Investigating Relationships Between the Backdrop of Provincial Economic Volatility and Wider Mental Health in Alberta

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Course 601 - Working with Data and Visualization

Background

- More than **6.7 million people in Canada** are living with a mental health problem or illness today; or about **19.8% of Canada's population** in any given year. [1]

- The World Health Organization (WHO) claims the incidence of mental illness **is expected to rise in the coming decade**.

- Over the past decade, the economy has become to take a dramatic turns as drivers have shifted more towards a "gig-economy".

- Previous research has shown a connection between economic standing and mental health, **we aim to find a similar connection in the province of Alberta**.[1]

1 in 5 Canadians will experience a mental health or addiction problem.

While people may discriminate, mental illness and addiction do not. Any one can be affected.

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(1) Source: Smetanin et al. (2011). The life and economic impact of major mental illnesses in Canada: 2011-2041. Prepared for the Mental Health Commission of Canada. Toronto: RiskAnalytica.
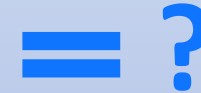
Guiding Questions To Be Answered

1

Is there an identifiable relationship between the dynamic economic situation and the wider mental health trend within Alberta?

2

Which subpopulations have been the most adversely affected by the economic volatility in Alberta within the last decade?

3

What have been the trends in more granular hospital-based mental health data, and do those findings relate to the wider economic analysis and subgroup analysis?

Core Data Utilized

- Canadian Community Health Survey (CCHS)
- Alberta Economic Dashboard Data
- Canadian Institute for Health Information (CIHI)

- **All data is open source**

1

Is there an identifiable relationship between the dynamic economic situation and the wider mental health trend within Alberta?

Alberta Economic Index
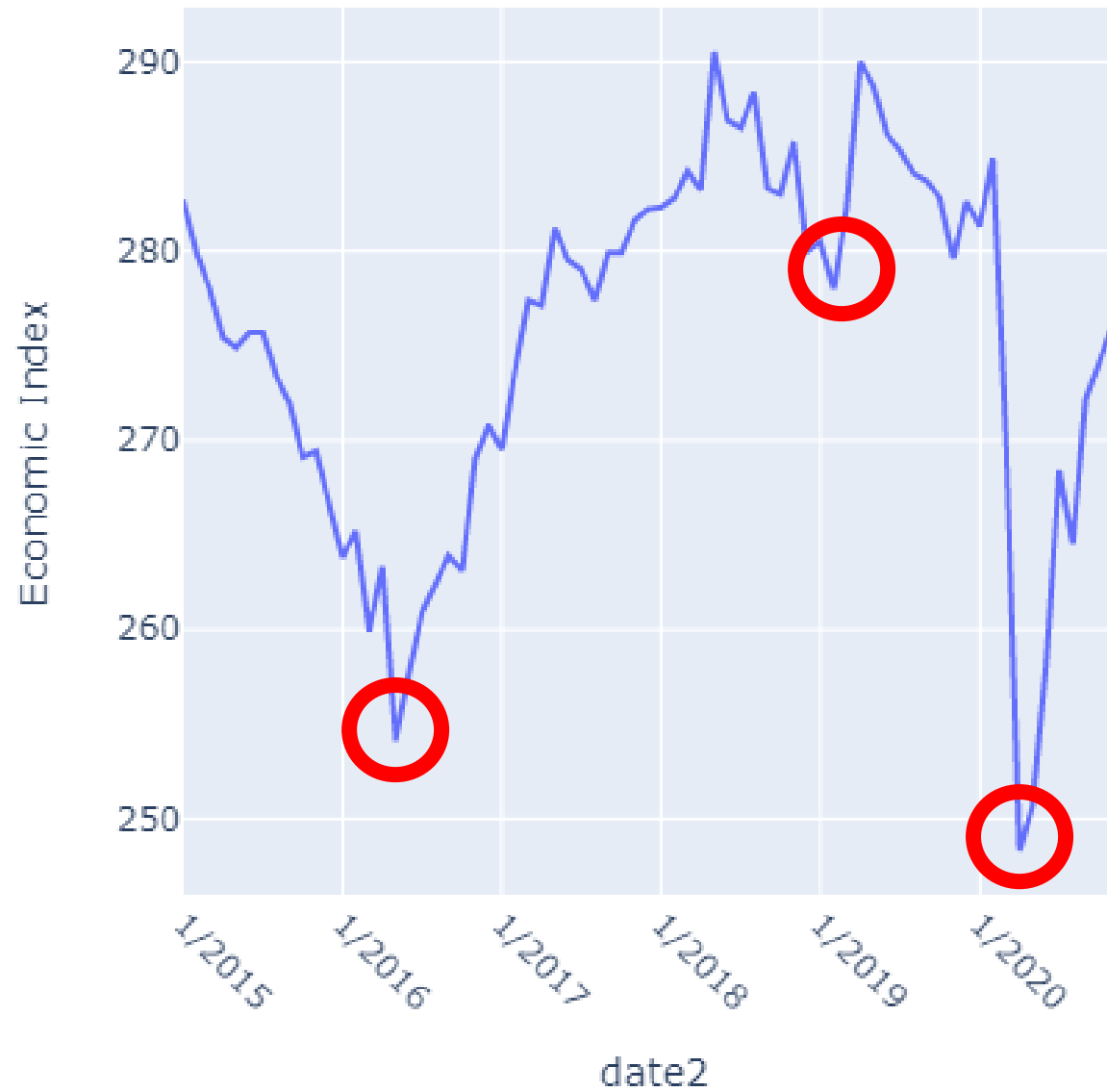
- A constant decrease in perceived 'good' or 'excellent' Mental Health status

- 'Stress most days' peaks around 2016, where we previously saw economic decline

- A steeper than nor increase in 'fair' or 'poor' mental health status in 2016 and 2020.

Mental Health Versus Alberta Economy
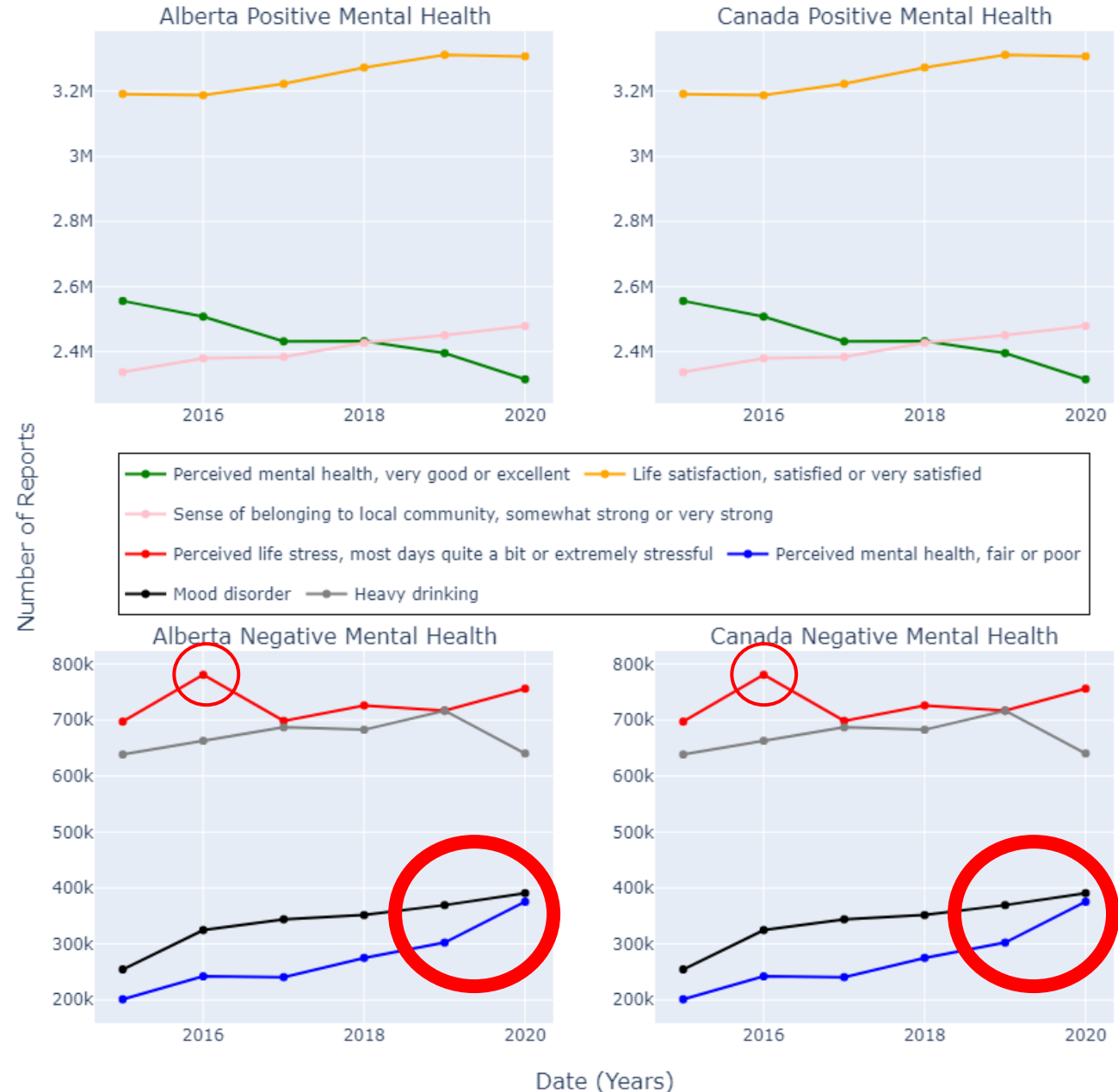
What subsectors of Alberta's economy change the most with economic decline / rise in poor mental health reports?

Year-to-year Results for WCSOilPrices
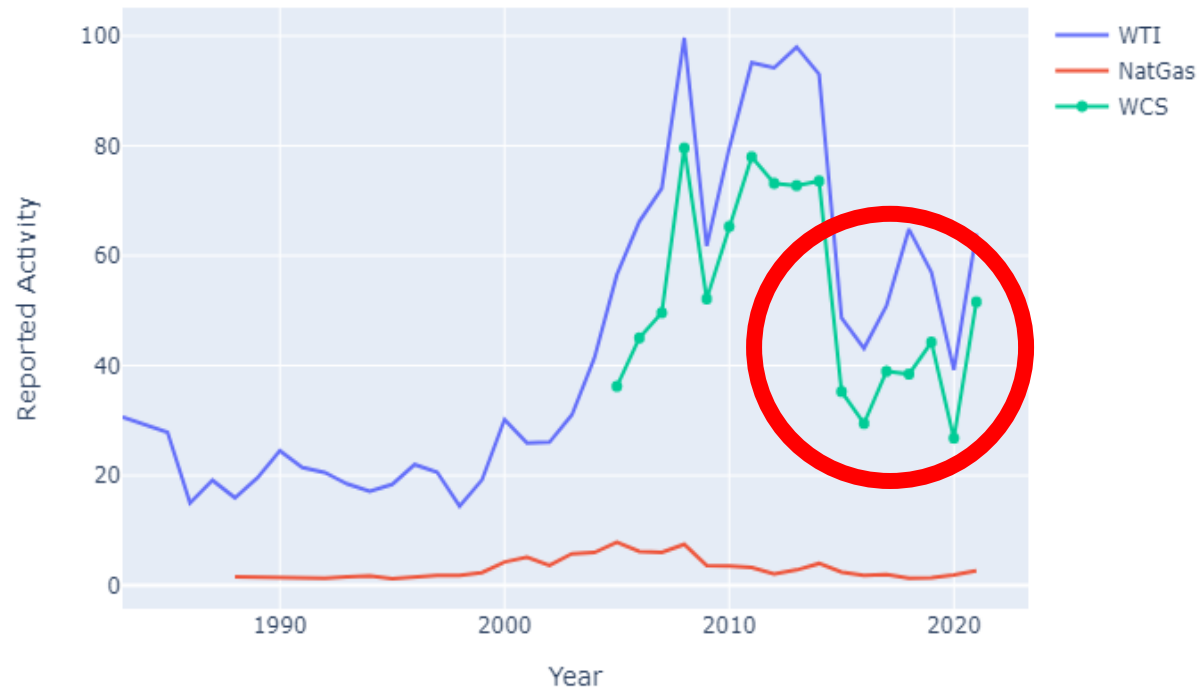
Year-to-year Results for Unemployment
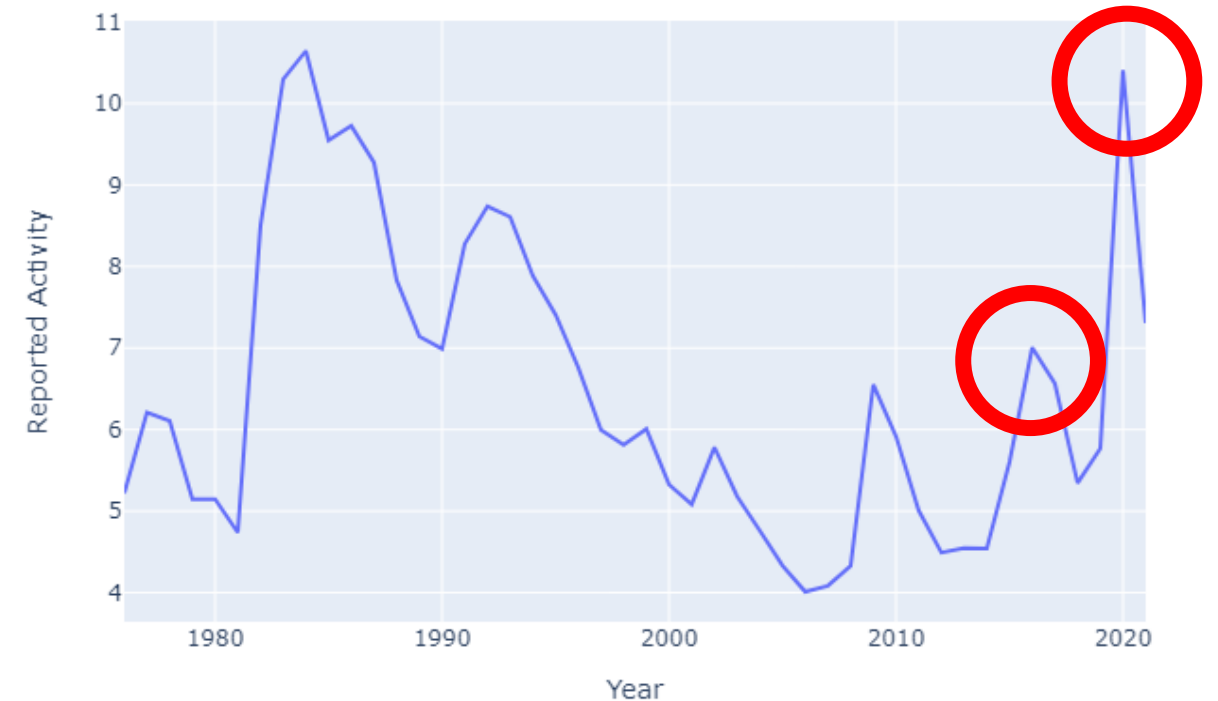
- Alberta Key Economic Indicator (Oil) saw rapid fluctuation after 2008.
- Largest decrease was in 2015, with another dip shortly after in 2020

- Unemployment likewise saw spike in 2008, 2016, and 2020

2

Which subpopulations have been the most adversely affected by the economic volatility in Alberta within the last decade?

Analysis:

Canada

Female (Age: 18 - 34)

	2015	2016	2017	2018	2019	2020
Perceived health, fair or poor	5.6	6.7	6.2	7.1	7.1	6.5
Perceived health, very good or excellent	70.5	68.5	69.6	67.9	66.8	68.0
Perceived life stress, most days quite a bit or extremely stressful	24.0	23.2	25.3	24.6	25.7	25.4
Perceived mental health, fair or poor	7.4	9.0	10.1	12.1	13.1	15.3
Perceived mental health, very good or excellent	69.6	67.1	64.2	59.5	56.2	53.0

Male (Age: 18 - 34)

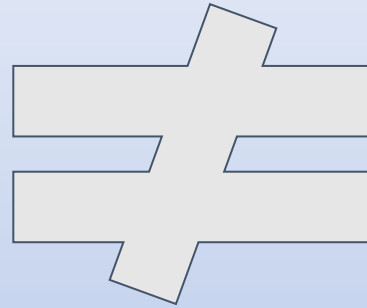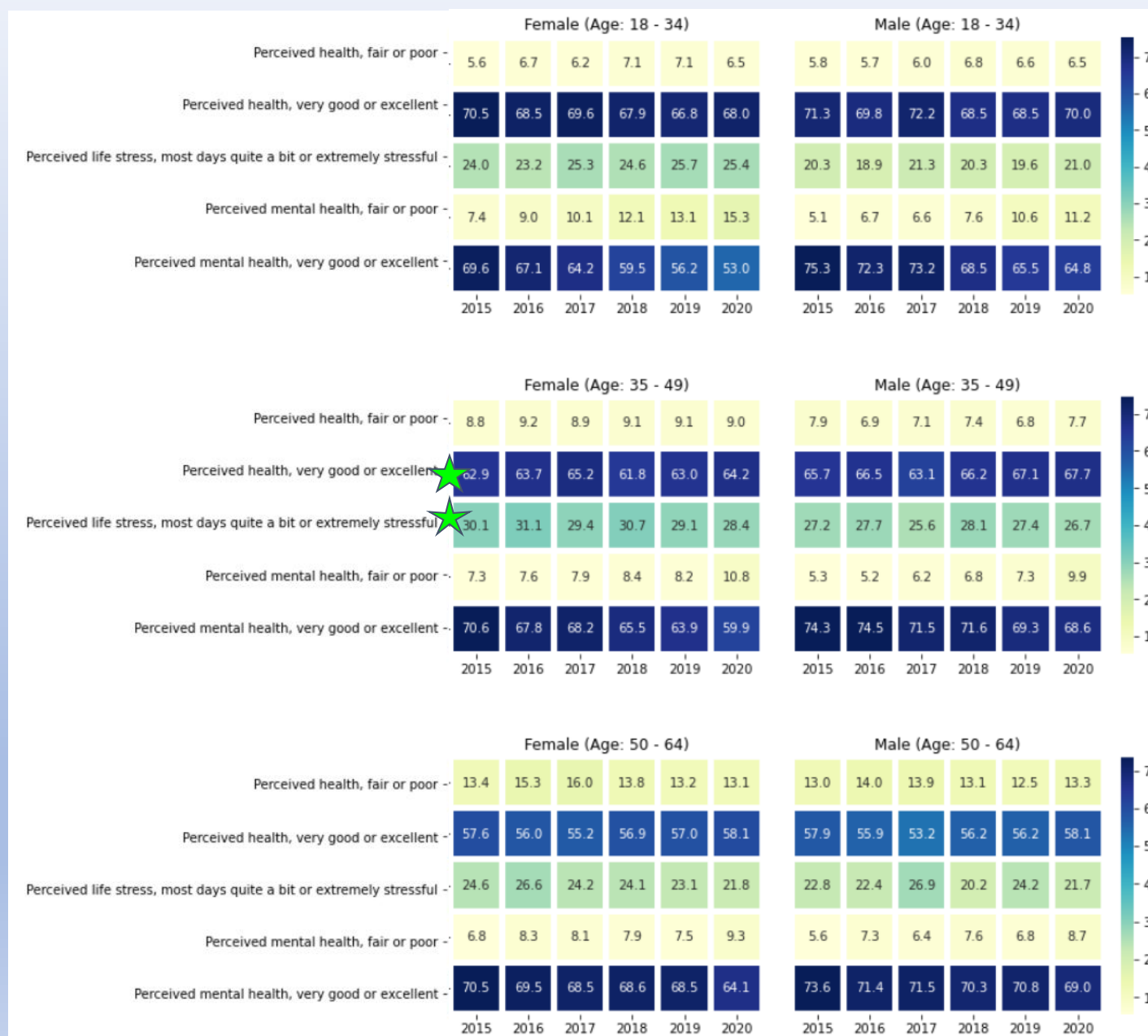|	2015	2016	2017	2018	2019	2020
Perceived health, fair or poor	5.8	5.7	6.0	6.8	6.6	6.5
Perceived health, very good or excellent	71.3	69.8	72.2	68.5	68.5	70.0
Perceived life stress, most days quite a bit or extremely stressful	20.3	18.9	21.3	20.3	19.6	21.0
Perceived mental health, fair or poor	5.1	6.7	6.6	7.6	10.6	11.2
Perceived mental health, very good or excellent	75.3	72.3	73.2	68.5	65.5	64.8

Female (Age: 35 - 49)

	2015	2016	2017	2018	2019	2020
Perceived health, fair or poor	8.8	9.2	8.9	9.1	9.1	9.0
Perceived health, very good or excellent	★2.9	63.7	65.2	61.8	63.0	64.2
Perceived life stress, most days quite a bit or extremely stressful	★30.1	31.1	29.4	30.7	29.1	28.4
Perceived mental health, fair or poor	7.3	7.6	7.9	8.4	8.2	10.8
Perceived mental health, very good or excellent	70.6	67.8	68.2	65.5	63.9	59.9

Male (Age: 35 - 49)

	2015	2016	2017	2018	2019	2020
Perceived health, fair or poor	7.9	6.9	7.1	7.4	6.8	7.7
Perceived health, very good or excellent	65.7	66.5	63.1	66.2	67.1	67.7
Perceived life stress, most days quite a bit or extremely stressful	27.2	27.7	25.6	28.1	27.4	26.7
Perceived mental health, fair or poor	5.3	5.2	6.2	6.8	7.3	9.9
Perceived mental health, very good or excellent	74.3	74.5	71.5	71.6	69.3	68.6

Female (Age: 50 - 64)

	2015	2016	2017	2018	2019	2020
Perceived health, fair or poor	13.4	15.3	16.0	13.8	13.2	13.1
Perceived health, very good or excellent	57.6	56.0	55.2	56.9	57.0	58.1
Perceived life stress, most days quite a bit or extremely stressful	24.6	26.6	24.2	24.1	23.1	21.8
Perceived mental health, fair or poor	6.8	8.3	8.1	7.9	7.5	9.3
Perceived mental health, very good or excellent	70.5	69.5	68.5	68.6	68.5	64.1

Male (Age: 50 - 64)

	2015	2016	2017	2018	2019	2020
Perceived health, fair or poor	13.0	14.0	13.9	13.1	12.5	13.3
Perceived health, very good or excellent	57.9	55.9	53.2	56.2	56.2	58.1
Perceived life stress, most days quite a bit or extremely stressful	22.8	22.4	26.9	20.2	24.2	21.7
Perceived mental health, fair or poor	5.6	7.3	6.4	7.6	6.8	8.7
Perceived mental health, very good or excellent	73.6	71.4	71.5	70.3	70.8	69.0

Alberta

Female (Age: 18 - 34)

	2015	2016	2017	2018	2019	2020
Perceived health, fair or poor	5.4	7.0	6.7	8.1	7.7	10.8
Perceived health, very good or excellent	70.3	66.7	68.5	72.2	67.5	70.2
Perceived life stress, most days quite a bit or extremely stressful	18.3	22.1	23.4	18.5	20.2	22.4
Perceived mental health, fair or poor	8.1	9.6	10.1	10.5	16.1	13.0
Perceived mental health, very good or excellent	68.2	67.4	62.4	62.2	55.8	61.9

Male (Age: 18 - 34)

	2015	2016	2017	2018	2019	2020
Perceived health, fair or poor	6.4	6.5	5.9	5.8	6.1	4.6
Perceived health, very good or excellent	72.9	72.4	69.7	70.4	69.7	64.8
Perceived life stress, most days quite a bit or extremely stressful	21.4	21.3	17.5	17.9	15.2	21.1
Perceived mental health, fair or poor	5.1	6.5	8.0	9.7	10.0	11.8
Perceived mental health, very good or excellent	77.4	75.2	68.2	69.3	68.5	64.2

Female (Age: 35 - 49)

	2015	2016	2017	2018	2019	2020
Perceived health, fair or poor	7.7	9.2	7.8	9.9	7.9	8.8
Perceived health, very good or excellent	★72.7	66.5	65.0	63.9	64.9	64.1
Perceived life stress, most days quite a bit or extremely stressful	★28.0	29.6	22.9	29.4	24.9	32.4
Perceived mental health, fair or poor	6.4	7.4	6.1	9.3	7.5	12.3
Perceived mental health, very good or excellent	75.8	70.0	70.1	67.7	63.4	58.6

Male (Age: 35 - 49)

	2015	2016	2017	2018	2019	2020
Perceived health, fair or poor	5.7	5.5	6.1	8.0	6.5	10.2
Perceived health, very good or excellent	64.8	67.0	65.0	60.7	69.5	63.6
Perceived life stress, most days quite a bit or extremely stressful	25.2	27.5	21.2	26.2	24.9	23.7
Perceived mental health, fair or poor	6.0	4.5	5.9	6.8	6.9	13.3
Perceived mental health, very good or excellent	71.4	78.9	72.5	70.4	71.1	63.0

Female (Age: 50 - 64)

	2015	2016	2017	2018	2019	2020
Perceived health, fair or poor	13.5	17.2	13.2	13.9	12.3	12.7
Perceived health, very good or excellent	64.4	58.3	57.3	54.3	62.2	61.9
Perceived life stress, most days quite a bit or extremely stressful	20.7	25.6	20.2	22.3	25.1	24.7
Perceived mental health, fair or poor	7.7	10.2	6.8	7.0	8.4	12.6
Perceived mental health, very good or excellent	80.3	70.1	69.1	69.0	72.3	66.0

Male (Age: 50 - 64)

|	2015	2016	2017	2018	2019	2020
Perceived health, fair or poor	12.0	12.3	16.5	14.5	12.0	13.3
Perceived health, very good or excellent	62.5	58.4	57.3	58.8	57.1	62.9
Perceived life stress, most days quite a bit or extremely stressful	19.5	25.0	25.8	21.7	22.8	18.4
Perceived mental health, fair or poor	6.3	7.7	7.7	6.0	5.1	8.1
Perceived mental health, very good or excellent	75.6	71.7	71.0	71.3	67.8	72.1

2 Conclusions:

1. 35 to 49 years old group was the mostly affected
2. Females have been affected more than males
3. The Mental health of people in Alberta was affected by the changing in Economy situation in much more than in Canada as a whole.

$$x = \frac{x - X_{min}}{X_{max} - X_{min}}$$

Indicators
- Heavy drinking
- Mood disorder
- Perceived health, fair or poor
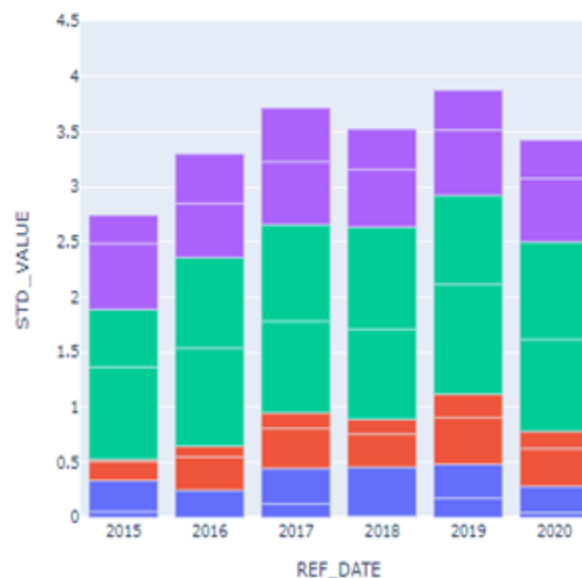- Perceived life stress, most days quite a bit or extremely stressful
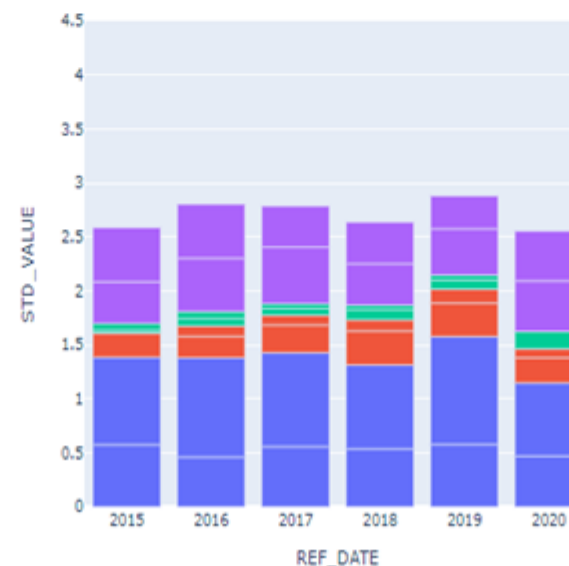
All_disorders together. 12 to 17 years
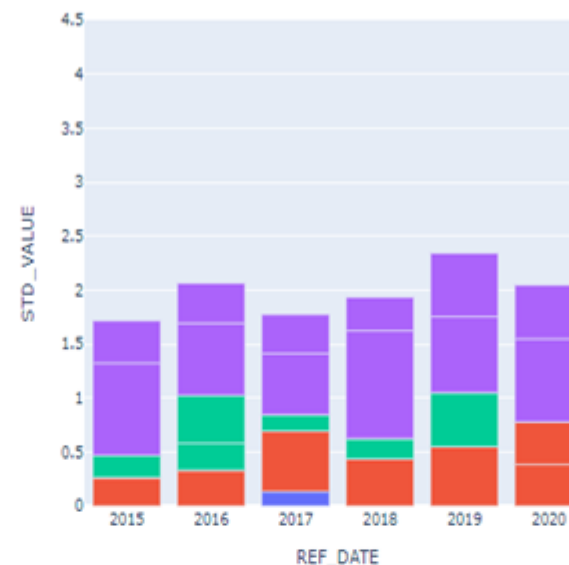
All_disorders together. 35 to 49 years

All_disorders together. 65 years and over

All_disorders together. 18 to 34 years

All_disorders together. 50 to 64 years

3

What have been the trends in more granular hospital-based mental health data, and do those findings relate to the wider economic analysis and subgroup analysis?

No relative changes in aggregate discharges across provinces
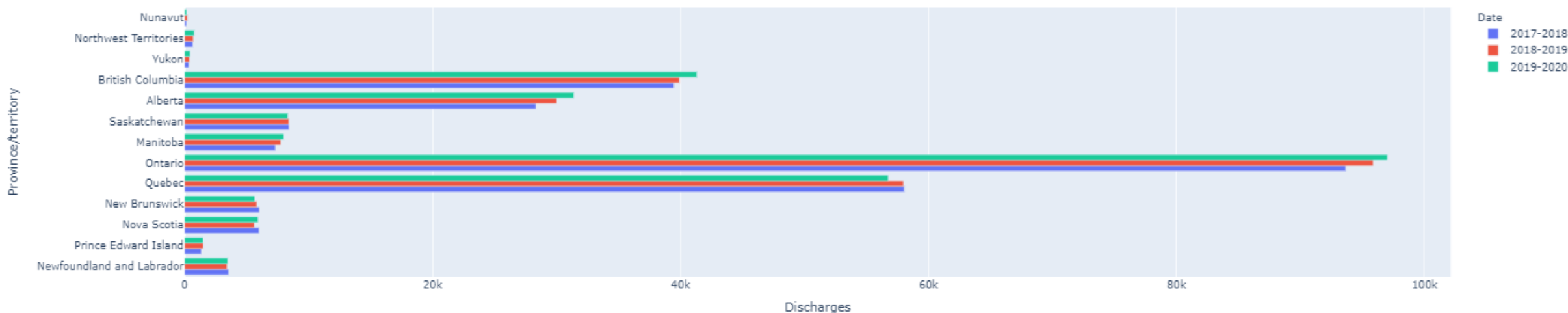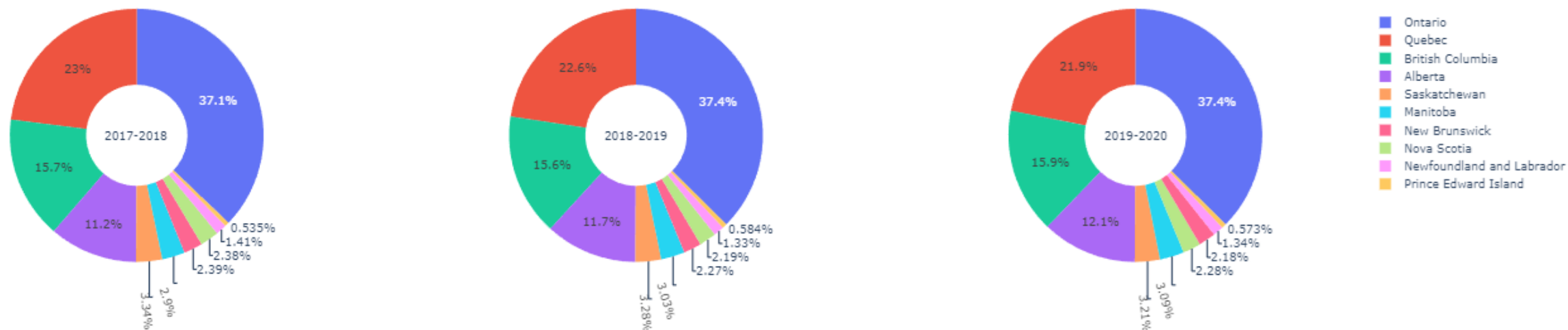
Conclusion

1

Is there an identifiable relationship between the dynamic economic situation and the wider mental health trend within Alberta?

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Which subpopulations have been the most adversely affected by the economic volatility in Alberta within the last decade?

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What have been the trends in more granular hospital-based mental health data, and do those findings relate to the wider economic analysis and subgroup analysis?

Next Steps

1. Utilization of trends within mental health data to improve allocation of provincial healthcare budgets

2. Feasibility assessment of potential of social outreach centers to help address stress and anxiety within patients aged 35-49

3. Social programs to proactively address declining mental health indicators when an economic downturn is occuring

References:

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- Macintyre, A. (2018) 'What has economics got to do with it? The impact of socioeconomic factors on mental health and the case for collective action', Humanities & Social Sciences Communications, 4(10) [Online]. Available at: https://www.nature.com/articles/s41599-018-0063-2 (Accessed: 25 September 2021)

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- World Health Organization. (2013) Mental health action plan 2013 - 2020 [Online]. Available at: https://www.who.int/publications/i/item/9789241506021 (Accessed: 26 September 2021)

Comprehensive Data Source Attributions:

- Alberta Economic Dashboard. (2021) Government of Alberta, 17 September [Online]. Available at: https://economicdashboard.alberta.ca/

- Alberta Activity Index Data Tables. (2021) Government of Alberta, 17 September [Online]. Available at: https://open.alberta.ca/opendata/alberta-activity-index-data-tables

- Canadian Community Health Survey (CCHS). (2021) Statistics Canada (Canadian Dataset), 2 October [Online] Available at: https://www150.statcan.gc.ca/t1/tbl1/en/cv!recreate.action?pid=1310009601&selectedNodeIds=1D10,4D1,4D2,4D3,4D4,4D5,4D14,4D15,4D17,4D23,4D24,4D26,5D1&checkedLevels=1D2,2D2,3D2&refPeriods=20150101,20200101&dimensionLayouts=layout2,layout2,layout2,layout3,layout2,layout2&vectorDisplay=false

- Canadian Community Health Survey (CCHS). (2021) Statistics Canada (Alberta Dataset), 2 October [Online] Available at: https://www150.statcan.gc.ca/t1/tbl1/en/cv!recreate.action?pid=1310009601&selectedNodeIds=4D1,4D2,4D3,4D4,4D5,4D14,4D15,4D17,4D23,4D24,4D26,5D1&checkedLevels=0D1,1D2,2D2,3D2&refPeriods=20150101,20200101&dimensionLayouts=layout2,layout2,layout2,layout3,layout2,layout2&vectorDisplay=false

- Canadian Institute for Health Information (CIHI) Data and Reports Database. (2021) 3 October [Online]. Available at: https://www.cihi.ca/en/access-data-reports/results?fs3%5B0%5D=primary_theme%3A678

Thank you!