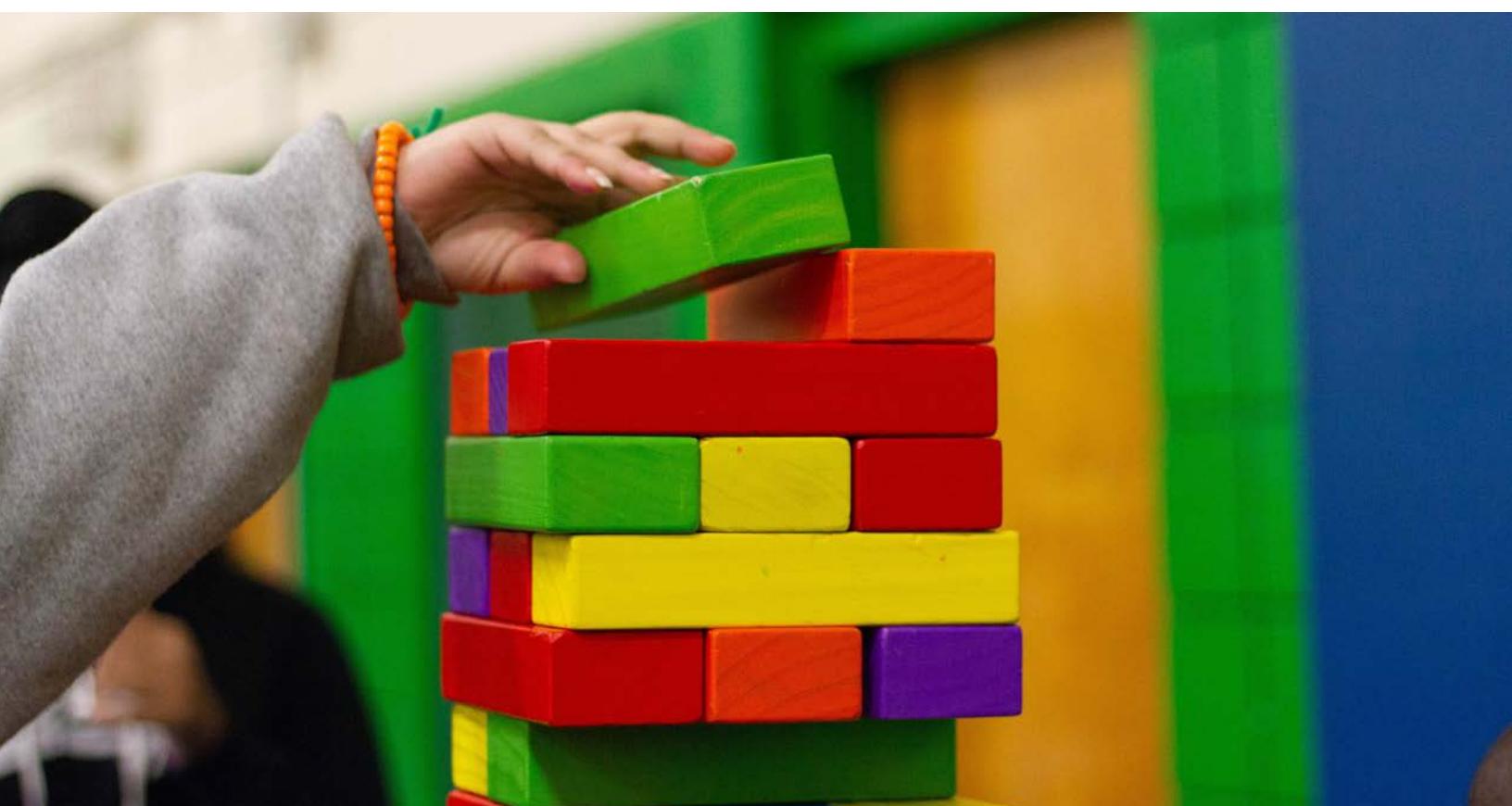




NB-IRDT
New Brunswick Institute for
Research, Data and Training

PRELIMINARY RELEASE
PLANNING FOR COMMUNITY RESILIENCY IN
RECOVERY FROM COVID-19
October 2, 2020



Sandra Magalhaes
Madeleine Gorman-Asal
Paramdeep Singh
Chandy Somayaji



New Brunswick
Health Research
Foundation



Fondation de la
recherche en santé
du Nouveau-Brunswick

PROJECT TITLE

Planning for Community Resiliency in Recovery from COVID-19: October 2, 2020

PRINCIPAL INVESTIGATOR

Dr. Sandra Magalhaes, Research Associate, New Brunswick Institute for Research, Data and Training (NB-IRDT)

RESEARCH TEAM

Madeleine Gorman-Asal, Research Assistant, NB-IRDT

Paramdeep Singh, Data Analyst, NB-IRDT

Chandy Somayaji, Data Analyst, NB-IRDT

ACKNOWLEDGEMENT

This research study is funded by the New Brunswick Innovation Foundation and the New Brunswick Health Research Foundation as part of a special COVID-19 funding program (<https://nbif.ca/new-brunswick-researchers-rise-to-the-challenge-of-covid-19/>). The research capacity and infrastructure is made possible by support from the Maritime SPOR Support Unit (MSSU), which receives financial support from the Canadian Institutes of Health Research (CIHR), the Nova Scotia Department of Health and Wellness, the New Brunswick Department of Health, the Nova Scotia Health Research Foundation (NSHRF), and the New Brunswick Health Research Foundation (NBHRF). The opinions, results and conclusions reported in this paper are those of the authors and are independent from the funding sources. No endorsement by the MSSU or the named funding partners is intended or should be inferred.

HOW TO CITE THIS REPORT

Magalhaes, S., Gorman-Asal, M., Singh, P., & Somayaji, C. (2020). Planning for Community Resiliency in Recovery from COVID-19: October 2, 2020. Fredericton, NB: New Brunswick Institute for Research, Data and Training.

TABLE OF CONTENTS

INTRODUCTION	4
METHODS	5
OVERVIEW.....	5
RESULTS	6
Negative Outcomes Associated with COVID-19 Infection	6
Greater Risk of Infection in Collective Dwellings.....	7
Mental Health Impacts Associated with Distancing Measures.....	8
Financial Vulnerability Associated with Employment Interruptions	11
REFERENCES	13

INTRODUCTION

Population-based risk indicators can support decision-making in planning for future waves of, and recovery from, COVID-19. They can inform efforts to limit spread and exacerbation of infection in those most at risk and help identify at-risk groups likely impacted by measures to limit spread.

As part of our research we are deriving risk indicators using population-level data that can help identify vulnerable populations who may be at higher risk of consequences related to COVID-19 infection or public health restrictions, including

- poor health outcomes associated with infection,
- greater risk of infection in collective dwellings,
- mental health impacts associated with distancing measures,
- poor educational outcomes due to school closures, and
- financial vulnerability associated with employment interruptions

While stay-at-home measures aim to reduce community spread of infection and protect those vulnerable to poor health outcomes, they increase proximity among those living in collective dwellings. In the absence of complete lockdown, the opportunity for infection to enter the home exists. Those living in residential facilities (e.g. special care homes) and apartments have greater risk of infection. As measures relax, schools re-open, which further increases opportunity for transmission across households. Public health measures to control spread of COVID-19 may also have unintended consequences for individuals residing alone, low-income families, individuals with uncertain employment, children with special needs, individuals susceptible to mental health challenges, and those with chronic conditions unable to manage them effectively.

The goal of our research is to develop an analytical framework to generate community level indicators that are relevant to COVID-19 pandemic planning and recovery efforts in New Brunswick.

METHODS

This research is being conducted using infrastructure at the NB Institute for Research, Data and Training (NB-IRD). Positioned within UNB-Fredericton, NB-IRD is the sole provincial data custodian in NB, defined in legislation to provide access to linkable administrative datasets (currently 40+) for research. We undertake research with government, academics, not-for-profit and industry, including multi-year research contracts with the Departments of Health, Post-Secondary Education, Training and Labour (PTEL), and Education and Early Childhood Development (EECD).

For this research we are using linked administrative data at NB-IRD to derive community-level indicators using data provided by the GNB Departments of Health, Social Development, EECD and PTEL as well the Horizon and Vitalité Regional Health Authorities. We are using the most recent data available that we anticipate will provide a baseline against which to measure outcomes in NB. As current data become available, we will be able to update indicators and monitor how they change as the pandemic progresses. We will also be in the position to link indicators to data on other outcomes of interest to quantify impacts of COVID-19 on vulnerable populations in NB.

The report herein represents one of two releases that we have planned. In this preliminary release we present several high-level indicators providing relevant contextual information. However, as there are many possible risk indicators that we can generate using available NB-IRD data, our intention for the first report is that it will provide the opportunity for more informed discussions when engaging with key stakeholder to prioritize in our second, and final release.

For this first release all datasets used were provided by the Department of Health. The datasets include the Citizen Registry Medicare data, Discharge Abstract Database hospitalization data, Physician Billing services data and Canadian Chronic Disease Surveillance System data for relevant physical health conditions. These data were used to derive aggregated community-level estimates of crude prevalence for each of the 33 New Brunswick Health Council's communities. Community-level estimates were obtained using complex statistical models developed for small geographic areas that account for the presence of spatial correlation between adjacent communities.

OVERVIEW

This report presents indicators related to four potential consequences of COVID-19 using the following six indicators:

COVID Consequence #1: Negative Health Outcomes Associated with COVID-19 Infection

- Prevalence of Multimorbidity with Relevant Physical Condition

COVID Consequence #2: Greater Risk of Infection in Collective Dwellings

- Prevalence of Households with Children and Older Adults (65+)

COVID Consequence #3: Mental Health Impacts Associated with Distancing Measures

- Prevalence of Mental Illness (Possible, Diagnosed, and Acute)
- Prevalence of Households with Older Adults Living Alone

COVID Consequence #4: Financial Vulnerability Associated with Employment Interruptions

- Prevalence of Households with Single Parents
- Demographic Dependency Ratio

RESULTS

Negative Outcomes Associated with COVID-19 Infection

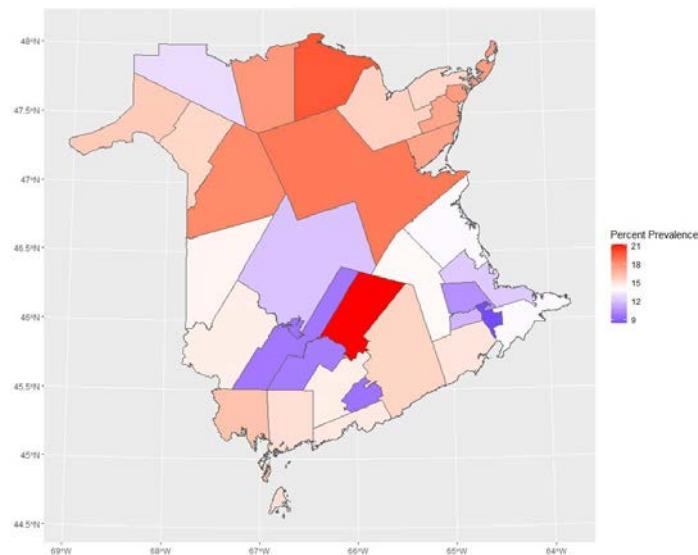
Community Indicator: Multimorbidity with Relevant Physical Conditions

Context: Individuals with specific underlying health conditions are among those most at risk of negative outcomes associated with infection of SARS-CoV-2 (COVID-19),^{1,2} such as hospitalization or intensive care admission in severe cases.

Description of Indicator: Figure 1 shows the percent prevalence of adults with two or more relevant physical conditions by community in New Brunswick. These relevant physical conditions include diabetes, heart failure, hypertension, acute myocardial infarction, and stroke. Individuals were identified as prevalent for any one of these conditions using most recently available administrative data, which ranged from 2015 to 2019.

Highlight of Findings: Our results show that there is higher prevalence of adults with two or more relevant underlying health conditions in the northern communities of the province, indicated in red, but the highest prevalence is in Minto (24.9%). The Fredericton region (including Fredericton (12.1%), New Maryland (12.7%) and Oromocto (13.4%)) and Quispamsis (12.5%) are among the communities with lowest prevalence; whereas Dieppe (10.8%) was the community we found to have the lowest prevalence of multimorbidity with relevant physical conditions.

Figure 1: Prevalence of Multimorbidity with Relevant Physical Condition



Greater Risk of Infection in Collective Dwellings

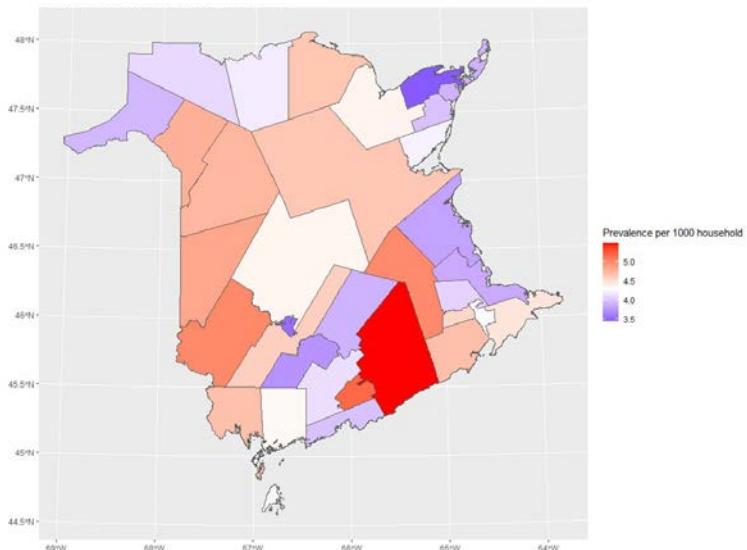
Community Indicator: Households with Children and Older Adults

Context: The risk of severe illness from COVID-19 increases with age, making older adults at the highest risk of poor health outcomes or hospitalization as they are more likely to have weakened immune systems and underlying health conditions.³ With children in school, it places older adults living with children at an increased risk of contracting the COVID-19 as household contact remains an important route of transmission.⁴

Description of Indicator: The prevalence of households is measured as the number of households with both children and older adults (≥ 65 years) living in the same dwelling for 1000 total households in 2019.

Highlight of Findings: Our analysis shows that Sussex (5.5 per 1000 households), as well as Salisbury (5.0 per 1000 households), Quispamsis (5.2 per 1000 households) and Nackawic (5.0 per 1000 households), have a higher proportion of older adults living with children compared to the rest of the province. In both Caraquet and Fredericton, the lowest proportion, only 3.5 of every 1000 households have older adults living with children.

Figure 2: Prevalence of Households with Children and Older Adults (65+)



Mental Health Impacts Associated with Distancing Measures

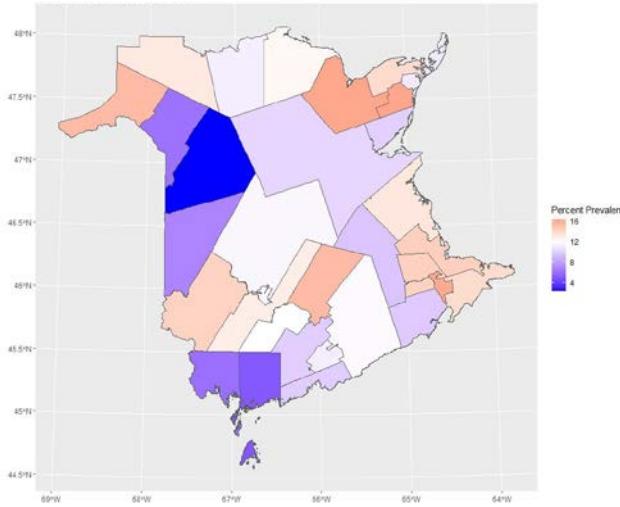
Community Indicator: Possible, Diagnosed, and Acute Mental Health Concerns

Context: In studies of the effects of previous epidemics like SARS and MERS, it was found that physical distancing measures can result in increased social isolation.⁵ Social isolation has been found to lead to increased symptoms of loneliness and anxiety, subsequently having negative mental health implications.⁶ Current evidence shows that the general public has seen worsening psychological well-being since the pandemic began, and those with previously diagnosed mood or anxiety disorders reported additional anxiety symptoms during the pandemic.⁷ As physical distancing measures persist for the foreseeable future, we may thus expect increased mental health problems requiring additional resources such as preventative support and intervention.

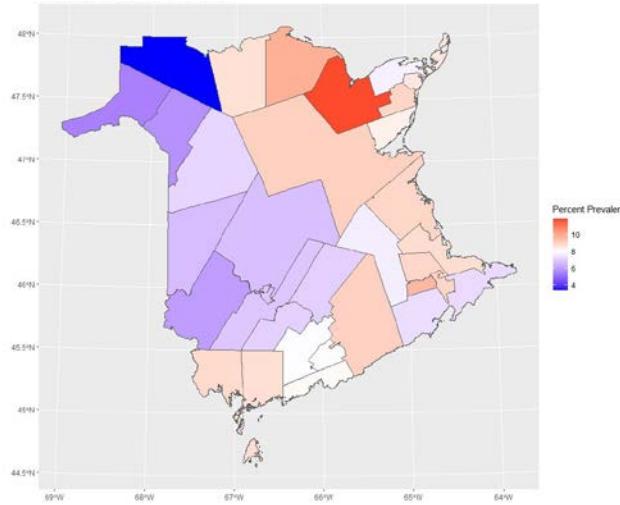
Description of Indicator: Our analysis looked at the geographic distribution of varying degrees of mental illness in New Brunswick. Figure 3a depicts the prevalence of individuals who sought services from a family physician or psychiatrist in the last 10 years for psychotherapy or counselling. The prevalence of individuals who had a prevalent mood or anxiety disorder in 2016 can be found in figure 3b. Lastly, figure 3c shows the prevalence of individuals who were acutely hospitalized for a mental health condition in the last 10 years.

Highlight of Findings: As shown in Figure 3a, compared to the rest of the province, we see that Bathurst (16.3%), Tracadie-Sheila (16.3%), Dieppe (16.1%), Edmundston (15.3%) and Minto Area (15.3%) may have more individuals with mental health concerns than other areas of New Brunswick. Figure 3b shows that prevalence of diagnosed mood and anxiety disorders was greatest in the Bathurst area (11.9%), Dalhousie (9.8%) and Riverview (9.7%), whereas the western half of the province has noticeably lower prevalence. Figure 3c illustrates that the northern parts of the province have a distinct higher proportion of individuals with acute hospitalization for mental illness compared to the southern areas, with Campbellton (7.1%) and Edmundston (7.1%) among the highest. Two of the three largest urban cores, Fredericton and Saint John, showed a lower prevalence, relative to other New Brunswick regions, for the three levels of mental health we examined.

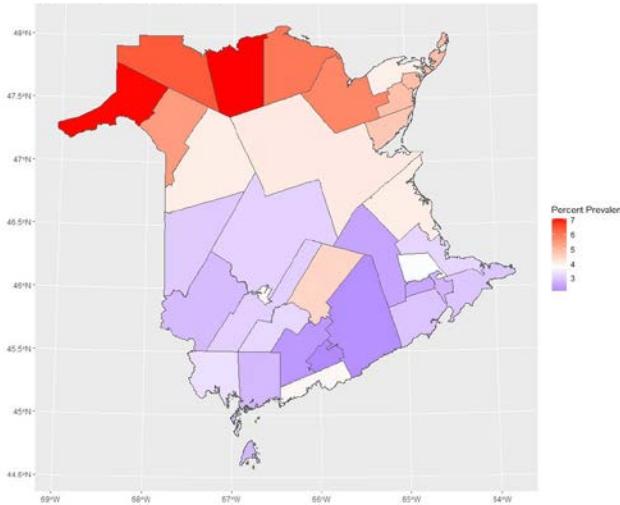
Figure 3: Prevalence of Poor Mental Health



a. Mental Health Concerns



b. Diagnosed Mood and Anxiety Disorder



c. Acute Hospitalization for Mental Health Condition

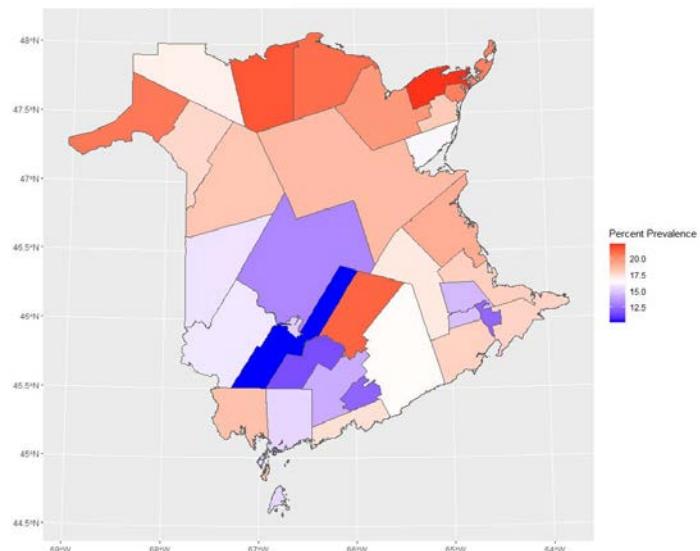
Community Indicator: Households with Older Adults Living Alone

Context: As mentioned previously, older adults have an increased risk of severe illness if they are infected with COVID-19.³ As a result, many older adults who may also have underlying medical conditions to be concerned about are taking strict precautions to physically distance and avoid unnecessary contact with the community while the threat of the pandemic remains present. Older adults living alone are at higher risk of experiencing loneliness or social isolation which accompany a myriad of negative physical and mental health outcomes.⁸ Further compounded as seniors may have reduced access or ability to use technology.

Description of Indicator: The percent prevalence of households with older adults (≥ 65 years) who live alone in 2019.

Highlight of Findings: Older adults living alone are in higher prevalence in Minto (21.3%) and northern New Brunswick, with Caraquet being the highest (22.3%). At least 20% are older adults living alone in most of the northernmost communities in the province. The New Maryland area has the lowest proportion of older adults living alone (10.2%), with the greater Moncton area (12.4-14.8%) and Oromocto (11.7%) also having a low prevalence.

Figure 4: Prevalence of Households with Older Adults Living Alone



Financial Vulnerability Associated with Employment Interruptions

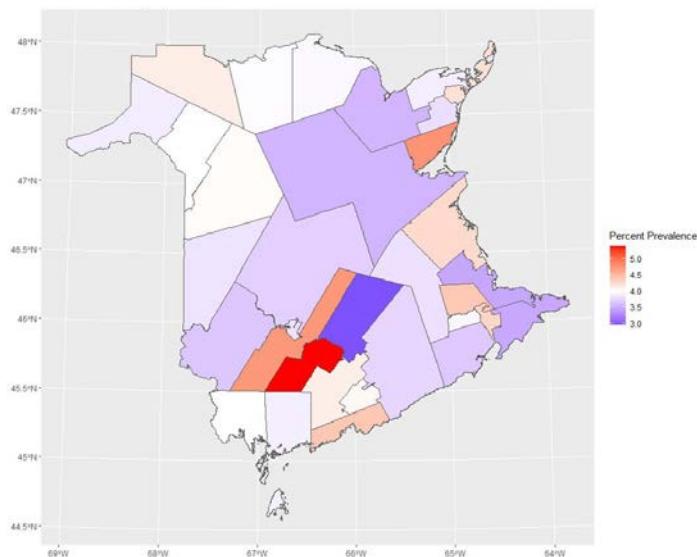
Community Indicator: Households with Single Parents

Context: Lone parents are among the most financially vulnerable population,⁹ often occupying jobs where working from home is not an option.¹⁰ Should more cases of COVID-19 necessitate the closing of schools again, a heavier burden will be on lone parents to provide childcare or manage remote learning in an already financially strenuous time. There is also the additional stress of running necessary errands with children while many places or services limit the number of people allowed in establishments at a time.

Description of Indicator: The percent prevalence of households of single adults with at least one dependent under the age of 18 years in each community in 2019.

Highlight of Findings: In our analysis we see that Oromocto (5.4%), New Maryland (4.7%) and Neguac (4.8%) appear to have the highest prevalence of lone parent household in the province. A likely reason why Oromocto is among these communities is an artifact of our methodology to define households using Provincial health care information, which for Canadian Armed Forces is provided by the Federal Government. Following these three, the areas with highest prevalence of lone parent households are concentrated in areas with greatest population density: Saint John (4.4%), Moncton (4.4%) as well as Dieppe (4.3%).

Figure 5: Prevalence of Households with Single Parents



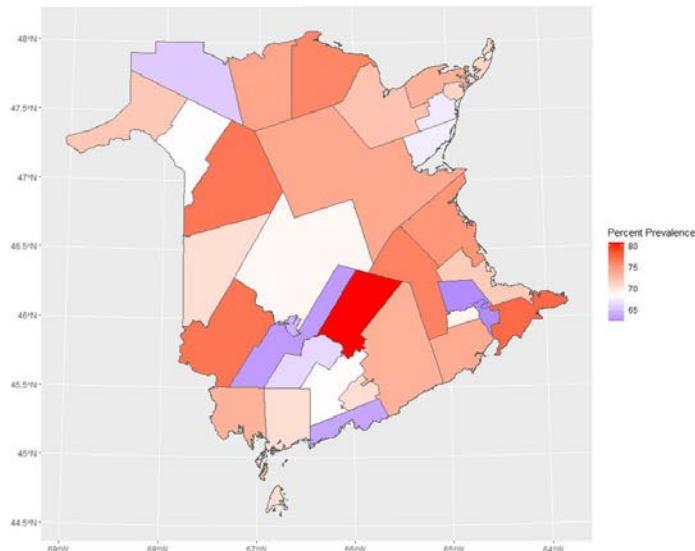
Community Indicator: Demographic Dependency Ratio

Context: A high relative dependency ratio tells us in which areas youth and older adults are more socially and economically dependent on working age New Brunswickers.

Description of Indicator: Demographic dependency ratio is a measure of the total number of youth and older adults, younger than 19 and older than 65, to the total number of working age adults ages 20 to 64 in each community. For presentation we present the dependency ratio as a percentage. Percentages that are less than 100% indicate less dependents to working age population.

Highlight of Findings: The Fredericton and New Maryland area (64.2% and 63.0%), the greater Moncton area (62.2%) and Saint John (63.6%) have relatively lower dependency ratios compared to the rest of the province. Outside of these urban centers, we see in rural communities there tends to be more dependents to working age people. However, the ratio gets no higher than 80%, found in Minto (80.8%), which means there are still more working age people than dependents in all New Brunswick communities.

Figure 6: Demographic Dependency Ratio Percent



REFERENCES

1. Chung H, Fung K, Ferreira-Legere LE, Chen B, Ishiguro L, Kalappa G, et al. COVID-19 laboratory testing in Ontario: patterns of testing and characteristics of individuals tested, as of April 30, 2020. Toronto, ON: ICES; 2020.
2. Government of Canada. People who are at high risk for severe illness from COVID-19 [Internet]. Government of Canada; 2020 [updated 2020 Sep 30]. Available from: <https://www.canada.ca/en/public-health/services/publications/diseases-conditions/people-high-risk-severe-illness-covid-19.html>.
3. Shahid Z, Kalayanamitra R, McClafferty B, Kepko D, Ramgobin D, Patel R, et al. COVID-19 and older adults: what we know. *J Am Geriatr Soc*. 2020;68(5):926-9.
4. Wang Z, Ma W, Zheng X, Wu G, Zhang R. Household transmission of SARS-CoV-2. *J Infect*. 2020;81(1):179-82.
5. Kato TA, Sartorius N, Shinjuku N. Forced social isolation due to COVID-19 and consequent mental health problems: lessons from Hikikomori. *Psychiatry Clin Neurosci*. 2020.
6. Saltzman LY, Hansel TC, Bordnick PS. Loneliness, isolation, and social support factors in post-COVID-19 mental health. *Psychol Trauma*. 2020;12(S1):S55-S7.
7. Vindegaard N, Benros ME. COVID-19 pandemic and mental health consequences: systematic review of the current evidence. *Brain Behav Immun*. 2020;89:531-42.
8. Berg-Weger M, Morley JE. Editorial: Loneliness and social isolation in older adults during the COVID-19 pandemic: implications for gerontological social work. *J Nutr Health Aging*. 2020;24(5):456-8.
9. Statistics Canada. Census in brief: children living in low-income households [Internet]. Statistics Canada; 2017 [updated 2019 Apr 3; cited 2020 Nov 2]. Available from: <https://www12.statcan.gc.ca/census-recensement/2016/as-sa/98-200-x/2016012/98-200-x2016012-eng.cfm>.
10. Messacar D, Morissette R, Deng Z. Inequality in the feasibility of working from home during and after COVID-19 [Internet]. Statistics Canada; 2020 [updated 2020 Jun 24; cited 2020 Nov 2]. Available from: <https://www150.statcan.gc.ca/n1/pub/45-28-0001/2020001/article/00029-eng.htm>.