton, & Fenton, 2006). The context-dependent nature of social mix initiatives makes the interpretation and appraisal of program outcomes complex. The inconsistencies in evidence regarding purported benefits of social mix require further research in understanding the precise mechanisms and associated contextual factors that can lead to resident outcomes (Bond et al., 2011; Sautkina et al., 2012).

The purpose of the present study is to narrow the gap in knowledge and unpack the ‘black box’ for one type of social mix initiative – socially-mixed public housing

in a mixed community.

revitalization initiatives — which has the general aim of regenerating public housing estates into mixed-use, tenure-mix communities. The study will focus on the outcomes of low-income children and families. Past research has highlighted important roles children can play in building socially-integrated and sustainable mixed communities (Kleit, 2005; Ziersch & Arthurson, 2007, Bailey & Manzi, 2008; Holmes, 2006). However, no studies to date have synthesized the current state of evidence on child outcomes related to socially-mixed public housing revitalization. Using Pawson et al's (2005) realist synthesis method, this study will unpack the 'black box' of these programs (Ellen & Turner, 1997) and provide clarity on the theoretical linkages between socially-mixed public housing revitalization and the outcomes of low-income children and families (Pawson et al., 2005). This realist synthesis systematically reviews evidence on revitalization outcomes for children and families (*what works for whom*), program mechanisms that are activated to translate program components to outcomes (*how*); and contextual factors and program components that lead to outcomes (*and under what conditions*). The paper begins with a background section including a brief review of past research evidence related to child and family outcomes from social mix initiatives, followed by a description of the realist synthesis method; the research questions; and the results of a review on existing mechanisms. The methods section details the literature search and data extraction processes. The results section provides a summary on the types of revitalization programs assessed and present the key findings related to the outcomes, mechanisms, and contextual factors related to revitalization initiatives. The paper concludes with a discussion section which

summarizes the main findings, discusses the strengths and limitations of the review, compares the findings of this study with existing literature and provides research and policy implications of the findings.

Background

A large portion of existing knowledge related to the effect of social mix on children comes from US mobility studies such as MTO or Gautreaux⁸. Evaluations of MTO revealed gender divergent findings on child mental health, specifically significant mental health gains for teenage girls but null or detrimental effects for boys (Fortson & Sanbonmatsu, 2010; Jackson et al., 2009; Ludwig et al., 2013; Orr et al., 2003; Sanbonmatsu et al., 2012; Schmidt, Glymour, & Osypuk, 2017). Evaluations on Chicago's Gautreaux Program revealed that relocation to middle-income suburban areas was associated with reduced involvement in the criminal justice system for young males 17 and older, but not for females (Keels, 2008). Education outcomes of MTO children suggest that no significant differences in test scores between those who moved from high-poverty to low-poverty areas and those who stayed in high-poverty areas were detected (Sanbonmatsu, Kling, Duncan, & Brooks-Gunn, 2006). Long-term outcomes of MTO children revealed that the benefits of moving out of concentrated poverty diminished with age. Those who were below age 13

⁸ The Gautreaux Project is a US housing mobility project initiated by court order. The project randomly selected households in public housing projects to receive housing vouchers and were randomly placed in either suburban or urban neighborhoods chosen by the Chicago Housing Authority.

when relocated to a low-poverty area showed significant improvements in college attendance rates and earnings whereas the same moves had negative impacts on children who were older than 13 at the time of relocation (Chetty, Hendren, & Katz, 2016). Results from the Gautreaux program revealed that as young adults, children who moved to low-poverty areas were more likely than children who remained in high-poverty areas to graduate from high school, attend college, and to be employed with better pay and benefits (DeLuca & Rosenbaum, 2003). Evaluations done on the HOPE VI demonstrations found that children who relocated with vouchers to low-poverty areas fared better compared to children who didn't relocate or relocated to other public housing buildings (Clampet-Lundquist, 2007; Popkin, Eiseman, & Cove, 2004). HOPE VI Parents reported lower rates of behaviour problems for girls who relocated to low-poverty areas (Gallagher & Bajaj, 2007). Some studies found few or no improvements amongst HOPE VI residents that relocated to low-poverty areas (Keene & Geronimus, 2011).

Reviews that investigated studies done in Europe and Australia (Bailey & Manzi, 2008; Holmes, 2006; Kleinhans, 2004; Tunstall & Lupton, 2010; Wood, 2003) often lack the level of detail on individual effects necessary to draw inferences for policy decision-making. A review of social mix reviews concluded that “reviews of primary studies (on social mix), most drew on less than half the available primary studies, none provided a critical appraisal of individual studies and made no comment on conflicting evidence between and within studies” (Bond et al., 2011, p. 69). The inconsistencies in the findings from revitalization evaluation studies makes drawing evidence-informed insights on these initiatives difficult.

The current state of the evidence base and best practice guidelines makes extracting evidence for decision-making challenging. The purpose of this study is to fill this knowledge gap by using a systematic evidence synthesis method that is appropriate for socially-mixed revitalization initiatives to produce evidence that “allow policy makers to make ‘evidence-based’, ‘evidence-informed’ or ‘evidence-inspired’ policy” (Bond et al., 2011, p. 91).

The Realist Philosophy

A realist synthesis is a systematic, theory-driven approach to synthesizing evidence that is grounded in a realist philosophy of science (Greenhalgh, Wong, Westhorp, & Pawson, 2011). This method of systematic evidence review is suitable for the evaluation of interventions that are designed to tackle ‘wicked’ problems⁹ (Kreuter, Rosa, & Howze, 2004) such as socially-mixed revitalization initiatives that have multiple interconnected components to be delivered individually or targeted at communities or populations (Greenhalgh et al., 2015). Realist synthesis places emphasis on understanding how programs generate outcomes through mechanisms – the “underlying entities, processes, or structures which operate in particular context to generate outcomes of interest” (Astbury & Leeuw, 2010, p. 368) – and how these mechanisms are shaped and constrained by contextual factors (Pawson et al., 2005). It is particularly useful in gaining insights to

⁹ A ‘wicked’ problem is one that have multiple causes operating at both individual and societal level and is influenced by a constellation of societal and political factors.

policy-driven questions such as “if we invest in X, to which particular sector should we target it, how might implementation be improved and how might we maximize its impact?” (Greenhalgh et al., 2011).

Research Questions

The overarching research question for this realist synthesis is: Do socially-mixed revitalization initiatives improve health and well-being for low-income children and their families? More specifically we ask:

- 1) What outcomes are observed for low-income children and families?
- 2) Which mechanisms are relevant to the observed outcomes? and
- 3) What program components and contextual factors trigger such mechanisms?

Search for purported mechanisms

After finalizing the study questions, a search of peer-reviewed academic literature was conducted to identify purported mechanisms that relate socially-mixed revitalization initiatives to observed outcomes for low-income children and families. Four prominent mechanisms were highlighted by academic literature with very limited information provided on context and program components (Figure 1). Throughout the evidence synthesis process, missing mechanisms were added to this framework and existing theories were refined. A refined framework (Figure 3) will be presented in the discussion section.

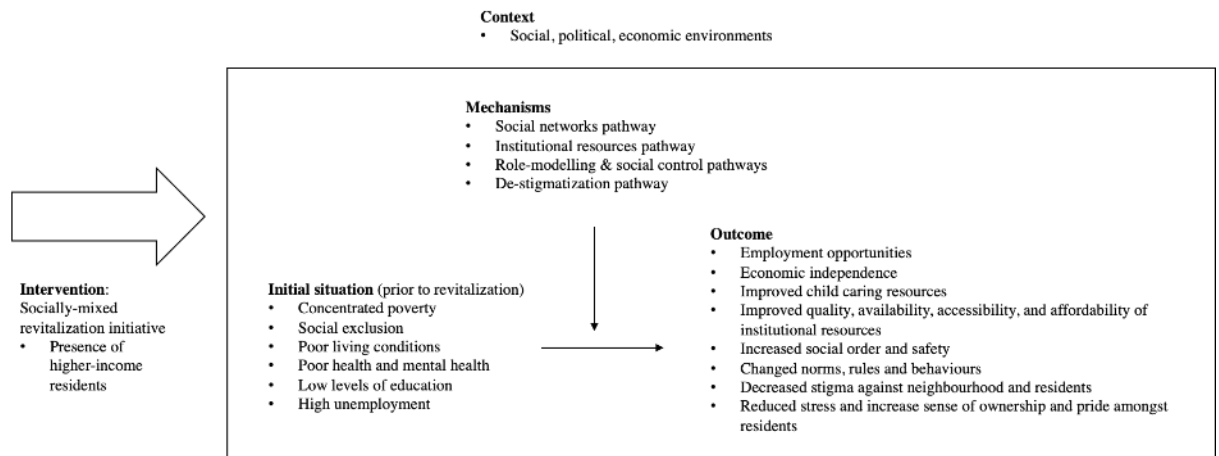


Figure 1. Prominent mechanisms highlighted by literature review. This figure outlines the potential effects of socially-mixed revitalization initiatives based on the initial review of literature. This only represents mechanisms that are relevant to this realist synthesis.

The *social network pathway* asserts that socially-mixed revitalization can facilitate the establishment of effective social networks and social capital for low-income residents. Newly established social capital would provide low-income residents with access to information and opportunities essential for upward mobility, especially employment opportunities (Joseph, 2006). Through interactions with middle-income residents, low-income residents could gain useful social networks and access to employment opportunities (Brooks-Gunn, Duncan, & Aber, 1997). These opportunities can lead to economic prosperity and benefit children in low-income households through family processes such as parental income, parental mental health, and parent-child interactions (Brooks-Gunn & Duncan, 1997).

The *institutional resources pathway* suggests that the demand and political influence of middle-income residents will improve the quality, availability, accessibility, and affordability of different types of institutional resources in the community (Galster, 2010;

Joseph, 2006; Leventhal & Brooks-Gunn, 2001). This pathway assumes that areas of concentrated poverty are wilfully neglected and marginalized by the market and political forces, and the residents of these areas are unskilled at effectively advocating for high quality goods and services. Revitalization initiatives bring middle-income residents into the neighbourhood so that low-income residents can benefit from the effective advocacy on behalf of them for high-quality goods and services (Joseph, 2006). Middle-income residents with more spending power would attract retail, commercial, and public goods and services to the area. These services could improve the quality of life for low-income residents. Another assumption is that middle-income owner-occupiers have a long-term financial commitment to their dwelling and its maintenance, and thus would more likely, and could more effectively complain about estates or neighbourhood problems and initiate prevention groups (Beekman, Lyons, & Scott, 2001; Jupp, Sainsbury, & Akers-Douglas, 1999).

The *role-modeling & social control* mechanisms posit that the presence of middle-income residents will restore social order and provide local supervision to prevent and address social problems (Joseph, 2006). Middle-income residents will enforce norms, rules and behaviours to increase the order and safety of the neighbourhood. On an individual level, middle-income residents can influence low-income residents to adopt more socially acceptable behaviour such as showing respect for property, seeking work, and going to school. Role-modelling can happen between middle-income and low-income residents *via* personal social interactions or *via* distal observations of behaviours and actions (Joseph et al., 2007).

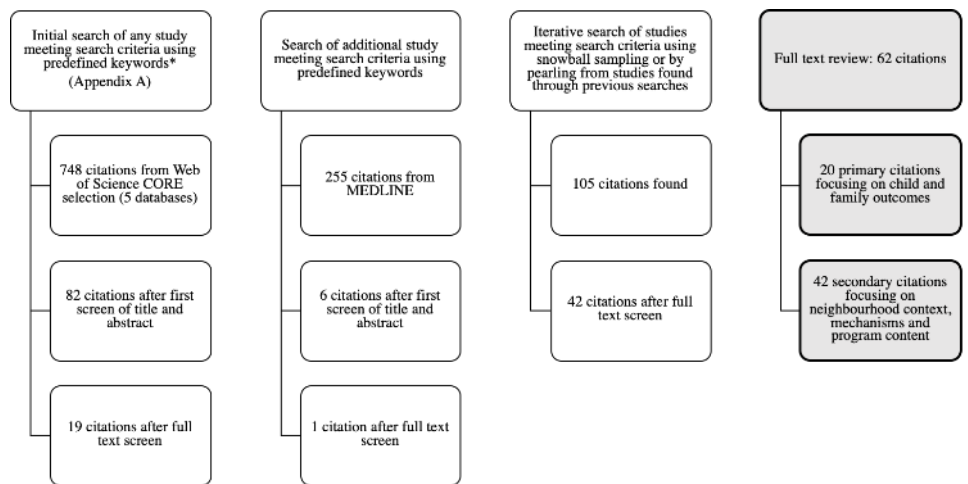
Lastly, public housing revitalization initiatives can work through the *de-stigmatization* pathway. Physical reconstruction and the introduction of market rate housing can de-stigmatize the public housing estate and its residents (Dunn, 2012; Galster, 2012). Place de-stigmatization could happen through a combination of the following: the brick-and-mortar reconstruction of public housing; the addition of retails and services in the community; improved neighbourhood safety; and the reduction of criminal activities in the community. These efforts work to better blend in public housing estates with surrounding commercial and private establishments to reduce the level of stigma exerted by society on the place and its residents (Dunn, 2012). De-stigmatization can reduce the stress and dissonance public housing residents feel and increase their sense of ownership and pride of their community.

Method

Document Search Process

Figure 2 illustrates the search process and the results of inclusion/exclusion decisions. An initial search was conducted using academic databases spanning fields of medical science, social science, arts and humanities including Science Citation Index Expanded (SCI), Social Sciences Citation Index (SSCI), Arts & Humanities Citation Index (A&HCI), Conference Proceedings Citation Index - Science (CPCI-S), Conference Proceedings Citation Index - Social Science & Humanities (CPCI-SSH), and MEDLINE using predefined keywords for citations written in English. Snowball sampling and pearling

(Cooke, Smith, & Booth, 2012) in which one reference led to several others were used to identify additional citations, both academic and grey literature. The initial search using the academic databases led to 1,003 citations matching the search keywords. Review of abstracts reduced the number of citations down to 88. Full-text review further eliminated the number of citations to 20. Through snowball sampling and pearling¹⁰, an additional 105 citations were identified that fit the search keywords. Among the additional citations identified, 42 fit the scope of the synthesis. Overall, 62 full-text articles were reviewed. Through a pre-determined appraisal tool consisting of three questions (Appendix A), 20 of the 62 full-text articles were identified as primary citations that provided information on child and family outcomes, with the remaining 42 citations to provide supporting evidence on mechanisms and context.



Keywords logic used for researching:
 [social hous* regeneration OR public hous* regeneration OR social hous* redevelopment OR public hous* redevelopment OR social hous* restructure OR public hous* restructure] AND [social mix* OR tenure mix* OR community mix* OR socio-economic mix*] AND [health OR mental health OR development* health OR education]

Figure 2. Flow diagram illustrating search process and article disposition.

¹⁰ Pearling is a sampling technique where the reference lists of relevant articles are examined for articles that may have been missed by the database searches (Cooke et al., 2012)

Data Extraction

The process of data extraction was conducted in a manner that was as comprehensive as possible. Data matrices were developed to detail the content of each reviewed citation and manage the data extraction (see Appendix B for a table of primary studies and Appendix C for a table of secondary studies). Data matrices documented the ‘neighbourhood context’, ‘potential mechanisms’, ‘child and family outcomes’, and ‘program components’ for each reviewed citation. Information on the social, political, and cultural factors were recorded under ‘neighbourhood context’; information on the processes through which the intervention led to outcomes were recorded under ‘potential mechanisms’; information on the program outcomes were recorded under ‘child and family outcomes’; and descriptions on the program components of the revitalization initiative(s) were recorded under ‘program component’.

In the process of data synthesis, prominent recurrent patterns of Context-Mechanism-Outcome (CMO) configurations were identified. Citations with these CMO configurations were then carefully scanned for a generative explanation for causation, that is how these recurrent patterns were generated by relevant mechanisms being triggered in a specific context. The theories were then tested and refined, incorporating additional research that could provide an explanation for the observed recurrent patterns of CMO configurations. Document searches and data extraction were conducted by the author, no secondary reviewer was used in this study.

Results

This realist synthesis reviewed evidence from evaluations of socially-mixed revitalization initiatives in Australia, UK, US, and Germany. We extracted evidence regarding the main research question from 20 primary citations. Additional insights about program mechanisms, program components, and contextual factors were supplemented with 42 secondary citations.

Socially-mixed revitalization initiatives reviewed

Of the primary citations, two are from Australia, seven are from the UK, ten are from the US and one from Germany with dates ranging from 2004 to 2018. All but three citations are peer-reviewed journal articles. All but one primary citation from the United States were evaluations of the HOPE VI project. Collectively, the HOPE VI demonstration was a \$5 billion investment launched in 1992 which combined “grants for physical revitalization with funding for management improvements and supportive services to promote resident self-sufficiently” (Popkin, Katz, Cunningham, Brown, & Margery Turner, 2004, p. 10). Making generalizations about the effects of HOPE VI is challenging because the demonstrations across the US have not been one program with a clear set of consistent goals and objectives. Each revitalization site was shaped more through implementation than

by how it was originally conceived and as a result, the local authorities had tremendous latitude in how each project was designed and implemented (Popkin et al., 2004).

Revitalization initiatives in the UK, Australia, and other parts of Europe are eclectically funded. Three studies from the UK investigated mature mixed communities that were at least twenty years old at the time of the study and had been originally designed and planned as mixed communities (Allen, Camina, Casey, Coward, & Martin, 2005; Camina & Wood, 2009; Casey, Coward, Allen, & Powell, 2007). One Australian study investigated the Carlton Housing Estate Upgrading Project in Melbourne (Arthurson, Levin, & Ziersch, 2016) and the other study looked at three suburban neighbourhoods in Adelaide (Arthurson, 2010). The study from Germany focused on the Deerfield neighbourhood in Berlin (Nast & Blokland, 2014).

Outcomes (What works for whom?)

Housing conditions and the built environment. Overall, residents expressed improved satisfaction with the reconstruction of building and neighbourhood environments (Allen et al., 2005; Arthurson et al., 2016; Bernstock, 2008; Bond et al., 2013; Buckner-Brown, Sharify, Blake, Phillips, & Whitten, 2014; Camina & Wood, 2009; Casey et al., 2007; Chaskin, Sichling, & Joseph, 2013; Joseph & Chaskin, 2010; Kleit, 2005; Silverman et al., 2006; Varady, Raffel, Sweeney, & Denson, 2005). Satisfaction with the living unit was

mostly attributed to tenure-blind designs¹¹, improved management practices, and higher-quality fixtures (e.g., appliances). Satisfaction with neighbourhood environment was related to New Urbanism¹² such as the addition of green spaces, restructuring of neighbourhood layout to improve walkability and safety, and improved quality of neighbourhood amenities and fixtures such as benches, lighting, and play areas for children (Buckner-Brown et al., 2014; Kleit, 2005). A Health Impact Analysis (HIA) of two HOPE VI sites in San Francisco that were revitalized demonstrated an association with the construction of a community kitchen, a food pantry, and a new grocery store along with the implementation of a healthy snack program and improved eating behaviours of low-income residents (Seto et al., 2009). In addition, physical reconstruction of dilapidated buildings reduced residents' exposures to environmental hazards such as slippery surfaces, traffic related air pollution and presence of broken glass and trash piles (Seto et al., 2009). Improved satisfaction with the physical conditions of the estate post-revitalization was reported by residents.

Physical health and mental health. Physical and mental health outcomes were less frequently investigated in the evaluations of socially-mix housing revitalization, especially for children and youth. Kersten et al (2014) investigated acute care usage of children ages

¹¹ Tenure-blind design principles purposefully emphasizes the similarities and minimizes the differences between housing units of different tenure types (e.g., public housing vs. market-rate housing) to mask the presence of public housing and assist better social integration of the community.

¹² New Urbanism is a set of design principles used to develop communities that emphasize mixed land use, diverse housing types with different price points, access to multiple modes of transportation, interconnected open space, street, and pedestrian networks. A core tenet of New Urbanism is to increase walkability and therefore facilitate social interactions and promote a sense of community (Jackson, 2018).

0-18 with public insurance in San Francisco and found that compared to children living in public housing estates, those who lived in revitalized HOPE VI housing were significantly less likely to have one or more repeated visits to acute health care services for reasons unrelated to the initial visit within an one-year period (Kersten, LeWinn, Gottlieb, Jutte, & Adler, 2014). Based on these results, the authors suggested that public housing revitalization may play an important role in reducing the use of pediatric acute care services. Similarly, the HIA done by Seto et al (2009) on the same HOPE VI sites in San Francisco provided evidence on significant reductions in exposure to a number of environmental exposures such as pollution and trash. The revitalization of the High Point neighbourhood in Seattle incorporated asthma-friendly homes as part of the redeveloped units. Accordingly to the authors, asthma-friendly homes were significantly increased the number of asthma-symptom-free days for children and adolescents post-revitalization (Buckner-Brown et al., 2014). Neighbourhood design that increased walkability in a mature mixed community in the UK was found to have increased children's physical activity levels (Casey et al., 2007). Increased sense of neighbourhood safety was mentioned by parents as tremendously beneficial to them (Joseph & Chaskin, 2010). Parents were less likely to engage in strict monitoring of their children's activities outdoors if they felt the neighbourhood was safe. Improved neighbourhood safety has been reported to decrease parental stress (Joseph & Chaskin, 2010) and increased outdoor playtime and physical activity for children (Allen et al., 2005; Bernstock, 2008).

Social networks and social capital. Evidence of social interactions between adults of different social classes post-revitalization is limited in the literature (Arthurson, 2010; Chaskin & Joseph, 2011). Residents from a number of studies expressed the sentiment that children act as important social bridges for adult interactions in mixed neighbourhoods (Bond et al., 2013; Camina & Wood, 2009; Casey et al., 2007; Chaskin et al., 2013; Kleit, 2005; Nast & Blokland, 2014). This is because children can interact and form social relationships with other children without regard to their class or tenure group. Allen et al (2005) reported social mixing amongst children in a mature mixed neighbourhood in the UK (Allen et al., 2005). The diversity in the availability of tenure options can aid in the maintenance of family networks because young adults, grandparents, and separated parents were able to stay in the same community (Camina & Wood, 2009; Casey et al., 2007).

Attitudes and behaviours. Allen et al (2005) reported changes in young people's aspirations in mature mixed community in the UK. Teenagers who lived in public housing units expressed aspirations to become a homeowner in the future after seeing the benefits of homeownership (Allen et al., 2005). Interviews with residents at two HOPE VI sites in Chicago revealed improved feelings of self-esteem and motivation among adult residents as a result of the revitalization (Joseph & Chaskin, 2010). Some parents agreed that the revitalization exposed their children to other ways of life and this has benefited their children and provided them with opportunities to learn from middle-income residents (Chaskin et al., 2013; Joseph & Chaskin, 2010). At the San Francisco HOPE VI sites, the establishment of onsite community centers served an important role in providing after

school programs and services for youth to keep them out of trouble on the streets (Seto et al., 2009).

Education. Education outcomes were seldom investigated as part of an evaluation of socially-mixed revitalizations. Case studies of five HOPE VI sites found improved student standardized test scores in two of the five study sites and improved physical conditions of the school and educational resources in all five sites (Abravanel, Smith, & Cove, 2006). The authors believe that efforts that coordinate between housing improvement and school improvements produced better opportunities and outcomes for creating a more sustainable mixed community (Abravanel et al., 2006). A case study of Thames Gateways reported increased peer mix in the newly constructed school inside the community which successfully attracted middle-income families to the community (Bernstock, 2008). A comparative analysis of two HOPE VI sites reported improvements in test scores and increased social mix in the Philadelphia school but a decrease in performance in Washington D.C. school (Comrie, 2018). Commitment from middle-income families to send their children to the local public school and the direct partnerships between public housing officials and public education administrators were key factors that attributed to the successful educational outcomes observed in the Philadelphia HOPE VI site (Comrie, 2018).

Mechanisms and Contextual factors (How and under what conditions?)

Evaluations of socially-mixed neighbourhood revitalization initiatives provide compelling evidence to support two mechanisms: 1) the institutional resources pathway and 2) the de-stigmatization pathway. The reviewed evidence did not support the social networking pathway as a potential mechanism by which improvements in child and family outcomes could be achieved through. Research evidence did suggest that this pathway will likely require specific contextual circumstances and program components to be triggered and produce individual outcomes for children and families. The following sections will explore each of these three mechanisms and provide analytical details on how and under what conditions these pathways were triggered.

Institutional Resources Pathway. The institutional resources pathway posits that the presence of middle-income residents can improve the quality, accessibility, availability, and affordability of institutional resources. This synthesis found evidence that supports this mechanism. The presence of middle-income residents is important not only in generating political and market demand for institutional resources, but also in the maintenance of these resources. Although better housing quality can be achieved through physical reconstruction of public housing, changes in the daily operation of property management, and the sustained practice of these services require the constant presence of middle-income residents in the neighbourhood. This is supported by past evidence demonstrating that middle-income residents can more effectively lobby for goods and services, and that mixed

communities are maintained to a higher standard than public housing estates (for example see Arbaci & Rae, 2013; Bailey & Manzi, 2008; Bond et al., 2013; Bretherton & Pleace, 2011; Crawford, Byun, & Sainsbury, 2015; Graves, 2011; Groves, Middleton, Murie & Broughton, 2003; Joseph, 2008; Kearns, McKee, Sautkina, Cox, & Bond, 2013; Keita, Hannon, Buys, Casazza, & Clay, 2016; Knox, Alcock, Roderick, & Iles, 2002; McKee, 2013; Meen, Gibb, Goody, McGrath, & Mackinnon, 2005). The elimination of mould in High Point in Seattle (Buckner-Brown et al., 2014); the replacement of lead-based paint, the use of higher quality features inside and outside of the homes; and the inclusion of accessibility features for persons with disabilities in Belmont Heights (Rinker, 2007) are examples that illustrate the beneficial impacts socially-mixed revitalizations could have on the living conditions of low-income residents.

A program component that can affect the success of this mechanism is the use of New Urbanism design principles. The incorporation of green spaces was recognized as an important element in the promotion of social interaction and physical activity in mixed communities. More green space in the residential neighbourhood have been associated with increased physical activity and social interactions in the community (Arthurson, Levin, & Ziersch, 2016; Bernstock, 2008; Casey et al., 2007; Chaskin & Joseph, 2011). In addition, neighbourhood designs that accentuate green spaces and walkability can improve pedestrian safety, especially for children who often, according to parents, engage in play on residential streets in their community. Improved safety decreased the level of strict monitoring practices by parents which helped to reduce parental stress (Allen et al., 2005; Arthurson et

al., 2016; Bernstock, 2008; Camina & Wood, 2009; Casey et al., 2007; Chaskin, 2013; Chaskin & Joseph, 2011; Joseph & Chaskin, 2010). Interviews with children revealed that they were aware of signs of distress in their neighbourhood and expressed enthusiasm about new environmental fixtures which provided special places for play such as parks and the green space (Allen et al., 2005). For mixed communities to achieve such effects, the revitalization must be purposefully designed with New Urbanism principles. The program should also have ample funding and collaborative relationships with local authorities to facilitate the building of parks and playgrounds. Revitalization of the neighbourhood built environment had positive impacts on children's perceptions of their community. Through interviews, low-income residents expressed that the creation of new, and the maintenance of existing neighbourhood infrastructures, goods and services was reliant on middle-income residents (Keita et al., 2016). Revitalization initiatives that successfully attracted middle-income families into the neighbourhood had better success at improving the social cohesion in the neighbourhood and education achievements at the local school (Abravanel et al., 2006; Allen et al., 2005; Keita et al., 2016; Meen et al., 2005; Tersteeg & Pinkster, 2016). For this mechanism to take place, the neighbourhood context must allow for middle-income families to thrive in the mixed community.

De-stigmatization. Addressing the stigma associated with public housing is one of the goals of social mix policies (Dunn, 2012). One way to reduce the stigma attached to public

housing is through the adoption of design elements that eliminates distinguishing features of public housing so that those outside and inside the community cannot easily identify public housing residents from middle-income residents (Dunn, 2012). Tenure-blind designs were identified by public housing residents in Sydney as an essential element that improved social cohesion and reduced disadvantage, inequity and stigma against public housing residents in the mixed community (Belinda Crawford & Sainsbury, 2017). Coherent tenure-blind designs have been documented to reduce prejudice against low-income groups (Kearns et al., 2013) and lift public residents' sense of pride (Arthurson, 2013). When tenure-blind designs were not applied, social cohesion could be affected negatively although reconstruction of old public housing was done. Highly visible spatial separation between private and public residents in a mixed community in Amsterdam produced tension between the parents around the expected usage of common spaces (Tersteeg & Pinkster, 2016). Contextual factors that are specifically important for the success of this mechanism are the scale of mixing (i.e., how close together groups from different tenure reside) and the concentration of mixing (i.e., the percentage of public housing residents in the mixed community) (Galster, 2010). Mixed communities that place public and private residents in close proximity can generate unwanted conflicts; however, complete segregation of public housing residents can create spatial concentrations of poverty within the mixed community.

Social networking. Evidence showed that children interacted without regard to tenure in mixed communities largely because social class difference was not something the children or younger teenagers, themselves, were aware of (Allen et al., 2005). Older teenagers who were aware of social class differences did not express tenure prejudice against public housing residents and often judged each other based on common interests rather than social class (Casey et al., 2007). Although social interactions amongst adults were less frequent, studies showed that children could act as facilitators of social interactions between adults (Arthurson, 2010; Bond et al., 2013; Camina & Wood, 2009; Chaskin & Joseph, 2011; Chaskin et al., 2013; Kleit, 2005; Nast & Blokland, 2014; Varady et al., 2005). Therefore, the presence of children from all tenure groups in the neighbourhood is an important contextual factor for this mechanism to be triggered. Social networking between parents have happened while picking up children from school, during play time, or in the residential area and these contacts were described as positive and polite (Casey et al., 2007). An investigation on parental social networking in a mixed school revealed that although children's friendships did not foster friendships between parents, these connections allowed the exchange of valuable information on school reputation or extracurricular activities (Nast & Blokland, 2014). The authors described these exchanges as 'child-related social capital' (Nast & Blokland, 2014). The positive and polite 'child-related social capital' is akin to the idea of 'good neighbouring' (Chaskin & Joseph, 2015) – acts of small but important exchanges of basic favours – which can form the foundation of a socially cohesive, sustainable mixed community (Camina & Wood, 2009; Chaskin & Joseph, 2015).

Discussion

The primary concern of a realist synthesis is to test, refine, and build theories through the identification of mechanisms leading to program outcomes (Pawson et al., 2005). The practice of implementing socially-mixed revitalization initiatives can be very context dependent and thus unlikely to lend itself to the traditional approach of a systematic review. A realist synthesis, while systematic in nature, recognizes a diverse range of sources to develop a theoretical framework of how, and under what conditions, the intervention might work (or not) for different populations. The evidence synthesis process allows the reviewer to refine, revise, accept, and reject the original purported theory(ies) with the purpose of providing more informed theory(ies) for future interventions (Pawson et al., 2005). Based on the results of the realist synthesis, we have refined the framework by removing unrealistic mechanisms (e.g., role-modelling and social control) and outcomes (e.g., employment) from the initial framework and added outcomes, contextual factors, and program components that are supported by evidence extracted from this study. Figure 3 illustrates the refined framework on the CMO configurations of socially-mixed public housing revitalizations.

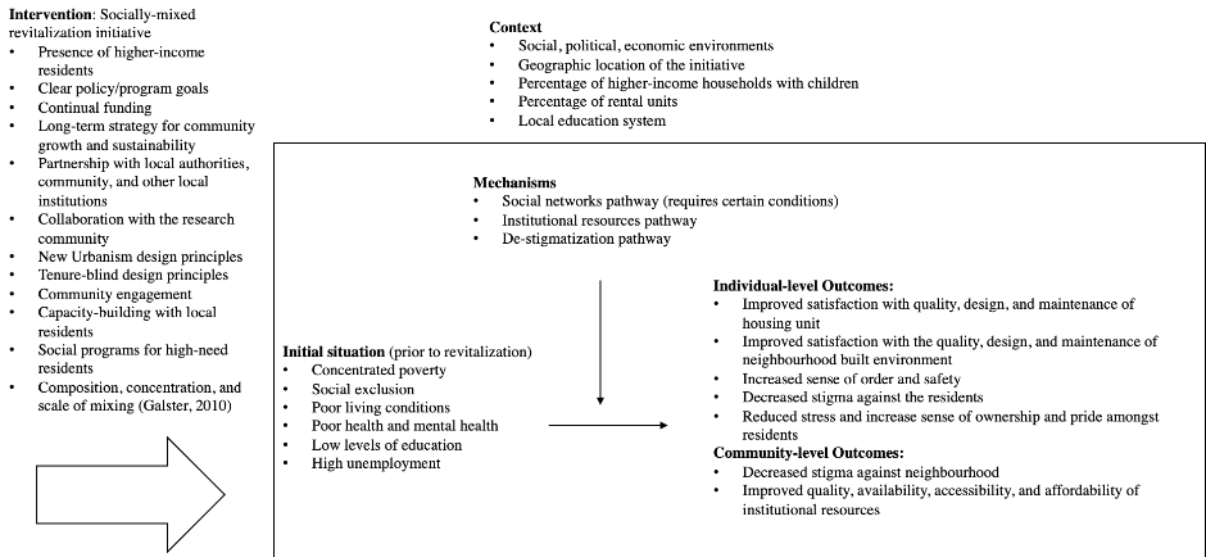


Figure 3. Refined framework: this figure outlines the potential effects of socially-mixed revitalization initiatives based on the results of the realist synthesis. Unrealistic mechanisms and outcomes have been removed from the initial framework (Figure 1). Outcomes, contextual factors, and program components that emerged as important from the realist synthesis have been added.

A review of mechanisms indicates that program effects of socially-mixed revitalization initiatives currently are operated primarily through the institutional resources pathway and de-stigmatization pathway. The institutional resources pathway posits that residents within high-poverty neighbourhoods are willfully neglected by market and political forces with few opportunities and resources for individuals and families to thrive economically and socially (Galster, 2010; Joseph, 2006). Socially-mixed revitalizations would grant them with access to high-quality local institutional and market resources. The presence of middle-income residents should generate the political and market forces needed to effectively advocate and produce the momentum for change to the local environment. The revitalized neighbourhood should, in theory, be equipped with higher-quality institutional

resources such as schools and policing, as well as market resources such as fresh food markets and healthier restaurants. The de-stigmatization pathway postulates that public housing estates are stigmatized on the basis of public stereotypes about the place and its residents (Dunn, 2012). This stigma may occur because of the estate's history, environmental or topographical disamenities, and the conditions of commercial and public spaces (Galster, 2010). Such stigma may limit the opportunities available to residents of stigmatized areas in ways such as job opportunities. Public housing revitalization could “normalize the built environment” *via* physical reconstruction resulting in improved neighbourhood safety, commercial activity and social interactions (Dunn, 2012). De-stigmatization by making market and public units visually similar can reduce the stress and dissonance public housing residents feel and improve their sense of pride.

Results from this synthesis indicate that socially-mixed revitalization initiatives improved residents' satisfaction with the quality, design, and maintenance of housing units and the neighbourhood built environment. Greater satisfaction with the physical appearance of the neighbourhood seems to have been related to New Urbanism design principles that increased walkability by decreasing car dependency, improved the amount of open green space, and diversified tenure options. Improvements in the quality of housing along with the elimination of environmental hazards reportedly improved the health of children. This appeared to have been related to the brick-and-mortar reconstruction of old estates which was made possible due to social-mixed revitalization. The presence of middle-income residents appeared to have improved the order and safety of the neighbourhood. Anecdotal

evidence from parents point to decreased parental stress and less strict parental monitoring after revitalization as a result of increased sense of neighbourhood safety. Consequently, children were allowed to be more physically active in outdoor green space according to parents.

Results from the synthesis also indicate that socially-mixed revitalization initiatives decreased levels of area stigma and improved residents' self-esteem and sense of pride. This reduction in the level of stigma may be related to tenure-blind design principles which diminished the visual dissonance between market and social housing. This design principle appeared to have affected the social cohesion of the neighbourhood by reducing the disadvantage, inequity and stigma public housing residents felt about themselves and about their community. In neighbourhoods where tenure-blind design principles were successfully applied, friendships between children and 'child-related social capital' between adults were observed.

Impacts on children's education and behavioural outcomes were not strongly supported by evidence in comparison to effects on housing quality, stigma, and health. The lack of observed positive changes in education outcomes for children may have been related to the fact that there has traditionally been a disconnection between housing and the public-school authorities. The lack of collaboration with the local school system appeared to have hindered opportunities for the revitalization initiative to attract middle-income families to the mixed community post-revitalization. Similarly, socially-mixed revitalization appeared

to have limited positive impact on social capital of children and families. The social networking pathway did not seem to create cross-class interactions or build social capital in most instances. Results from this review indicate that children can act as ‘social bridges’ between adults of different social classes. The lack of observed social interactions could be related to insufficient number of middle-income families with children in the mixed community. This is confirmed by the demographic statistics reported in the reviewed studies. According to reports from revitalizations in Australia and the US, market rate tenants are frequently childless couples or student renters who spend most of their time outside of their neighbourhood (Arthurson, 2010; Chaskin & Joseph, 2010; Kleit, 2005). Two factors are potentially at play that could explain this demographic disparity between market and social households: a general lack of confidence in the quality of local school performance from middle-income families and a response to a neighbourhood environment that is not family-friendly.

School performance appeared to be a critical concern for middle-income parents and could determine whether they choose to take permanent residence in a mixed community. Improvements in the local school system may be achieved if collaborative relationships between housing and education authorities are established prior to revitalization so that improvements made to local public schools where low-income children will likely attend is incorporated into the revitalization plan. Stakeholder consultations with school leaders and educational authorities before and during the revitalization process could help highlight existing issues in the local education system (Gordon, 2008) and provide solutions to

improve the performance of local schools so that middle-income families may be incentivized to commit long-term to the mixed community.

In a case study of HOPE VI projects, private developers, housing officials, and consultants (architects and planners) discussed the housing market decline and ambitions to achieve market success as barriers to maintain design principles that are family-friendly (Jackson, 2018). One developer shared the challenges in attracting large-scale retailers to mixed communities because of the lack of support from the City of Chicago to allocate lots for its construction. Another public amenity that has not been adequately planned into the community is public parks. A developer explained that planned open green spaces were not constructed due to a lack of municipal support for park space operation and management. In addition, due to constraints on funding flow, redevelopment projects can take years, forcing families to live along-side construction sites. All these factors may contribute to a middle-income family's decision not to invest in a mixed community.

The results of this review point to a need to adjust current thinking around theoretical propositions of socially-mixed revitalizations. What appears to be a major limitation is the assumption that middle-income families with children will willingly choose to reside in a mixed community. Writings that examine the incorporation of families in Britain's mixed communities suggest that bringing benefits to lower-income families may depend partly on the ability of mixed communities to successfully attract and retain middle-income families (Rowlands, Murie, & Tice, 2006). Attracting middle-income families with

children could help low-income children in achieving a better life trajectory *via* school mix (Varady et al., 2005). The theoretical propositions of social mix, especially the social network pathway and the role modelling and social control pathways fails to consider the specific mechanisms needed to ensure that mixed communities provide the homes and environments that middle-income families need and can thrive long-term. In spite of the prominent roles middle-income children and families play in social mix mechanisms, the need to secure middle-income families in mixed communities is not explicitly articulated at the policy or program level beyond desires to provide tenure-mix post-revitalization. Our review suggests that for at least some socially-mixed revitalizations, the presence of middle-income children may have contributed to better schools and other community resources suitable for children in the new neighbourhood through the institutional resources pathway; more ‘child-related social capital’ between adults of different social class through the social network pathway; and perhaps increasing levels of social order and improved child behaviours through the role-modelling and social control pathways.

Mature mixed communities (at least twenty years-old) demonstrated that the neighbourhood needs appropriate facilities where children from different social groups can interact and social, in a productive manner (Allen et al., 2005). The provision of walkways, cycle ways, and quality play areas were particularly important for children to establish social interactions with middle-income children. These elements of planned environment may be undervalued in the theoretical propositions that rely on cross-tenure, cross-income social interactions. At least in certain communities, there are limited formal and informal

spaces in which children and youth from different social classes can socially interact (Chaskin, Sichling, & Joseph, 2013). The social network pathway assumes that physical structures to facilitate social interactions will exist in a mixed community and that middle-income families will want to use those facilities in the same way as lower-income families. Current interpretation of this mechanism does not account for differences in the structure of households and family compositions in new neighbourhoods that may impact their behaviour and how they choose to interact with others in the community. Nor does the social network pathway account for the barriers low-income families face when they have been socially isolated in the past. The provision of social programs that supports low-income families to actively participate in the new neighbourhood may be necessary to facilitate social interactions.

Although the literature emphasizes both the physical and the social aspects of social mix neighbourhoods, our review of socially-mixed revitalizations seems to suggest that current initiatives are much more effective at producing notable improvements in the physical environment of the new neighbourhood than moving the dial on social cohesion and interaction. Outcomes that are associated with the social networking and role modelling mechanisms require additional contextual and program components to be realized. Research has highlighted that cross-class social interactions do not happen naturally, and therefore physical design and social programs are required to facilitate these interactions. To attract middle-income families to mixed communities, research suggested that municipal support is a key success factor for middle-income families to settle in mixed communities and for

subsequent cross-tenure interactions to happen in the community. There is no one-size-fits-all approach and program success for each revitalization will likely depend on a variety of local contextual factors.

This realist synthesis of socially-mixed revitalizations re-conceptualized mixed communities as complex systems of human relationships that exist within physical structures which are confined to limited resources and opportunities that are directly and indirectly impacted by the social, political, and economic systems. Certain aspects of tenure-blind design and New Urbanism can only be realized through human interactions. The quality of human relationships that occur and are created within the physical infrastructures in a mixed community can either reinforce or hinder the well-being of low-income individuals and families. The program components (i.e., various aspects of social mixing) of a socially-mixed revitalization and the contextual factors (i.e., neighbourhood conditions, resources, and services) of the neighbourhood will likely determine how people and their surrounding spaces will interact.

Our findings suggest that collaborations with various institutional resources, such as universities, research consultants, and local schools will facilitate the creation of neighbourhood structures that are suitable for the people in the community. Revitalizations would benefit from working collaboratively with research teams or consultants who are experts in urban planning, epidemiology, and public health policy (Jutte, LeWinn, Hutson, Dare, & Falk, 2011). Having an interdisciplinary team of researchers would prompt

developers to consider critical design elements prior to major financial investments (Jutte et al., 2011). In addition, researcher could provide academic and evidence-based knowledge on best practices learned from other jurisdictions that the developers may not be exposed to. Research consultants directly contributed to the success in the design and execution of the High Point revitalization project in Seattle (Buckner-Brown et al., 2014). Similarly, researchers provided critical support in capacity-building with residents in a revitalization initiative in Glasgow (Lawson & Kearns, 2010). Community engagement during the planning and implementation of public housing revitalization have enhanced feelings of control, ownership, and empowerment for public housing residents (Beck et al., 2010). In a study that looked at the role of empowerment in urban regeneration, it was found that empowerment was associated with better physical and mental health for low-income residents going through demolition and urban revitalization (Baba, Kearns, McIntosh, Tannahill, & Lewsey (2017).

Despite neighbourhood-specific differences, this review suggests that a long-term strategy for community growth and sustainability prior to revitalization might improve the effect of the revitalization. This plan might result in a more explicit vision regarding what kind of human interactions are expected to happen in the mixed community, and what physical infrastructures and social programs are required to activate relevant mechanisms that could result in improved health and well-being of its residents.

One of the challenging aspects of realist synthesis is to organize empirical evidence from evaluations of programs that are highly complex and eclectic in nature. The insights discussed in this study were based on socially-mixed public housing revitalizations in the United States, United Kingdom, Australia, and Germany, but the results can potentially be applied to socially-mixed revitalizations in other nations comparable to the countries that were included in this study. The experience of each individual family who are involved in a revitalization is likely different and differences in outcomes may occur as a result. The purpose of this study is to provide a better understanding of the complex system in a mixed community that is composed of people and the place with social relationships that impact the health and wellbeing of individuals in the community. Revitalizations to date have been effective at improving the physical environments of its residents, addressing the social domains of the community may help revitalizations to achieve additional intended results that have been lacking (e.g., social capital, social networks). Results suggest that revitalizations that are design and implemented with the involvement from community stakeholders and most importantly, the public housing residents may improve the outcomes of revitalizations irrespective of context.

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Appendix A. Appraisal tool

Article # / Authors	Did the paper investigate program outcomes or implementation processes of a socially-mixed revitalization initiative in Europe, Australia, or North America?	Does the paper describe outcomes for children and families in sufficient detail?	Does the paper describe the socially-mixed revitalization initiative program component and local context in sufficient detail?
Paper 1	Yes	Yes	Yes

Appendix B. Primary articles

#	Title	Author(s)	Date	Publication type; Method of analysis	Scope and Purpose
1	Linking Public Housing Revitalization to Neighborhood School Improvement	Abravanel et al	2006	Urban Institute Report; case studies of five HOPE VI communities.	To understand the diverse ways in which communities approach the linkage of public housing revitalization and school improvement at 5 HOPE VI sites in Atlanta, Milwaukee, Tacoma, Tucson, and D.C. (United States).
2	Mixed tenure, twenty year on - nothing out of the ordinary	Allen et al	2005	Joseph Rowntree Foundation report; three case studies with mixed method approach using census data, interviews, focus groups, and resident diaries.	To explore residents' (including children) views and experiences of living in three mature mixed tenure housing development that is at least 20 years old in the areas of Norwich, Middlesbrough, and Peterborough (U.K.).
3	Operationalising Social Mix: Spatial Scale, Lifestyle and Stigma as Mediating Points in Resident Interaction	Arthurson	2010	Journal; 40 in-depth interviews with residents across three suburbs.	To explore the apparent benefits for socio-economically disadvantaged residents of living in neighbourhoods with a diverse range of social mix in 3 suburb areas in Adelaide: Mitchell Park, Hillcrest, and Northfield (Australia).
4	Public housing renewal and social determinants of health	Arthurson et al	2016	Journal; case study with in-depth interviews with 51 residents.	To explore tenant's self-perceived health and well-being in Carlton Housing Estate, Melbourne (Australia).
5	Research: report Neighbourhood watch Building new communities: learning lessons from the Thames Gateway	Bernstock	2008	Report; a case study of 3 mixed communities by reviewing relevant documents.	To examine the form and impact of mixed tenure policies in Thames Gateway (U.K.)
6	Residents' perspectives on mixed tenure communities: a qualitative study of social renters and owner occupiers	Bond et al	2013	Report; project fieldwork involved semi-structured interviews with 37 heads of households from three re-developed, mixed-tenure estates	To explore owners' and social renters' perceptions, views and experience of living in mixed tenure neighbourhoods in 3 areas in Glasgow: CastleMilk, Drumchapel, and New Gorbals (U.K.).
7	Using the Community Readiness Model to Examine the Built and Social Environment: A Case Study of the High Point	Buckner-Brown et al	2014	Journal; retrospective document analysis of a HOPE VI site.	To describe how a community implemented a comprehensive redevelopment plan that created a sustainable built environment with improved indoor environmental quality in High Point, Seattle (United States).

	Neighborhood, Seattle, Washington, 2000–2010				
8	Parallel Lives: Towards a Greater Understanding of What Mixed Communities Can Offer	Camina & Wood	2009	Journal; interviews with residents and diaries of three mature estates	To examine the levels of neighbourhood usage and social interactions in three mature mixed tenure housing development that is at least 20 years old in the areas of Norwich, Middlesbrough, and Peterborough (U.K.).
9	On the planned environment and neighbourhood life Evidence from mixed-tenure housing developments twenty years on	Casey et al	2007	Journal; case studies of 3 communities with interviews with children aged 7-8 and 10-11	To examine the extent to which the planned environment can help create and sustain socially mixed communities in three mature mixed tenure housing development that is at least 20 years old in the areas of Norwich, Middlesbrough, and Peterborough (U.K.).
10	social interactions in mixed-income developments: relational expectations and emerging reality	Chaskin & Joseph	2011	Journal; in-depth qualitative research in two mixed-income developments in Chicago.	To explore the dynamics of social interaction in 2 HOPE VI sites, Westhaven park and Oakwood shores, Chicago (United States).
11	Youth in mixed-income communities replacing public housing complexes: Context, dynamics and response	Chaskin et al	2013	Journal; in-depth interviews, focus groups, field observations, and a review of documentary data concerning three mixed-income developments	To investigate how young people are viewed by those working on and living in 3 HOPE VI sites, Westhaven park, Oakwood shores, and Park Boulevard, Chicago (United States)
12	Linking Public Housing to Education: A Comparative Case Study of HOPE VI	Comrie, Donna	2018	Journal; comparative case study of two HOPE VI neighbourhood public schools with 14 in-depth interviews and document analysis	To examine urban revitalization program's influence on neighborhood public school performance in 2 HOPE VI sites, MLK Plaza (Philadelphia) and Capital Gateway (D.C.) (United States).
13	Community responsive schools, mixed housing, and community regeneration	Gordon	2008	Journal; focusing on practices of two head teachers of schools in communities that went under regeneration.	To understand how head teachers created an environment, shaped curriculum and engaged with community to address the special needs of their students in communities that were regenerated in the area of Middlesbrough (U.K.).
14	Living in a Mixed-Income Development: Resident Perceptions of the Benefits and Disadvantages of Two Developments in Chicago	Joseph & Chaskin	2010	Journal; in-depth interviews with residents at two mixed income developments	To explore residents' perceptions of the physical, psychological and social impacts of the mixed-income setting on their lives in 2 HOPE VI sites, Westhaven park and Oakwood shores, Chicago (United States).

15	San Francisco Children Living In Redeveloped Public Housing Used Acute Services Less Than Children In Older Public Housing	Kersten et al	2014	Journal; retrospective cohort study with 5711 children using health system utilization records.	To examine the associations between public housing type and recurrent pediatric emergency and urgent care hospital visits at 5 HOPE VI sites in San Francisco (United States).
16	HOPE VI new communities: neighborhood relationships in mixed-income housing	Kleit	2005	Journal; telephone survey of 105 residents and focus group interviews	To explore expectations about social community in a new, mixed-income, New Urbanist development at the HOPE VI NewHolly Phase I site, Seattle (United States).
17	Social Mix Revisited: Neighbourhood Institutions as Setting for Boundary Work and Social Capital	Nast & Blokland	2014	Journal; semi-structured interviews and observations of parents from a mixed school in Berlin, Germany	To investigate the networks of parents from different class backgrounds in an mixed elementary school in the community of Deerfield, Berlin (Germany).
18	HOPE VI to HOPE SF San Francisco Public Housing Redevelopment A Health Impact Assessment	Seto et al	2009	Report; Health Impact Analysis using literature and interviews with stakeholders on 2 HOPE VI sites.	To explore impacts of past HOPE VI developments at Bernal Dwellings and North Beach Place to understand health needs and opportunities to improve health at 5 HOPE VI sites in San Francisco (Valencia gardens, North beach, Plaza east, Bernal Dwellings, Hayes valleys) (United States).
19	A Good Place for Children? Attracting and Retaining Families in Inner Urban Mixed Income Communities	Silverman et al	2006	Report; case study of four mixed income new communities (MINCs) where market-rate families were envisaged as part of the mix.	To investigate demand from better-off families to live in these communities, and find out what attracts them, keeps them, or drives them away at Britannia village, Greenwich, Millennium village, and New Gorbals (U.K.).
20	Attracting Middle-Income Families in the Hope VI Public Housing Revitalization Program	Varady et al	2005	Journal; comparative case analysis of four HOPE VI sites in Cincinnati, Louisville, Baltimore, and Washington, DC with semi-structured interviews document analysis of documents and direct observation	To test the presumed causal relationships between the involvement a substantial number of middle-income families with children and HOPE VI public housing at 4 HOPE VI sites: City west (Cincinnati), Towns at the Terrace (Baltimore), Capital Hill (D.C.), and Park Du Valle (Louisville) (United States).

Appendix C. Secondary articles

#	Title	Author, Date	Publication type; Method of analysis	Scope and Purpose
1	Linking Public Housing Revitalization to Neighborhood School Improvement	Abravanel et al., 2006	Report; Case studies of five HOPE VI communities.	To understand the diverse ways in which communities approach the linkage of public housing revitalization and school improvement using 5 HOPE VI sites at Atlanta, GA. Milwaukee, WI. Tacoma, WA. Tucson, AZ. and Washington, DC. (United States).
2	Mixed-Tenure Neighbourhoods in London: Policy Myth or Effective Device to Alleviate Deprivation?	Arbaci & Rae, 2013	Journal; Quantitative and qualitative longitudinal analyses.	To explore the extent to which social tenants in ten mixed-tenure neighbourhoods have greater life chances in terms of opportunities and access to resources than those in ten concentrations of social housing in London (UK).
3	Mixed tenure communities and the effects on neighbourhood reputation and stigma: residents' experiences from within	Arthurson, 2013	Journal; Case studies of three Australian neighbourhoods using survey and in-depth interviews.	To understand whether creating mixed tenure neighbourhoods in areas of previously concentrated social housing contributes to improvements in the reputations and blemish of place of these neighbourhoods along with the associated territorial stigma attached to residents in Mitchell Park, Hillcrest and Northfield, Adelaide (Australia).
4	Social mix, '[A] very, very good idea in a vacuum but you have to do it properly!' Exploring social mix in a right to the city framework What is the Meaning of 'Social Mix'? Shifting perspectives in planning and implementing public housing estate redevelopment.	Arthurson, Levin, & Ziersch, 2015a Arthurson, Levin, & Ziersch, 2015b	Journal; in-depth interviews with public housing tenants, private residents and service providers, as well as neighbourhood observations and participation in on-site events.	To investigate the right to appropriate or access local space and the right to participate in decision-making processes at the Carlton Housing Estate Redevelopment Project in Melbourne (Australia).
5	Negotiating Social Mix in Toronto's First Public Housing Redevelopment: Power, Space and Social Control in Don Mount Court	August, 2014	Journal; participant observations of meetings of the steering committee (the 'Navigators').	To explore how tenants returning to subsidized housing, residents of the new condos and neighbours in the surrounding gentrifying community have experienced and negotiated the area's new 'social mix' in Rivertowne, Toronto (Canada).

6	The relocation of public housing tenants in South Western Sydney - A Health Impact Assessment	Crawford et al., 2015	Report; Case study of The Airds Bradbury Renewal Project involving review of documents, health and social profile analysis and in-depth interviews with employees from Health and Housing organizations in South Western Sydney and public housing residents involved in the housing relocations.	To examine the impacts of estate renewal and rehousing on the health, particularly chronic disease, quality of life and wellbeing, of public housing residents in Airds Bradbury, Sydney (Australia).
7	Is empowerment a route to improving mental health and wellbeing in an urban regeneration (UR) context?	Baba et al., 2017	Journal; Quantitative analysis using cross-sectional data from the 2011 Community Health and Wellbeing Survey (GoWell).	To examine how health gains can be generated through promoting empowerment as well as identifying whether feelings of empowerment are associated with residents personal characteristics or perceptions of their neighbourhood in 15 Glasgow communities undergoing regeneration. (UK)
8	Creating and sustaining mixed income communities in Scotland	Bailey, Chartered Institute of Housing & Joseph Rowntree Foundation, 2006	Report; Ten case studies were selected from a variety of locations in Scotland and England and each was researched through interviews with officers of the key agencies involved and residents.	To show the extent to which achieving mixed income developments is an important prerequisite for sustainable communities using case studies from Ardler Village, Attwood Green, Caterham Village, Craigmillar, Grahame Park, Hulme, Kings Hill, New Gorbals, The Ocean Estate, Royal Quays, and Upton (U.K.)
9	How will area regeneration impact on health? Learning from the GoWell study	Beck et al., 2010	Journal; Policy analysis of published policies and strategies and interviews with key informants including politicians, senior strategists, local	To establish the theoretical and perceived links between area regeneration and health in a Scottish context in order to inform a comprehensive evaluation of regeneration strategy (UK).

			implementers, or residents.	
10	Opportunity or Loss? Health Impacts of Estate Renewal and the Relocation of Public Housing Residents	Belinda Crawford & Sainsbury, 2017	Journal; In-depth interviews with public housing residents as well as with informants from local health and housing authorities.	To explore the potential positive and negative health impacts of estate renewal and rehousing programs, with the intention of developing some tentative best practice guidelines from the Airds Bradbury Renewal Project in Sydney (Australia)
11	A Difficult Mix: Issues in Achieving Socioeconomic Diversity in Deprived UK Neighbourhoods	Bretherton & Pleace, 2011	Journal; semi-structured interviews and week-long diaries residents kept about their homes and is based on responses from 41 residents.	To examine resident perceptions of eight new-build, mixed tenure, high-density housing schemes, all but one of which were developed by Housing Associations within the past decade designed to provide socially diverse and cohesive communities. (UK).
12	'Positive' Gentrification, Social Control and the 'Right to the City' in Mixed-Income Communities: Uses and Expectations of Space and Place: Mixed-income communities and control of 'public' space in Chicago	Chaskin & Joseph, 2013	Journal; interviews were conducted over two waves of data collection including panels of both resident and stakeholder key informants.	To analyze the ways which the dynamics of space and behaviour play out across the three mixed-income sites in Chicago: Oakwood Shores; Park Boulevard; and Westhaven Park (United States).
13	Achieving a sustainable mixed community: Report of a survey of residents of the Commonwealth Games Athletes' Village in Glasgow	Clark & Kearns, 2017	Report; Interviews and the Go Well East community survey	To explore residents' views of the new Athletes' Village ('the Village'), which was constructed in the Dalmarnock area as part of the Glasgow 2014 Commonwealth Games developments (UK).
14	mixed outcome developments: Comparing Policy Goals to Resident Outcomes in Mixed-Income Housing	Graves, 2011	Journal; participant observation and resident interviews	To address the social dynamics within a mixed-income housing development and compare the dynamics observed there to those assumed in the theoretical literature at Maverick Landing, Boston, MA (United States).
15	Neighbourhoods that work A study of the Bournville estate, Birmingham	Groves, Middleton, Murie & Broughton, 2003	Report; Case study including the analysis of administrative and performance data,	To understand and assess how Bournville Village achieved relative success in creating a mixed tenure environment and continual efforts required to ensure the community remains attractive and sustainable (UK).

			interviews with key officers and professionals focus groups and in-depth interviews carried out with residents.	
16	Interim Assessment of the Hope VI Program Cross-Site Report	Holin, Buron, Locke, & Cortes, 2003	Report; case study of 5 HOPE VI sites.	to explore the impact of HOPE VI on residents, developments, and neighborhoods shortly after re-occupancy at 5 HOPE VI sites (Mission Main, Monterey Place, First Ward Place/Autumn Place, Townhomes on Capitol Hill (DC), and Centennial Place) (United States).
17	Barriers to integrating New urbanism in mixed-income housing plans in Chicago: Developer, housing official, and consultant perspectives	Jackson, 2018	Journal; In-depth interviews across developers, housing officials, and consultants involved in the development process.	To examine a comparative case study of three HOPE VI planning efforts in Chicago, that exhibit different results: Westhaven Park, Jackson Square, and Roosevelt square (United States).
18	Building “Community” in Mixed-Income Developments Assumptions, Approaches, and Early Experiences	Chaskin & Joseph 2010	Journal; in-depth interviews, field observations, and a review of documentary data concerning three mixed-income.	To explore the strategies engaged, expectations for, and early responses to efforts to build "community" in three mixed-income developments being built on the footprint of former public housing developments in Chicago: Oakwood Shores, Park Boulevard, and Westhaven Park (United States).
19	Creating mixed-income developments in Chicago: developer and service provider perspectives	Joseph, 2010	Journal; In-depth interviews were conducted with 26 individuals working on nine of Chicago’s major new mixed-income developments.	To explore the perspectives of two key actors in the mixed income development process: private developers and social service providers at: Cabrini replacement housing; Hilliard Homes; Jazz on the Blvd; Lake Park Crescent; Legends south; Oakwood Shores; Park Boulevard; Roosevelt square; West end; Westhaven Park and Village (United States).
20	Early Resident Experiences at a New Mixed-Income Development in Chicago	Joseph, 2008	Journal; in-depth interviews with residents who had been living in the development for at least one month.	To explore the early experiences of residents of all income levels who have moved into a new HOPE VI mixed-income development on the south side of Chicago: Jazz on the Boulevard (United States).

21	Living together: community life on mixed tenure estates.	Jupp et al., 1999	Book; interviews with over 1,000 residents of ten mixed tenure estates across England.	To understand the impact of mixing on local economies, public services, and image. tease out the social and cultural issues around mixed tenure estates (UK).
22	Bringing Researchers and Community Developers Together to Revitalize a Public Housing Project and Improve Health	Jutte et al., 2011	Journal; case study of 1 HOPE VI community with qualitative description.	To review research on the intersection of housing, community development and health, then describe the opportunities for collaboration, the challenges, and the potential using Sunnyside, HOPE San Francisco (United States).
23	How to mix? Spatial configurations, modes of production and resident perceptions of mixed tenure neighbourhoods	Kearns et al., 2013	Journal; qualitative research with 37 residents in 7 neighbourhoods.	To investigate the relationship between the spatial configuration of tenures produced within neighbourhoods, and residents' views on the benefits and drawbacks of mixed tenure and their reported social interactions within and across tenures in three communities: Castlemilk, Drumchapel, and New Gorbals (UK).
24	Surrounding Community Residents' Expectations of HOPE VI for Their Community, Health and Physical Activity	Keita et al., 2016	Journal, community-engaged participatory research with concept mapping.	To examine the perceptions of surrounding community residents who are also directly affected by HOPE VI policies regarding their community, health, and physical activity at the Tuxedo neighbourhood in Alabama (United States)
25	Approaches to community Governance Models for mixed tenure communities	Knox et al., 2002)	Report; case study of 7 sites with site visits, focus groups and face-to-face interviews with residents and officers, and carried out background research.	To investigate whether there were models of engaging communities in neighbourhood governance that could be applied to areas of mixed tenure using: Poundbury in Dorset; the Royds area in Bradford; Churchill Gardens in Westminster; Stockfield in Birmingham; Blackbird Leys in Oxford; Manor and Castle estates in Sheffield; and Bournville in Birmingham (UK).
26	Community engagement in regeneration: are we getting the point?	Lawson & Kearns, 2010	Journal; 3 case studies with series of interviews and group discussions	To clarify what the intended benefits of community engagement in regeneration are supposed to be, according to policy theory and to add to the evidence base by assessing to what extent these aims are being achieved through community engagement in the latest cycle of area regeneration in the city Glasgow with three regeneration areas—Red Road, Sighthill and Shawbridge (UK).
27	Understanding Urban Practitioners' Perspectives on Social-Mix Policies in Amsterdam: The Importance of Design and Social Space	Lawton, 2013	Journal; open-ended interviews with a total of 18 'urban practitioners' working within areas such as urban design, architecture, planning and management in	To explore the relationship between social-mix policies, urban design and social space through the lens of 'urban practitioners', such as planners, architects and management personnel, directly involved in the development of recently built socially-mixed urban developments in the Nieuw West area of Amsterdam; Development of IJburg (Netherlands)

			both private practice and public authorities in Amsterdam.	
28	Policy-maker and practitioner perspectives on mixed tenure communities: a qualitative study	McKee, 2013	Report; Key informant interviews were undertaken with 16 professionals.	To compare and contrast the development of mixed tenure in three localities within the city of Glasgow with professionals and practitioners who have been involved in the areas of Drumchapel, Castlemilk, the and New Gorbals (UK).
29	Economic segregation in England	Meen et al., 2005	Report; 3 case studies with interviews with key stakeholders in the communities and document analysis.	To consider areas where both social/affordable housing has been inserted in predominantly owner-occupied markets using Werrington in Peterborough; Newbiggin Hall in Newcastle-upon-Tyne; and Hulme in Manchester (UK).
30	Resident Services in Mixed-Income Developments Phase 1: Survey Findings and Analysis	National Initiative on Mixed-Income Communities, 2015	Report; descriptive analysis of online survey of 60 mixed-income developments.	To provide an initial picture of how mixed-income developments across the U.S. are providing services to improve residents' well-being and self-sufficiency using 57 developments (United States).
31	Mobilizing social capital: Which informal and formal supports affect employment outcomes for HOPE VI residents?	Nguyen et al., 2016	Journal; one case study using quantitative data combined survey data, case management data, and administrative data.	To examine the relationship between informal social support and formal support services and employment outcomes among residents of a public housing development relocated as part of a HOPE VI project in The Boulevard Homes, Charlotte, North Carolina (United States).
32	The HOPE VI program- what about the residents?	Popkin, Levy, Harris, Comey, & and L. F. Buron, 2004	Report; Uses data from the HOPE VI panel study: Baseline report and HOPE VI resident tracking study.	To document systematic, multi-city studies of HOPE VI's impact on original residents
33	Belmont heights estates: A HOPE VI success story.	Rinker, 2007	Journal; Descriptive account of one mixed community.	Provide a descriptive account of the achievements of the Belmont Heights Estate redevelopment, Florida (United States).
34	More than Tenure Mix: Developer and Purchaser Attitudes to New Housing Estates	Rowlands, Murie, & Tice, 2006	Report; Seven case studies involving interviews with a sample of larger house builders operating in England.	To identify the attitudes of house builders and those living in new housing estates towards mixed tenure housing. It sets out their opinions of the housing, its environment and the 'community' which is created and the impact that tenure plays on the sale and values of housing. (UK).
35	A review of social housing regeneration in the London Borough of Brent	Stewart & Rhoden, 2003	Journal; review of historical and contemporary	To review the government response to redevelopment three estates in the London Borough of Brent: Stonebridge Park, Chalkhill and South Kilburn (UK).

			literature, combined with estate visits.	
36	More than Bricks and Mortar: Neighborhood Frames, Social Processes, and the Mixed-Income Redevelopment of a Public Housing Project	Tach, 2009	Journal; in-depth interviews with a random sample of residents in the development, interviewed key informants, conducted neighborhood observation, and analyzed data from the U.S. Census and other secondary sources.	To examine whether the presence of higher-income neighbors decreased social isolation or improved social organization in a Boston public housing project that was redeveloped in to a HOPE VI mixed income community: Orchard Gardens (United States).
37	"Us up here and them down there": How design, management, and neighbourhood facilities shape social distance in a mixed-tenure housing development	Tersteeg & Pinkster, 2016	Journal; in-depth case study of a fine-grained mixed-tenure development in the relatively new neighborhood	To examine to what degree residents experience social closeness and distance in a newly built fine-grained mixed-tenure development in IJburg, Amsterdam (Netherlands)
38	Social Impact Assessment of Rebuilding an Urban Neighborhood: A Case Study of a Demolition and Reconstruction Project in Petah Tikva, Israel	Trop, 2017	Journal; analysis of official documents, field observations, and semi-structured interviews with key stakeholders involved in the rebuilding process, and with affected community representatives.	To conduct a social impact assessment (SIA) applied to a demolition and reconstruction case study carried out in a low-income neighborhood in Petah Tikva (Israel).
39	All Mixed Up: Making Sense of Mixed-Income Housing Developments	Vale & Shamsuddin, 2017	Journal; descriptive analysis of income mixes across HOPE VI projects.	To illuminate the practice of mixed-income housing by analyzing the complete set of redevelopment projects funded through HOPE VI using 260 HOPE VI mixed-income redevelopment projects (United States).
40	Mixed-tenure development: Literature review on the impact of differing degrees of integration	van de Nouwelant & Randolph, 2016	Report; review of literature and case studies	To examine difference degree of integration in mixed tenure developments and provide case study examples for each using 5 cases, 4 in Australia, one in US (Australia, United States)

41	Social Capital and Housing Tenure in an Adelaide Neighbourhood	Ziersch & Arthurson, 2007	Journal; self-completion questionnaires and in-depth qualitative interviews across housing tenures and between socio-economic groups.	To compare and contrast elements of social capital across different housing tenures in an 2 Adelaide neighbourhood. (Australia).
42	Support for tenure mix by residents local to the Carlton Housing Estate, Melbourne, Australia	Ziersch, Arthurson, & Levin, 2018	Journal; telephone survey exploring the perceptions of the Carlton Housing Estate by residents living close by the estate and the level of support for tenure mix.	To report on the level of support for tenure-mix policies of residents living proximate to the Carlton Housing Estate in Melbourne (Australia).

Chapter 5
Conclusion

The overarching research objective of the three studies that comprise this doctoral dissertation is to develop a better understanding of socially-mixed public housing revitalization initiatives which have the general aim of regenerating public housing estates into mixed-use, mixed-tenure communities. The specific aim is to better understand how socially-mixed public housing revitalizations initiatives ‘work’ to improve (or not) the health and wellbeing of disadvantaged children and families. The dissertation combined three independent studies with complementary research goals to address specific gaps in the literature. By conducting this research, I wanted to investigate the potential impacts of socially-mixed revitalization initiatives on children and adults; to explore the purported mechanisms of socially-mixed revitalization initiatives that are suspected to underlie observed outcomes; and to generate evidence regarding the use of socially-mixed public housing revitalization initiatives for improving the health and wellbeing of disadvantaged children and families. These research objectives were accomplished by designing and conducting three interrelated original research studies that contribute new knowledge to the study area. In this chapter, the main findings of the studies presented in Chapters 2 to 4 are highlighted, followed by their substantive, methodological, and theoretical contributions to the field. The chapter ends with a description of the relationship among the studies and a summary of how this work contributes to this research field.

Main Findings

Study 1 (Chapter 2) consist of an empirical analysis on the effects of moving from old public housing to new housing units amongst households participating in the Regent Park Revitalization Project in Toronto. Child mental health was assessed using the Strengths and Difficulties Questionnaire (SDQ) on three groups of children: i) children whose families moved to new housing units in the same community; ii) children whose

families moved to other, existing public housing, on a temporary basis ('relocation units'); and a iii) a comparison group of children who lived in public housing outside Regent Park and were unaffected by the revitalization. Difference-in-differences (DID) analyses showed that children who moved directly to new housing units displayed significant improvements in overall mental and scales that measured conduct problems, emotional symptoms, peer relationship problems, and hyperactivity problems. Children who moved into relocation units (public housing units in other buildings) displayed moderate improvements in overall mental health as well as improvements in hyperactivity problems. In addition, caregiver mental health was found to be a significant mediator of child mental health outcomes.

Study 2 (Chapter 3) presents a content analysis of 11 semi-structured interviews that builds on the empirical evidence gathered from Chapter 2 by examining the scholarly consensus on how socially-mixed public housing revitalization initiatives 'work' from a realist perspective (Pawson, 1996). Scholars from Canada, US, and Australia were interviewed. Content analysis of interview transcripts revealed that the use of the term 'social mix' is inconsistent in practice and research. Scholars supported the institutional resources pathway and the de-stigmatization pathway as effective measures to improve resident outcomes in a mixed community. Collectively, interviewed scholars urged the use of more contextual analysis, community engagement, as well as social support programs.

Study 3 (Chapter 4) describes a realist synthesis (Pawson, Greenhalgh, Harvey, & Walshe, 2005) that examined the evidence regarding effects of socially-mixed public housing revitalization initiatives on the health and well-being of low-income children and families. A search of relevant databases results in the identification of 1,108 documents; 62 of these documents (20 primary sources and 42 secondary sources) met eligibility criteria for inclusion in the study. By examining the Context(C), Mechanism(M), and Outcome(O) (Pawson, 2006) of revitalization initiatives that were evaluated in the included studies,

common outcomes and prominent mechanisms were found. Consistent with past research, it was discovered that the most common benefits from revitalization initiatives for low-income residents were improvements in housing and neighbourhood satisfaction, decreased stigma, reduced parental stress, and improved neighbourhood safety. The results of this synthesis provided support for the institutional resources pathway and the de-stigmatization pathway as the most relevant mechanisms responsible for observed resident outcomes currently. Special attention should be directed towards attracting middle-income families into the mixed community, as well as community engagement during the design and implementation periods of the revitalization with local residents.

Contributions of the Dissertation

These three original studies collectively address the overarching research objective of providing a more refined and precise understanding of how socially-mixed public housing revitalizations ought to be designed and implemented so that it can effectively produce benefits for disadvantaged children and families. This dissertation advances the knowledge in this field by contributing original empirical outcomes, substantive methodological advances, and theoretical contributions that begin to fill important knowledge gaps in the scholarly literature. These contributions are discussed in detail below.

Study 1. The first study of this dissertation adds to the current empirical evidence base on child mental health outcomes resulting from a public housing revitalization project. The findings from this study helped to move the field forward by demonstrating that moving from old public housing directly to newly constructed housing units improved children's mental health overall as well as in multiple specific domains. Children who moved from old public housing to relocation units (while awaiting a new unit housing unit

within Regent Park) showed limited improvements in overall mental health and children who were from the control group did not show any improvements in their overall mental health.

These findings are partially consistent with results from studies on MTO and HOPE VI which demonstrated significant improvements in mental health for girls, but not for boys (Buron, Popkin, Levy, Harris, & Khadduri, 2002; Jackson et al., 2009; Popkin, Eiseman, & Cove, 2004; Popkin, Leventhal, & Weismann, 2010), although the MTO and HOPE VI studies were focused mostly on older children (adolescents). As the only empirical analysis on child outcomes from the Regent Park Revitalization Project, and one of few studies that investigated the effects of public housing revitalizations in Canada, this study contributes a unique Canadian perspective to the existing evidence base. Given the context-dependent nature of complex programs such as public housing revitalizations, it is imperative that evidence generated to inform future policy design and implementation in Canadian cities are context-appropriate. Duplicating social mix programs from other jurisdictions without making contextual adjustments can lead to inappropriate program design and negative outcomes for the population it is intended to serve.

Methodologically, this study contributed to the limited pool of studies that have used a quasi-experimental study design to investigate the effects of socially-mixed public housing revitalizations. This study addresses some of the limitations of correlational research by using a comparison group as well as two time-points in measurement (pre- and post-relocation) which minimizes the effect of externalities so that treatment effects could be isolated. The use of a DID analysis allowed us to focus on changes comparing treatment groups rather than absolute levels, thereby removing biases that arise from permanent differences between the individuals within each of the groups. In addition, this study was able to longitudinally track a hard-to-reach population – public housing residents – and

examine how they have progressed overtime. This study provides important information that is needed for this group of disadvantaged population.

From a theoretical standpoint, findings from this study supplemented the limited empirical evidence base on child outcomes from socially-mixed revitalizations. Findings from this study revealed positive child mental health outcomes from socially-mixed revitalizations. The knowledge produced from this study can inform future developments and evaluations of the Regent Park Revitalization Project; and provide policy makers with evidence-based outcomes for decision-making. Furthermore, the insights gained from this empirical analysis could be used to inform future studies examining socially-mixed revitalizations in other countries.

Study 2. The second study of this dissertation is a content analysis of qualitative interviews with scholars. The interviews were designed to investigate the scholarly consensus around their understanding of social mix policies, and their knowledge about how existing socially-mixed revitalization programs produce outcomes for disadvantaged children and families. Moreover, the study provides valuable policy recommendations on how revitalization programs ought to be designed, implemented, and evaluated to achieve the outcomes most beneficial for disadvantage populations. The findings from this study indicate that the use of the term ‘social mix’ is inconsistent and can generate confusion in the design, implementation, and evaluation of socially-mixed programs/policies. According to study participants, the principles of social mix is mostly embodied in socially-mixed public housing revitalization initiatives as it deliberately introduces socio-economic and/or ethno-cultural diversity into a formerly homogenous neighbourhood. Improvements in the physical conditions of the housing unit and the neighbourhood; improved neighbourhood safety; and reduction in stigma against the neighbourhood and its residents were most

commonly mentioned benefits of revitalization projects by study participants. The most promising mechanisms of socially-mixed revitalization initiatives are the institutional resources pathway and the de-stigmatization pathway. Tenure-blind designs and intentional housing allocation emerged as program components that were important for the social cohesion of the neighbourhood.

From a methodological standpoint, realist approach to stakeholder interviews was chosen as it allows researchers to ‘inspire/validate/falsify/modify’ (Pawson, 1996, p. 295) explanations of the ways in which revitalization initiatives work. The study participants were asked questions regarding the Context-Mechanism-Outcome (CMO) configurations of revitalization initiatives (Pawson, 2006). To our knowledge, this study is the only one to investigate scholars’ understanding of socially-mixed public housing revitalization initiatives. The realist approach allows for the investigation of complex social programs which due to its context-dependent nature, does not lend well to the traditional methods of research.

In terms of theoretical contributions, this study qualitatively explored the scholarly consensus on the purported mechanisms of socially-mixed public housing revitalization initiatives and their expert opinion on contextual factors and program components that trigger these mechanisms. Existing studies of socially-mixed revitalizations tend to neglect the interplay between contextual factors, program components, and individual outcomes. The application of realist perspective which focuses on the CMO configurations used in this study will help strengthen the contribution of this perspective when explaining social phenomena. Further, the insights gained from such a pragmatic perspective could be used to inform studies and programs in practice.

Study 3. The third study of this dissertation provided a systematic synthesis of recent evidence on the effects of socially-mixed public housing revitalization initiatives on

disadvantaged children and families. The study advances knowledge in this area by contributing to a greater understanding of how this type of revitalization initiative works, for whom, and under what conditions. Possible explanations for improved housing satisfaction included tenure-blind designs, improved maintenance practices, and New Urbanism design principals. Lack of outcomes related to social capital pathway could be related to the lack of formalized efforts to attracting middle-income residents with children to the mixed community. This study draws special attention to the specific mechanisms needed to ensure that mixed communities provide the homes and environments that middle-income families need and can thrive long-term.

Methodologically, this study contributes to the current literature through the use of a realist synthesis to review the CMO configurations of revitalization initiatives from US, UK, Australia, and Germany. A realist synthesis approach is grounded in a realist philosophy of science and allows for systematic review of complex social interventions (Pawson et al., 2005). The realist synthesis approach is particularly suitable for reviews of complex social programs like socially-mixed revitalization interventions. The realist approach is useful in addressing why and how social mix interventions ‘worked’, under what conditions it is most likely to ‘work’, and produce practical evidence-based recommendations for policymakers (Wong, Greenhalgh, Westhorp, Buckingham, & Pawson, 2013). It is particularly useful in gaining insights to policy-driven questions such as “if we invest in X, to which particular sector should we target it, how might implementation be improved and how might we maximize its impact?” (Greenhalgh, Wong, Westhorp, & Pawson, 2011). This study is the first realist synthesis focused on the effect of socially-mixed revitalizations on low-income children and families.

From a theoretical standpoint, this review contributes to the current literature by examining the relatively understudied area of CMO configurations of socially-mixed public

housing revitalization initiatives specific for children and families. The findings from study points to the potential importance of using a community-based participatory approach for engaging public housing residents as well as relevant institutional partners throughout the revitalization process (Buckner-Brown, Sharify, Blake, Phillips, & Whitten, 2014).

Collaborations with various institutional resources, such as universities, research consultants, and local schools were highlighted as beneficial for the revitalization process (Buckner-Brown et al., 2014). Furthermore, particular attention should be paid to the needs of middle-income families with children so that underutilized mechanisms such as the social network pathway could be triggered to produce beneficial results for low-income children and families.

Relationships among the studies

This thesis is comprised of three independent but interrelated studies. The finding from Study 1 (Chapter 2) suggest that improvements in the physical home environment could improve child mental health outcomes, but the extent of that benefit may depend on caregiver mental health as well as social programs in the local community. In addition, the act of moving alone could also produce moderate mental health benefits; however, the mechanism of such observed improvement is not well-understood. Limited household characteristics and neighbourhood characteristics were collected as part of the study and therefore mechanisms that drives these improvements in mental health could only be speculated. The findings from Study 1 informed the formulation of Study 2 (Chapter 3), which investigated scholarly consensus on how socially-mixed public housing revitalizations produce effects for disadvantaged children and adults. Findings from Study 2 illuminated essential contextual factors and program design components that may lead to successful revitalizations. Findings of Study 2 helped to inform, modify, and refine

purported CMO configurations for revitalization initiatives. To more comprehensively capture the information needed to inform future policies and programs, Study 3 (Chapter 4) uses a realist synthesis approach to systematically appraise evidence regarding how socially-mixed revitalizations work, for whom, how, and under what conditions (Pawson et al., 2005). Taken together, these three studies contribute to addressing the objectives of the dissertation as well as the overarching research aim: to better understand how socially-mixed public housing revitalizations initiatives ‘work’ to improve (or not) the health and wellbeing of disadvantaged children and families.

Summary

Overall, the studies presented in Chapters 2 to 4 form an important contribution to the understanding of socially-mixed public housing revitalizations as a potential population health initiative and a step forward in the field of health systems and policy research in general. These studies contribute new knowledge about 1) what impacts do public housing revitalization have on disadvantaged children and their families; 2) which theoretical mechanisms are most relevant to the observed outcomes; 3) which program components are essential to produce beneficial outcomes irrespective of context; and 4) which contextual factors affect the ability of mechanisms to produce outcomes for children and families. This work is instrumental in informing the design, implementation, and evaluation of future revitalization initiatives in North America and beyond. This work sets the foundation for successful program design and implementation by highlighting factors for success such as collaborative relationships with local schools as well as mechanisms that allow middle-income families with children to flourish in mixed communities. Moreover, results from this study provide timely information and insights to support policy-makers in determining

how socially-mixed revitalizations could be best positioned to benefit disadvantaged children and families, and potentially contribute to decreasing health disparities in society.

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