Erie County Mental Health Risk Indicator Database (version 13.1)

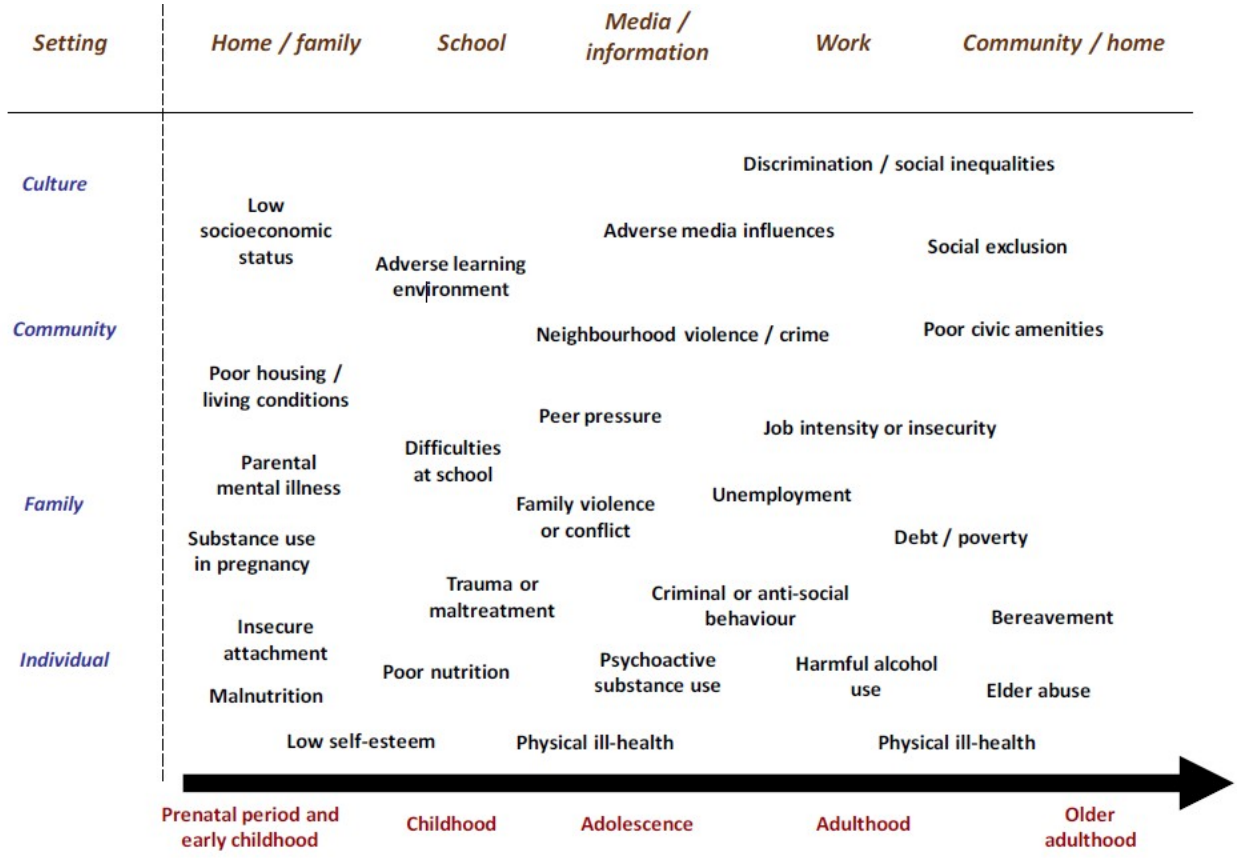
Technical Documentation

April 30, 2021

Introduction

This document provides technical information for the Erie County Mental Health Risk Indicator Maps developed by the Center for Health and Social Research (CHSR). The data were gathered from the existing Erie County Risk Indicator Database (RIDB) and a variety of publicly available sources. A list of suggested risk indicators was compiled using the World Health Organization schema below:

In 2012 the WHO Secretariat released a background paper detailing risk factors for mental health issues and a preliminary schema for understanding when these indicators most negatively affect a person in terms of social scale (individual, family, community, and culture), setting (home/family, school, media/information, work, and community/home), and life course (prenatal period and early childhood, childhood, adolescence, adulthood, and older adulthood) as based on existing mental health literature (WHO 2012).



Schematic overview of risks to mental health over the life course. World Health Organization (WHO). 2012. Risks to Mental Health: An Overview of Vulnerabilities and Risk Factors. Background Paper by WHO Secretariat for the Development of a Comprehensive Mental Health Action Plan.

The selected risk indicators presented in these maps encompass many of the categories outlined in the WHO document, however not all were included due the impracticality of obtaining relevant data (e.g., adverse media influences, bereavement). The selected risk indicators provide detailed population, social, economic, crime, overall and mental health, substance abuse, and school information.

These indicator maps have three main purposes: (1) to assist in needs assessment for the planning and geographic targeting of mental health services, (2) to provide detailed information to service providers, which allows programs to be tailored to local needs, and (3) to serve as a resource for the development of funding applications. This documentation accompanies three sets of .pdf risk indictor maps – Erie County Including Buffalo, Erie County Excluding Buffalo, and the City of Buffalo Only.

Database Geography

The risk indicators are compiled at a level of geography suitable for analysis at the community scale: 5-digit ZIP code tabulation areas (ZCTA). The ZCTAs are defined as in Census 2010 maps.

Contact Information

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Risk Indicators

The table below documents the risk indicators that were compiled for this project. These notes explain how to use the table.

- The Risk Indicators Description column lists descriptions of specific indicator variables (e.g., *Mental Related Emergency Room Visits, per 10,000 population*).
- Most indicator variables are essentially rates. The majority of them are expressed as percent, e.g., percent of households receiving food stamps. When it is clear, the [Universe: …] clause is omitted. In some cases, it may not be clear what denominator (i.e., population in question) is used to calculate the rate. In these instances, the exact denominator is provided, i.e., [Universe …]. For some indicators, such as those of disease and crime, the rate is per 10,000 population, rather than percent, while others, such as those for alcohol availability, the rate is per 100 road miles.
- The [Source/Native Geography] tag on the right side of the Risk Indicator column identifies the data source (see "Technical Notes", "Data Sources" on page 8 for the list of data sources) and the original geography level of the source data ("Z" for ZIP code, "O" for other – see footnotes in this case). For example, for Gini Coefficient the tag is [CEN/Z] meaning that these data come from the Census and was originally available at 5- digit ZIP code area geography levels.

Risk Indicator Description [Source/Native Geography]	*Variable Name*
Mental Health [CDC/Z] • 2020 Estimated confidence interval for crude prevalence of mental health not good for >=14 days among adults aged >=18 years	mh_lith_2
Alcohol Sales Establishments [SLA/O] • 2019 Off premise alcohol sales establishments, per 100 road miles [Universe: aggregate road miles per areal unit] • 2019 Off premise alcohol sales establishments, per 10,000 population [Universe: total population]	alc_of_pr_rd alc_off_pr_pop
Chronic Liver Disease and Cirrhosis Deaths [DH/Z] • 2016-2018 average annual deaths from cirrhosis, per 10,000 population [Universe: total population]	de_cirrhos
Reported Crimes [DCJS,BPD/O] • 2017-2019 average annual reported criminal mischief (vandalism, etc.) offenses, per 10,000 population. Index of criminal activity taken as the summation of the standard deviation units of crm_crmis and the following: ▪ 2017-2019 average annual reported violent offenses (aggravated assault, forcible rape, murder, robbery), per 10,000 population [Universe: total population] ▪ 2017-2019 average annual arrests for violent offenses (aggravated assault, forcible rape, murder, robbery) among juveniles, per 10,000 population [Universe: population under age 18]	crm_crmis crime_index
Juvenile Arrests [DCJS,BPD/O] • 2017-2019 average annual arrests for violent offenses among juveniles (aggravated assault, forcible rape, murder, robbery), per 10,000 population [Universe: population under age 18]	jar_viol
Youth Index [DCJS,BPD/O] • The summation of standard deviation unites of the following indicators: ▪ 2017-2019 average annual arrests for violent offenses (aggravated assault, forcible rape, murder, robbery) among juveniles, per 10,000 population [Universe: population under age 18] ▪ 2016-2018 average annual pregnancies by mother's age, per 1,000 population [Universe: population ages 15-19] ▪ 2016-2018 average rate of poor (levels 1-2 English performance [Universe: all students tested]	youth_index
Gini Coefficient [CEN/Z] • Index of income inequality, 2015-2019 American Community Survey data [Universe: total population]	Gini

Extreme Economic Deprivation [CEN/Z] • Composite Poverty Index (summation of standard deviation units of the following indicators, all data from 2015-2019 American Community Survey): ▪ Percent families with income below poverty level [Universe: all families] ▪ Percent families with female householder and no husband present, with income below poverty level and with related children under 18 years [Universe: all families] ▪ Percent children under 18 years living below poverty level [Universe: population under age 18] ▪ Percent aggregate income that is coming from assistance sources: social security, supplemental security income, public assistance [Universe: aggregate income from all sources] ▪ Median household income [Universe: all households reporting income]	z_pov
Rental Residential Properties [CEN/Z] • Percent of population in renter occupied housing units, 2015-2019 American Community Survey Data [Universe: population in occupied housing units]	rent_pop
Population Instability (Migration) [CEN/Z] • Percent of population 5 years and over that moved into current residence from another house in Erie County, 2015-2019 American Community Survey data [Universe: population 5 years and over]	mov_county
Employment Stability [CEN/Z] • Percent of the population currently employed working at least 35 hours per week, 50-52 weeks per year, 2015-2019 American Community Survey data [Universe: total population over age 16] • Percent of working age (ages 20-64) population currently employed, 2015- 2019 American Community Survey data [Universe: total population aged 20- 64] • Percent of population currently employed who has high school diploma or equivalent, 2015-2019 American Community Survey data [Universe: total population with high school or equivalent level education • Percent of disabled population (any disability) currently employed, 2013-2017 American Community Survey data [Universe: all disabled persons]	emp_ft emp_24_60 emp_hs emp_dis_any

Unemployment [CEN/Z] • Unemployment rate among working age population, 2015-2019 American Community Survey data (ages 20-64) [Universe: total population aged 20-64] • Unemployment rate among population with high school diploma or equivalent, 2015-2019 American Community Survey data [Universe: total population with high school or equivalent level education] • Unemployment rate among disabled population (any disability) currently employed, 2015-2019 American Community Survey data [Universe: all disabled persons]	uemp_20_64 uemp_hs uemp_dis_any
OASAS Alcohol and Substance Abuse Admissions [DMH/Z] • 2016-2018 average annual admissions of persons under 18 to treatment at the Office of Alcoholism and Substance Abuse (OASAS), per 10,000 population [Universe: population under age 18] • 2016-2018 average annual admissions of persons 18 or older to treatment at the Office of Alcoholism and Substance Abuse (OASAS), per 10,000 population [Universe: population 18 or older]	oasas_u18 oasas_o18
Nutrition [CEN/Z] • Percent of households receiving food stamps, 2015-2019 American Community Survey data [Universe: all households]	snaps_per
Early Childhood Attachment [UB/Z] • Percent of mothers who reported breastfeeding exclusively or partially upon discharge from the hospital post-delivery, 2017-2019 [Universe: all interviewed mothers]	bf_per
Substance Abuse among Pregnant Women [UB/Z] • Percent of women who reported smoking during pregnancy or up 3 months prior to becoming pregnant, 2017-2019 [Universe: all interviewed women]	smk_prg

Neighborhood Index [CEN/Z] Composite neighborhood instability score taken as the summation of standard deviation units of the following indicators: • Percent of population 5 years and over that moved into current residence from another house in Erie County, 2015-2019 American Community Survey [Universe: population in occupied housing units] • Percent of population 15 years and over who have never been married, 2015-2019 American Community Survey data [Universe: population age 15 and over] • Percent population in renter occupied housing units, 2015-2019 American Community Survey[Universe: population in occupied housing units]	ngh_index
Aggregated Risk Index The summation of standard deviation units of all risk indicators.	agg_risk

Selected Indicators Matched with WHO Risk Categories

WHO Risk Category	*Matching Indicators*
Adverse Learning Environment/Difficulties at School	edu_att edu_susps edu_regs g8_eng_l12
Criminal or Anti-Social Behavior	crm-crmis youth_index
Debt/Poverty	gini z_pov
Low Socio-Economic Status	gini z_pov
Job Intensity or Insecurity	emp_ft emp_20_64 emp_hs emp_dis_any
Unemployment	uemp_20_64 uemp_hs uemp_dis_any
Malnutrition/Poor Nutrition	snaps_per
Neighborhood Violence/Crime	crime_index jar_viol
Parental Mental Illness	mh_lith_2
Poor housing/Living Conditions	rent_pop mov_county
Psychoactive Substance Use	oasas_u18 oasas_o18
Insecure Attachment	bf_per
Substance Use in Pregnancy	smk_prg

Technical Notes

1. Data sources. Risk indicators were compiled using data from several sources. Below is the list of data sources and abbreviations identifying them in the table of risk indicators:

   (a) Federal and state sources:

U.S. Census Bureau American Community Survey	CEN
Health Data New York	HDNY
New York State Education Department	NYSED
New York State Department of Criminal Justice Services	DCJS
New York State Liquor Authority	SLA
Centers for Disease Control and Prevention	CDC

   (b) Erie County and local sources:

City of Buffalo Police Department	BPD
Erie County Department of Health	DH
Erie County Department of Mental Health	DMH
Keys to Health	KTH
University at Buffalo Department of OB/GYN	UB

2. Missing data values. Even when an indicator is available, not every ZIP code record will have an associated value, for some the value will be missing. Common reasons for missing data are data availability and small populations (see below).

3. Small populations. Since all indicators are essentially ratios of the form cases/population (expressed as percent or per 10,000), it is important to avoid unreliable indicator values due to small populations. For this reason, an arbitrary threshold of population greater than 100 was set. If the total population for a particular ZIP code area is less than 100, then most population-based (i.e., with population in denominator) indicators will be missing for this record.

- ❖ Some data are suppressed by the data source due to small numbers and the potential to violate confidentiality.

4. Imputation of indicators. Sometimes the source data for calculation of the indicators were available at a spatial level other than ZIP code area. In these cases risk indicators were first calculated at the available level, and then imputed (transferred) to the ZIP code level.

Four imputation schemes were utilized in calculating the risk indicators:

(a) From school districts to ZIP code areas. This scheme was used to transfer data collected for school districts (e.g., performance on English tests) to ZIP code areas and calculate

corresponding risk indicators.

(b) From police departments' areas of responsibility to ZIP code areas. Crime statistics obtained from New York State Department of Criminal Justice Services (DCJS) are tabulated by law enforcement agencies in Erie County. Areas served by each law enforcement agency (usually a town or an incorporated place) were delineated and data were interpolated to ZIP code areas for ease of use and for compatibility with crime data from Buffalo Police Department (see below).

(c) Data from the Buffalo PD for 2004 and beyond are incident-based (inclusive of all known crimes) and do not use the UCR coding system. Address-level records for crimes reported to DCJS by the Buffalo PD were geocoded and aggregated to compute their proportional shares per ZIP-code for each crime category. These proportions were in turn used to interpolate the 2015- 2017 DCJS crime counts to provide better spatial detail of crime within Buffalo; this method is more appropriate and reflective of actual crime patterns when compared to simple population or areal interpolation.

As an example of how this spatial interpolation works, consider interpolating school data from school districts to ZIP code areas. Specifically, let's calculate the risk variable g8_eng_l12 (low grade 8 English exam scores as percentage of tested students) for ZIP code area 14001.

- We start by allocating low score counts (e.g. numbers of cases of students with low scores) from each school district to ZIP code areas, proportionately to the percent of population of each school district which lives in a specific ZIP code area (as determined by spatial overlay operation in a GIS). For example, the population living inside the boundaries of Akron Central School District is distributed in the following way: 90.0% of the population lives in ZIP code area 14001, 4.6% in 14004, 3.5% in 14032, and 1.9% in 14013. Hence, the total number of low-scoring students for the Akron district, 80, is split up between these ZIP code areas as follows: 72.00 for ZIP code area 14001, 3.68 for 14004, 2.80 for 14032, and 1.52 for 14013.

- Next, we sum up allocated counts for each ZIP code area. ZIP code 14001 receives counts from three school districts: Akron (90.0% of Akron's total count of suspensions), Alden (5.0% of its count), and Clarence (14.9% of its count). The total suspension count for ZIP code area 14001 is then:

g8_eng_l12*14001* = g8_eng_l12*Akron* * 0.900 + g8_eng_l12*Alden* * 0.050 + g8_eng_l12*Clarence* * 0.149

- Repeating the above procedure for the total students tested in ZIP code area 14001, we can now compute the risk indicator variable suspension (low grade 8 English performance as% of tested students) for this ZIP code area.

5. Decimal places. Values of risk indicators were rounded to two decimal digits.

6. New York State Liquor Authority data. Data provided by the SLA was initially edited to remove locations that are not reflective of typical alcohol consumption patterns (e.g. concessions at the First Niagara Center where patrons must first gain entrance to the arena) as well as

additional liquor licenses for singular locations (e.g. Soho Bar at 64 Chippewa Street in Buffalo has three on-premise licenses to accommodate the three separate bars located on the two levels of the single location). These data were then geocoded and aggregated to determine the counts of locations per ZIP code which were then standardized by dividing by both 100 road miles and 10,000 population to reflect road network and population densities.

7. Adolescent Pregnancy Rate. Due to changes in policies at the Department of Health, disclosure of the adolescent pregnancy rates is limited to ages 15-19, rather than ages 10-19 as used in some previous versions of the database.

8. Gini Coefficient. A measure of statistical dispersion capturing inequality in a frequency distribution, in this case of household income. In this measure, 0 represents perfect equality, while 100 represents perfect inequality. Income inequality as measured by the Gini Coefficient is a risk indicator for mental health problems, particularly among adolescents.

9. The database includes several index variables: Composite Poverty, Youth, Crime, Neighborhood, Mental Health[1] and Aggregated Risk. To capture the information contained in several of the composite indices were constructed by converting several indicators (detailed above in the Risk Indicator Description Table) into standard deviation units (z scores) and then summing their scores.

10. School district level data at the ZIP code level is not included for the City of Buffalo Only because Buffalo consists of a single school district, and meaningful differences between many of the ZIP codes could not be discerned.

[1] Summary measure included in database but not visualized separate from the individual variables