The title

Makayla Whitney[1], Ernst-August Doelle[1], Ernst-August Doelle[1], & Ernst-August Doelle[1]

[1] University of Oregon

Author Note

Add complete departmental affiliations for each author here. Each new line herein must be indented, like this line.

Enter author note here.

The authors made the following contributions. Makayla Whitney: Conceptualization, Writing - Original Draft Preparation, Writing - Review & Editing; Ernst-August Doelle: Writing - Review & Editing; Ernst-August Doelle: Writing - Review & Editing; Ernst-August Doelle: Writing - Review & Editing.

Correspondence concerning this article should be addressed to Makayla Whitney, Postal address. E-mail: my@email.com

Abstract

One or two sentences providing a **basic introduction** to the field, comprehensible to a scientist in any discipline.

Two to three sentences of **more detailed background**, comprehensible to scientists in related disciplines.

One sentence clearly stating the **general problem** being addressed by this particular study.

One sentence summarizing the main result (with the words "**here we show**" or their equivalent).

Two or three sentences explaining what the **main result** reveals in direct comparison to what was thought to be the case previously, or how the main result adds to previous knowledge.

One or two sentences to put the results into a more **general context**.

Two or three sentences to provide a **broader perspective**, readily comprehensible to a scientist in any discipline.

Keywords: keywords

Word count: X

The title

Introduction

Our project was built around two datasets detailing head counts of students with exceptionalities eligible for special education services aged 6-21. The datasets detail the categorization for special education eligibility in public schools within British Columbia and Oregon. The head counts from BC are collected from 1996/1997 to the most recent data from 2019/2020. The OR head counts include years 2002-2020. Levels of categorization include school- district- and provincial-level head counts for BC. The OR data set includes state-wide head counts that are not aggregated by school or district.

We intend to explore several questions regarding longitudinal trends. Firstly, we hope to analyze trends in disability prevalence over time. We will engage in a discussion on developmental trajectories by studying how trends shift from static/linear to increasing linear trends based on age of diagnosis for the Oregon data, which can serve as a springboard to make inferences about BC data. In studying the differences and similarities between the two datasets we will also engage in a discussion on diagnosis terminology across regions with respect to the definitions as detailed by the Diagnostic and Statistical Manual of Mental Disorders (DSM), in part as a response to a challenge set by differing terminology between BC/OR categorization.

Secondly, we hope to more closely analyze any changes, or lack thereof, within the BC data following the year 2016 during which a BC Supreme Court ruled in favor of limiting the number of special needs students in classrooms and expanding the number of specialist teachers schools are required to hire.

Finally, we will also explore differences between urban and rural school districts in BC. Districts are categorized by population size and proximity to metropolitan areas, as recorded and defined by the Statistics Canada census from 2016. Two fringe rural districts

exhibiting high populations will be picked out and high-incidence diagnoses will be compared to those of other regions over time.

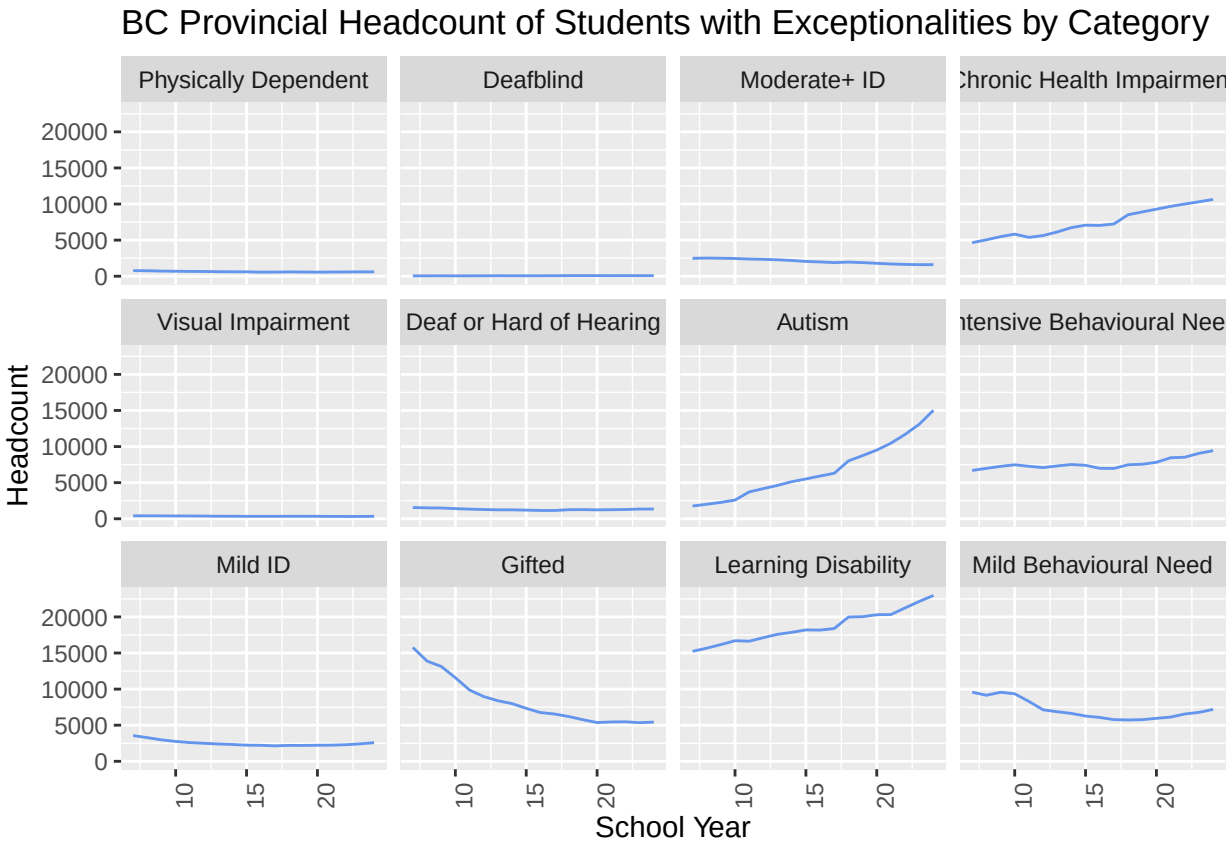
Problem Statement and RQs

In comparison to the United States, Canadian education policy receives little attention and scholarly interest (Walker & Bergmann, 2013). While Canadian K-12 academic achievement outcomes are viewed as favourable on the world stage, there are ongoing policy issues to address when provincial ministries of education are crafting legislation and procedures to impact a top-tier system of education. Significant events, such as the 2016 Canadian supreme court ruling that directly impacted British Columbia classrooms, have downstream effects on instructional interactions; yet a retroactive policy lens is rarely applied after such events occur. The current study seeks to address the knowledge gap of downstream instructional interact effects after a significant event in BC educational policy.

With respect to the 2016 Supreme Court of Canada decision to revert BC classroom composition, size, and ratios for specialist teachers: (1) Do student prevalence rates of disability or disorder change after the supreme court ruling of 2016? (2) Are there different patterns for disability or disorder designation for rural versus urban school districts after the supreme court ruling in 2016?

Results

Children designated with Special Needs categories have predominantly increased at different rates in British Columbia over time. The figure below demonstrates growth of 12 potential designations over an 18 year time period:



The district classification data was scaled down to include only public schools, while excluding private institutions. The school districts of Southeast Kootenay, Rocky Mountain, Kootenay Lake, Arrow Lakes, Revelstoke, Kootenay-Columbia, Cariboo-Chilcotin, Sea to Sky, Central Coast, Haida Gwaii, Boundary, Bulkley Valley, Nicola-Simikameen, Peace River South, Peace River North, Gulf Islands, Qualicum, Comox Valley, Campbell River, Gold Trail, Fraser-Cascade, Coast Mountains, Vancouver Island West, Vancouver Island North, Stikine, Nechako Lakes, Nisga'a, and Conseil scolaire francophone were excluded from the data set due to the lack of sufficient population information. The urban vs. rural classifications were made based on the district's population on the 2016 census. If the population was above 100,000 individuals, it is classified as urban. If the population was below 99,999 individuals, then it is classified as rural.

This table displays the census results from 2011 and 2016 for our school districts.

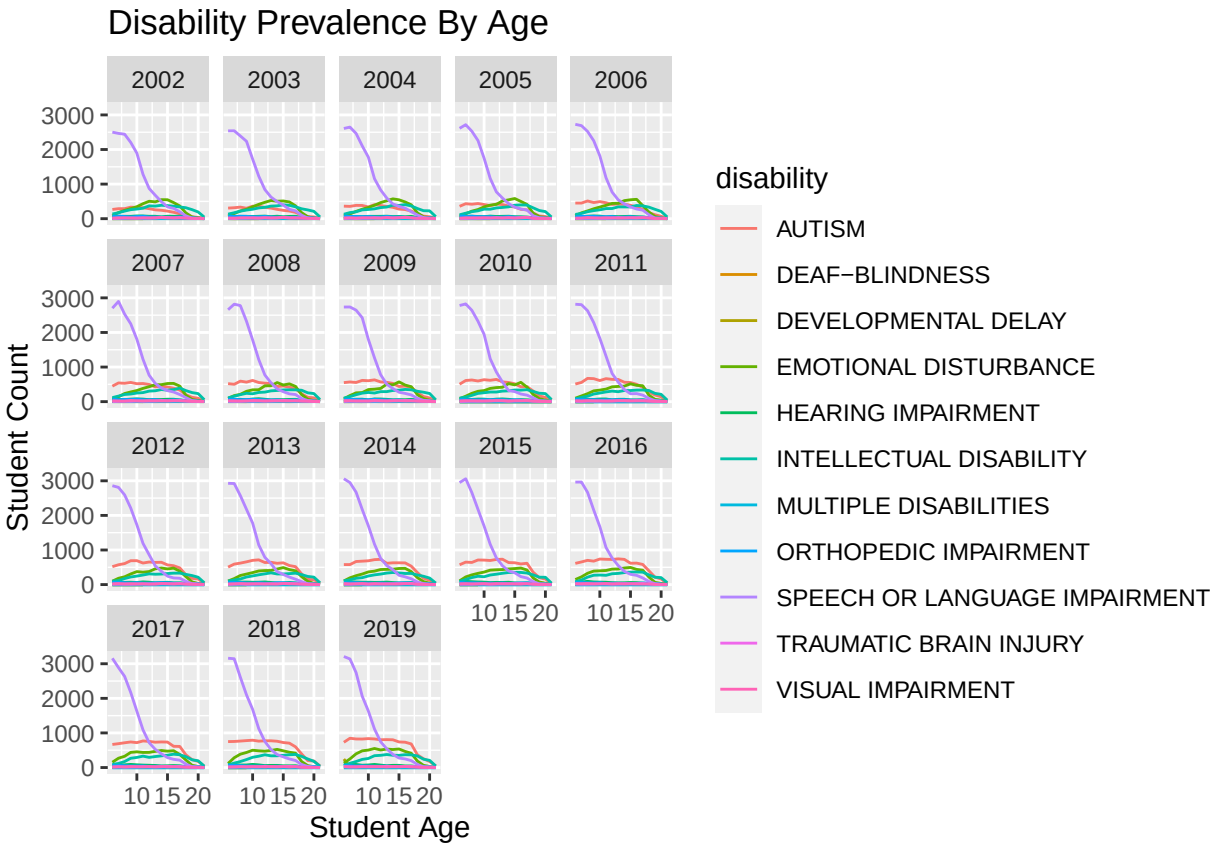
Many of the populations have stayed consistent within their urban or rural category. Three districts to note from the table are Nanaimo, Kamloops, and Chilliwack. In 2011, they were rural, but for our dataset they have been classified as urban due to their population increase in 2016.

```
## # A tibble: 198 x 18
##    year  disability    x6    x7    x8    x9   x10   x11   x12   x13   x14   x15
##    <chr> <chr>      <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
##  1 2002~ INTELLECT~   135   172   220   261   279   303   370   364   388   378
##  2 2002~ HEARING I~    46    66    69    67    79    78    69    70    53    72
##  3 2002~ SPEECH OR~  2502  2466  2443  2205  1894  1282   874   677   493   340
##  4 2002~ VISUAL IM~    18    27    25    16    12    26    19    24    31    19
##  5 2002~ EMOTIONAL~    81   178   241   292   347   433   504   487   549   548
##  6 2002~ ORTHOPEDI~    65    77    64    49    64    71    50    48    44    43
##  7 2002~ DEAF-BLIN~     0     2     0     0     1     0     2     0     4     2
##  8 2002~ MULTIPLE ~     0     0     0     0     0     0     0     0     0     0
##  9 2002~ AUTISM       267   289   290   334   325   316   290   256   243   219
## 10 2002~ TRAUMATIC~     6    11    17    23    22    19    21    23    36    36
## # ... with 188 more rows, and 6 more variables: x16 <dbl>, x17 <dbl>,
## #   x18 <dbl>, x19 <dbl>, x20 <dbl>, x21 <dbl>
```

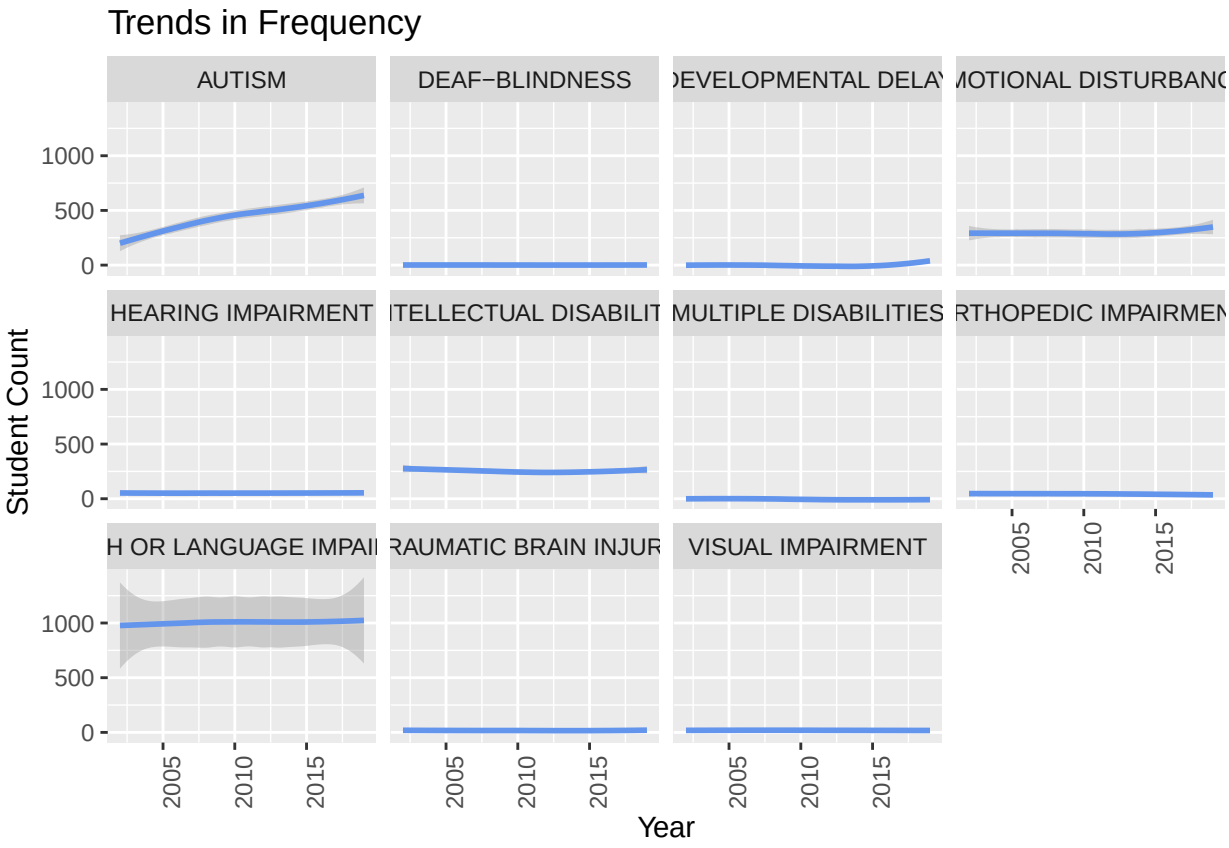
```
## # A tibble: 198 x 3
## # Groups:   year [18]
##     year disability                   total
##    <dbl> <chr>                        <dbl>
##  1  2002 AUTISM                        3339
##  2  2002 DEAF-BLINDNESS                  17
##  3  2002 DEVELOPMENTAL DELAY              0
```

```
##  4  2002 EMOTIONAL DISTURBANCE          4736
##  5  2002 HEARING IMPAIRMENT              873
##  6  2002 INTELLECTUAL DISABILITY        4387
##  7  2002 MULTIPLE DISABILITIES             0
##  8  2002 ORTHOPEDIC IMPAIRMENT           754
##  9  2002 SPEECH OR LANGUAGE IMPAIRMENT 15784
## 10  2002 TRAUMATIC BRAIN INJURY          306
## # ... with 188 more rows
```

```
## Warning: Removed 12 row(s) containing missing values (geom_path).
```




```
## Warning: Removed 190 rows containing non-finite values (stat_smooth).
```



Procedure

Data analysis

We used R (Version 4.0.2; R Core Team, 2020) and the R-packages *dplyr* (Version 1.0.2; Wickham et al., 2020), *forcats* (Version 0.5.0; Wickham, 2020a), *ggplot2* (Version 3.3.2; Wickham, 2016), *here* (Version 0.1; Müller, 2017), *janitor* (Version 2.0.1; Firke, 2020), *papaja* (Version 0.1.0.9997; Aust & Barth, 2020), *purrr* (Version 0.3.4; Henry & Wickham, 2020), *readr* (Version 1.3.1; Wickham, Hester, & Francois, 2018), *readxl* (Version 1.3.1; Wickham & Bryan, 2019), *stringr* (Version 1.4.0; Wickham, 2019), *tibble* (Version 3.0.3; Müller & Wickham, 2020), *tidyr* (Version 1.1.2; Wickham, 2020b), and *tidyverse* (Version 1.3.0; Wickham, Averick, et al., 2019) for all our analyses.

Results

Discussion

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