HOUSING MARKET IN CANADA

LHL Project 3 – Visualizations in Tableau

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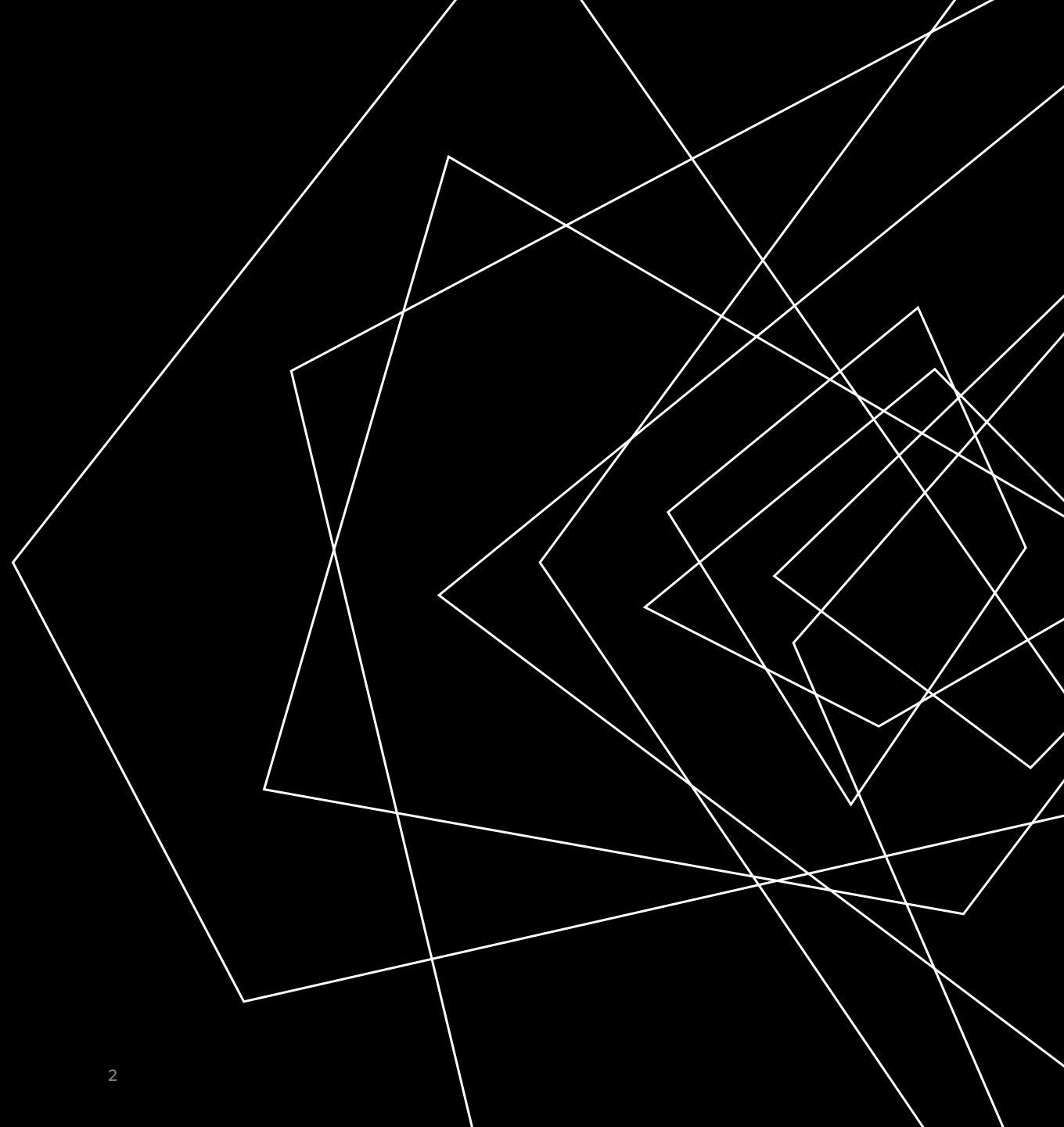
AGENDA

Introduction and goals

Housing Visualizations

Comparisons to other economic metrics

Challenges and areas for future research



INTRODUCTION AND GOALS

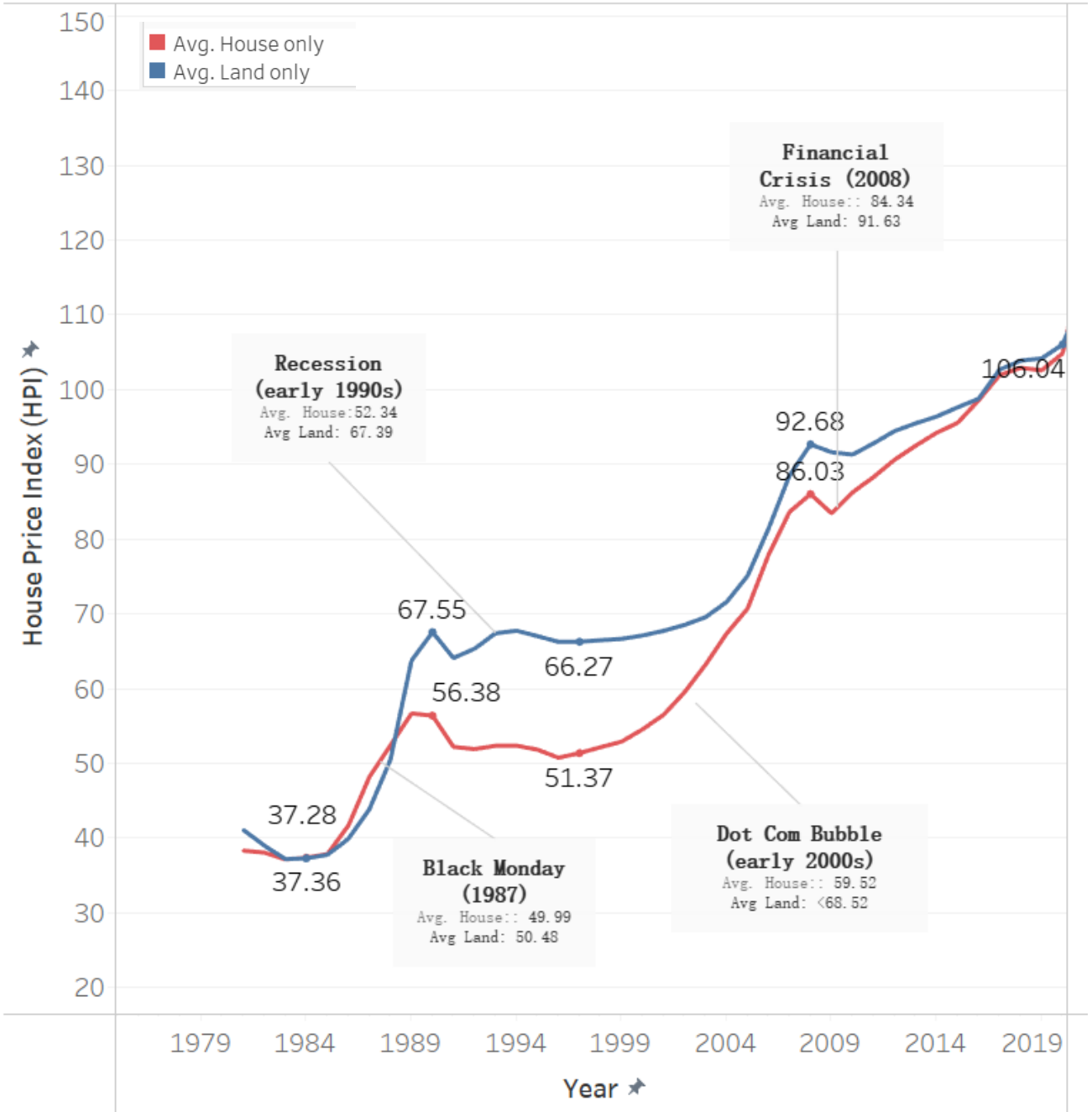
- Create Tableau visualizations to describe and explain various housing market datasets
- Compare housing market data with other economic metrics such as consumer price index (CPI) and earnings over time
- Explore different relationships within the data and portray this is a meaningful way

- Both housing and land show similar trends for the period of 1983 to 2019

- Major global economic events had a similar impact but hit the housing market more significantly and slightly earlier in time (especially the Dot Com Bubble of the early 2000s)

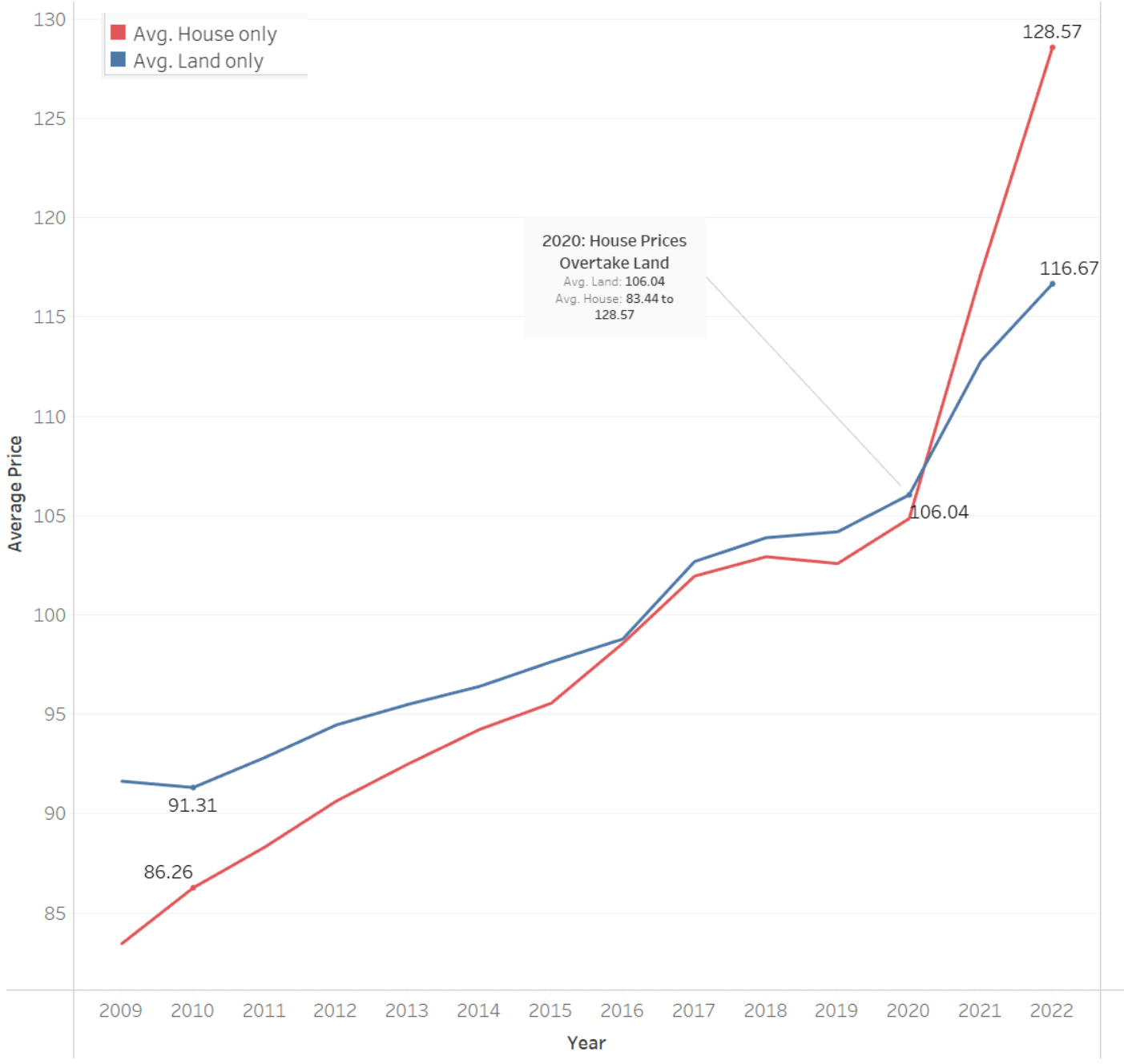
- The recession of the early 1990s, following 1987's Black Monday event, saw the indexes becoming less tethered, with land overtaking housing. This trend persisted until 2020.

House Price Index (HPI) for Houses v Land

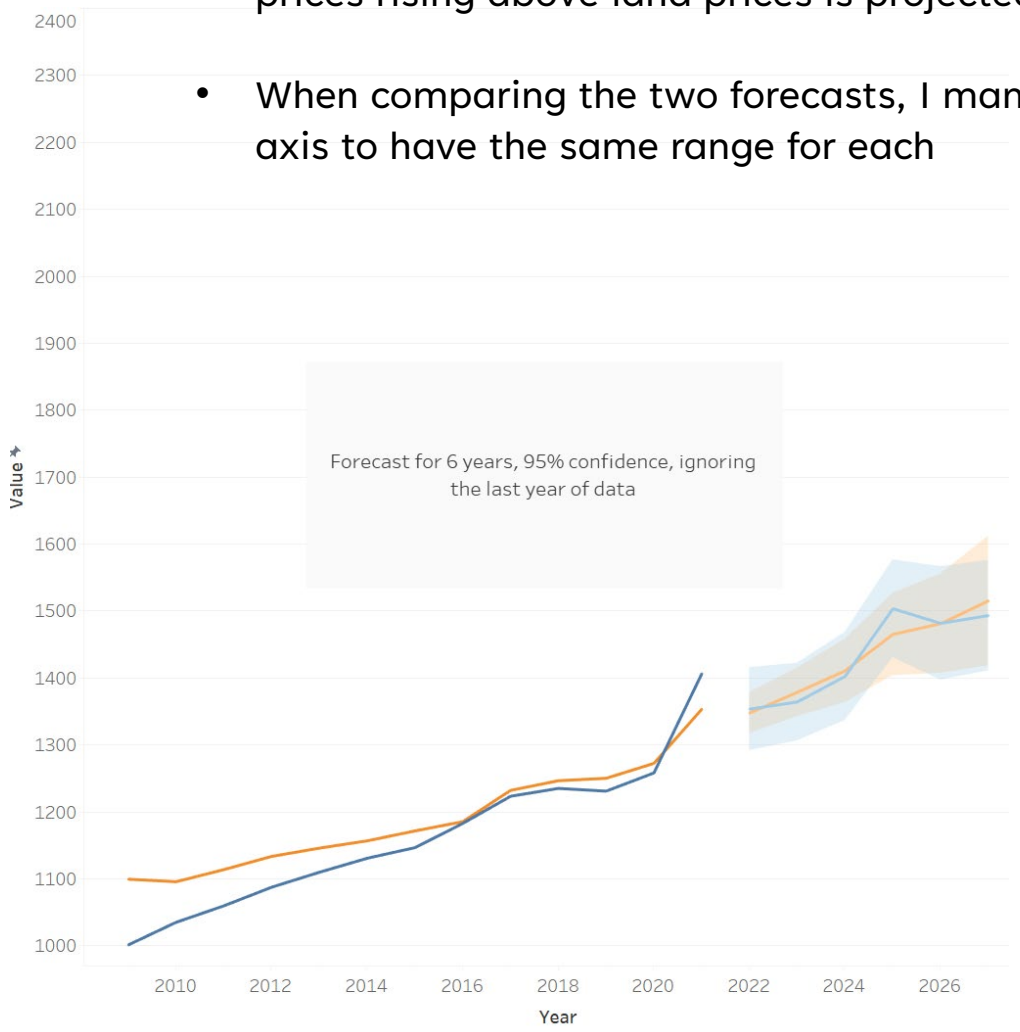


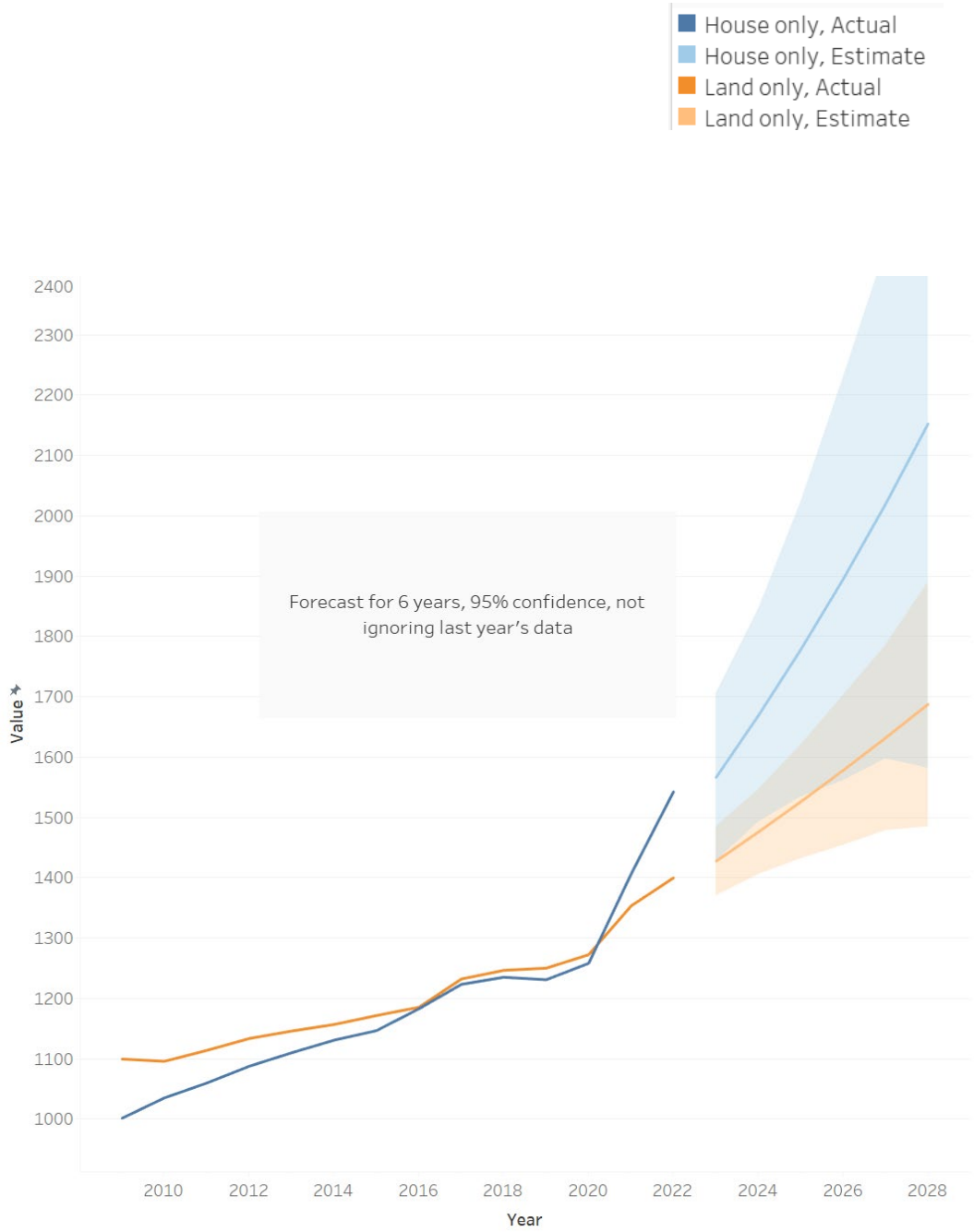
- 2020 saw house prices overtaking land prices for the first time since 1988.
- The forecast (not shown) changes significantly if we ignore the last year of data.
- There is insufficient information as to whether the last year's results are an anomaly and should be ignored or the sign of a more persistent long-term trend of housing overtaking land. Forecasts therefore cannot be made with any degree of accuracy (see next slide)

House Price Index (HPI) for Houses v Land



- If the data from 2021 is ignored, the house and land prices are very similar and show a slight upward trend.
- If the data from 2021 is included, the trend of house prices rising above land prices is projected into the future
- When comparing the two forecasts, I manually set the y axis to have the same range for each



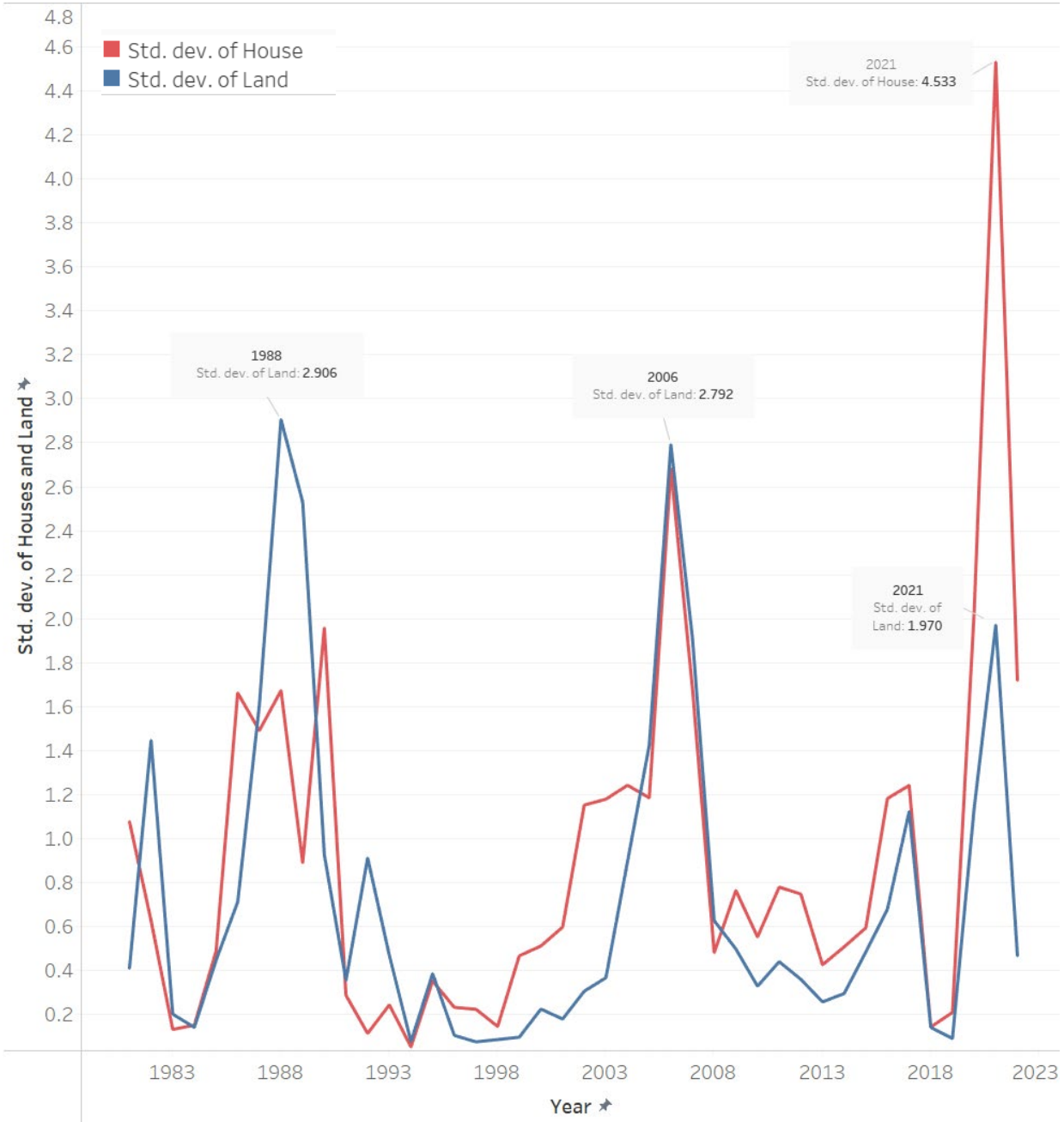


- The standard deviations of houses and land mostly fluctuate in line with each other. Right before the recession of the early 1990s, the standard deviations for both houses and (especially) land are high. During the recession and recovery, the standard deviations both dropped

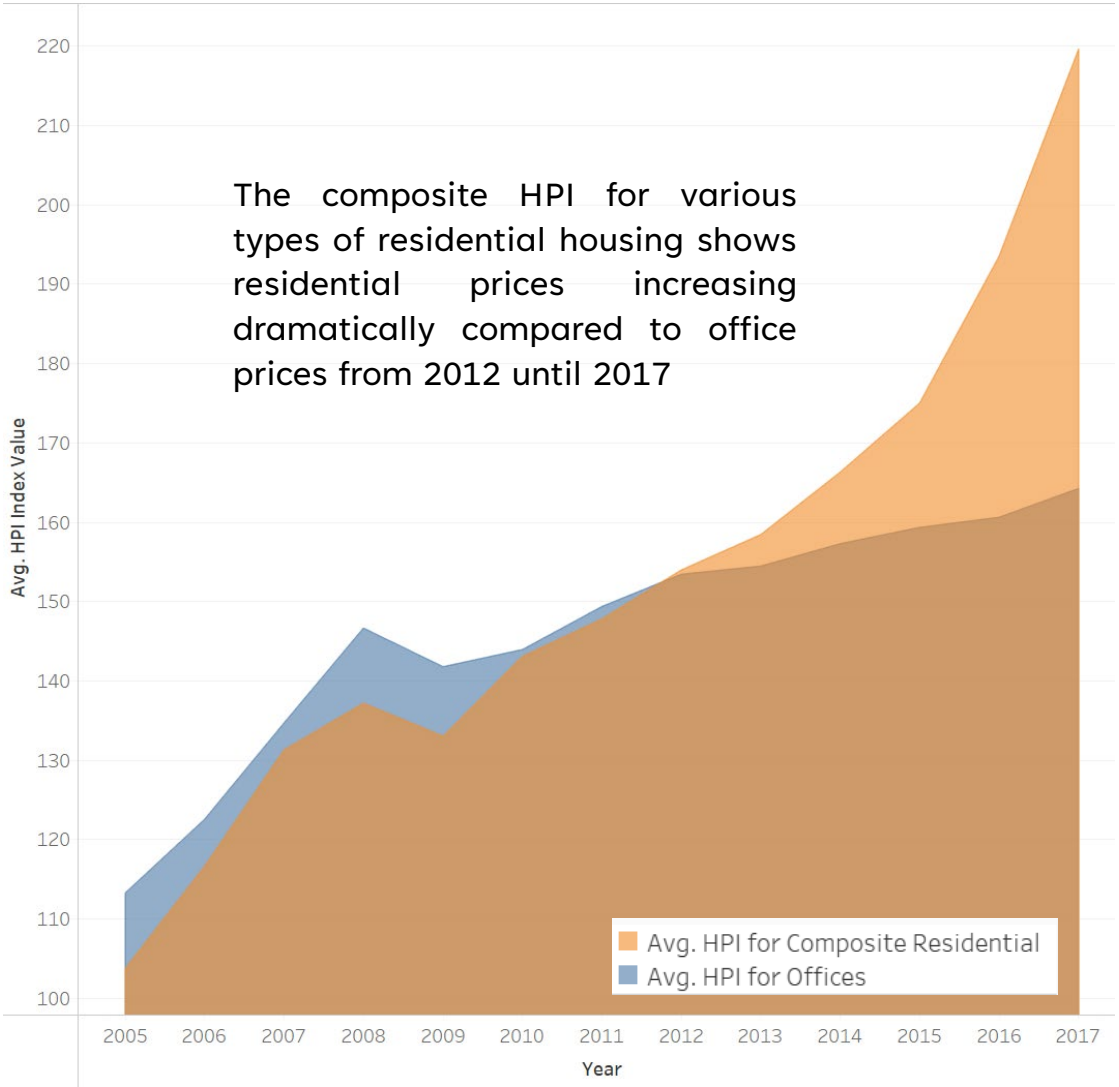
- This trend repeats in 2006, showing a high standard deviation for the 2 years preceding the 2008 financial crisis, and dropping again for the recession and recovery. This suggests that high standard deviation in HPI may suggest a market correction in the near future

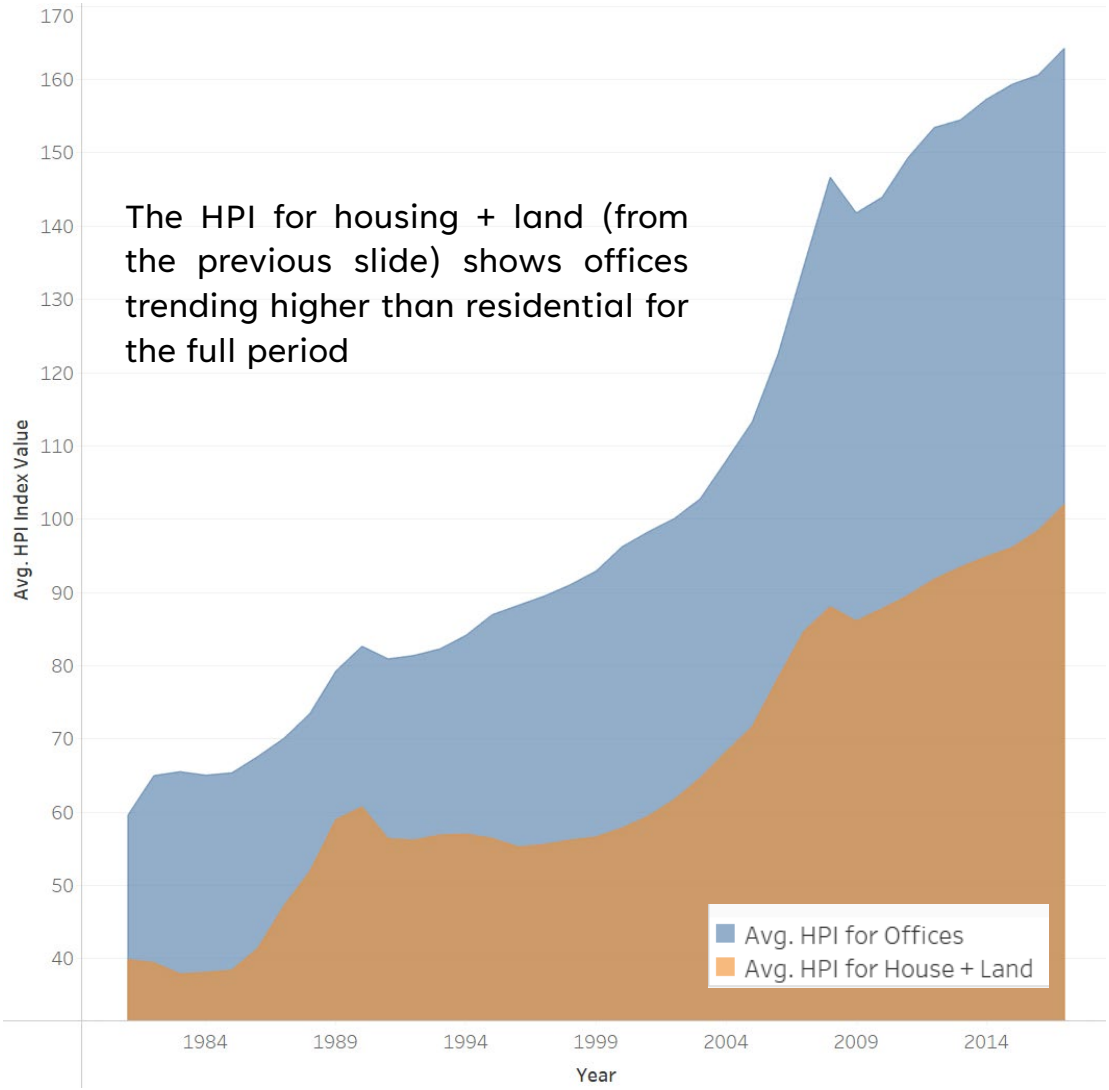
- Interestingly, the concordance between housing and land standard deviations breaks in 2021, with land showing a small spike, but housing showing an unprecedented spike in its standard deviation. This suggests that house prices varied more widely than land prices during the covid epidemic

Standard Deviation – Houses v Land



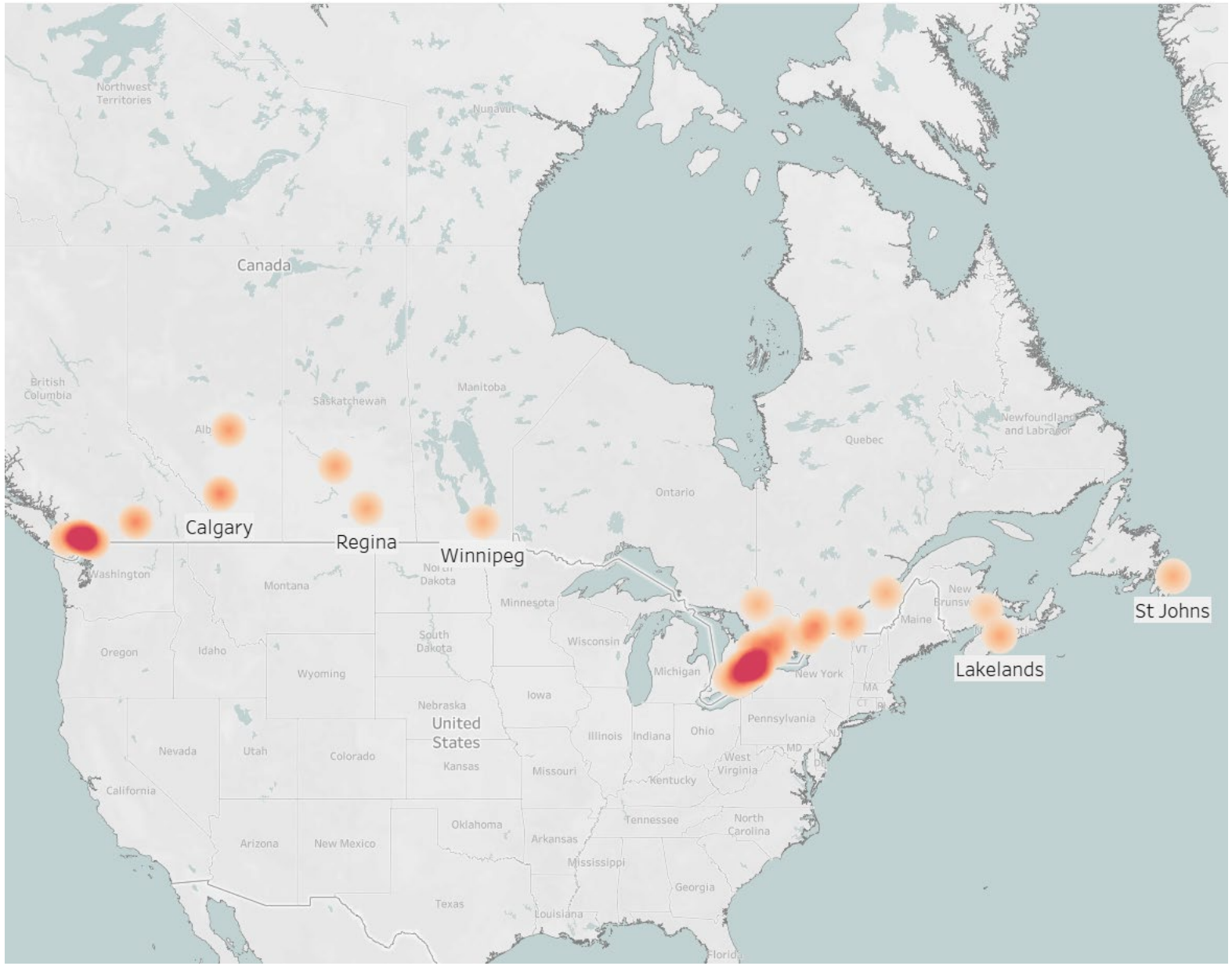
Comparisons between residential and office HPIs depend on which measure we use to determine the residential component. More data is needed to explore where the data originated and how it was calculated in order to determine which is the more accurate measure of the residential HPI





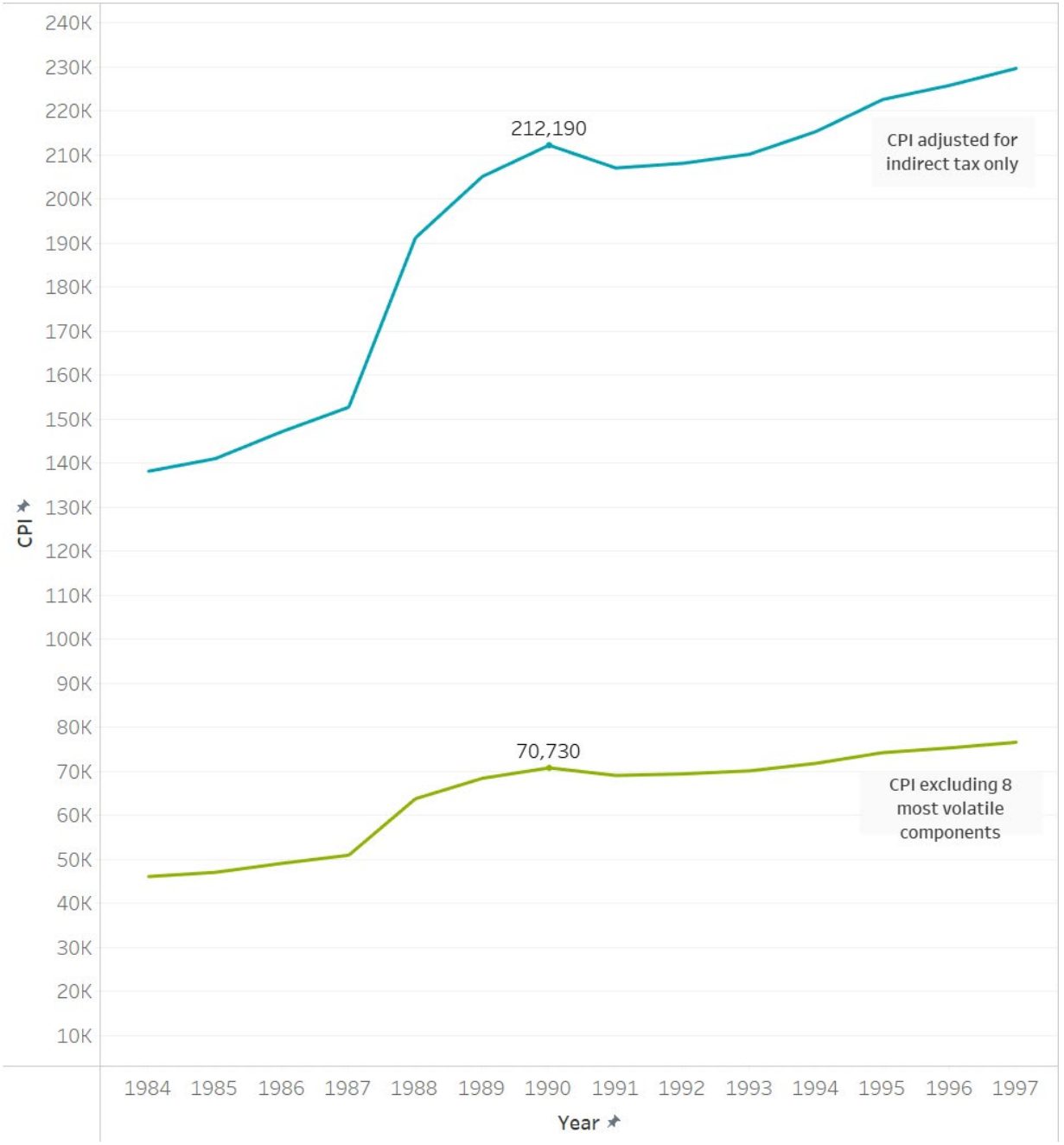
Unsurprisingly, the most expensive places to live in Canada in 2020 were the Lower Mainland in BC and the Greater Toronto Area in Ontario.

Most Expensive Places to Live in Canada (2020)



- There are several different ways of measuring the consumer price index (CPI)
- When the CPI is adjusted only for the effect of indirect taxes, it has a far higher absolute value and is more volatile. This data is almost identical to CPI adjusted for food, energy and tax
- When the CPI is adjusted to take into account the 8 most volatile components and indirect tax (CPIX) it is less volatile and has a lower absolute value
- There are different amounts of data available for each measure of CPI. When using CPI to compare data year-on-year to the housing market, it is important to consider the implications of the measure of CPI selected

Different ways of measuring CPI produce different results



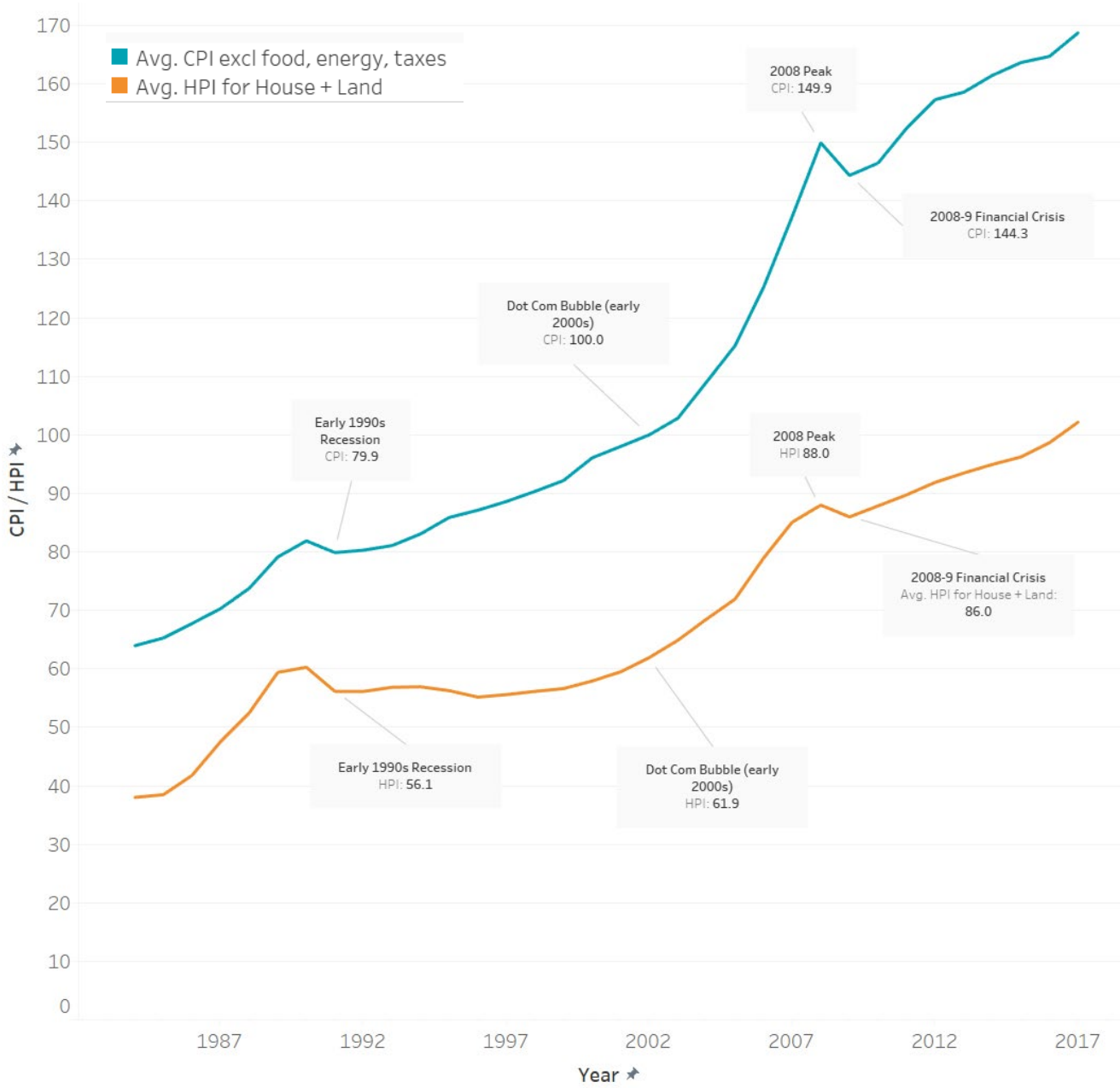
- I selected the CPI excluding food, energy and the effect of indirect taxation, benchmarked against 2002. There was ample data available for this measure, it tracked closely with several other measures, and I didn't want to exclude too many measures of economic performance

- The HPI closely tracks the CPI, responding in the same way to global economic events and trends

- However, the HPI responded more dramatically to the 2008 financial crisis, perhaps because it had been increasing much faster relative to the CPI in preceding years

- Although the CPI itself excludes housing, its overall value is higher. More information is needed as to how the HPI is calculated (e.g. its benchmark year) to determine the significance (or lack thereof) of its absolute values being higher

CPI v HPI

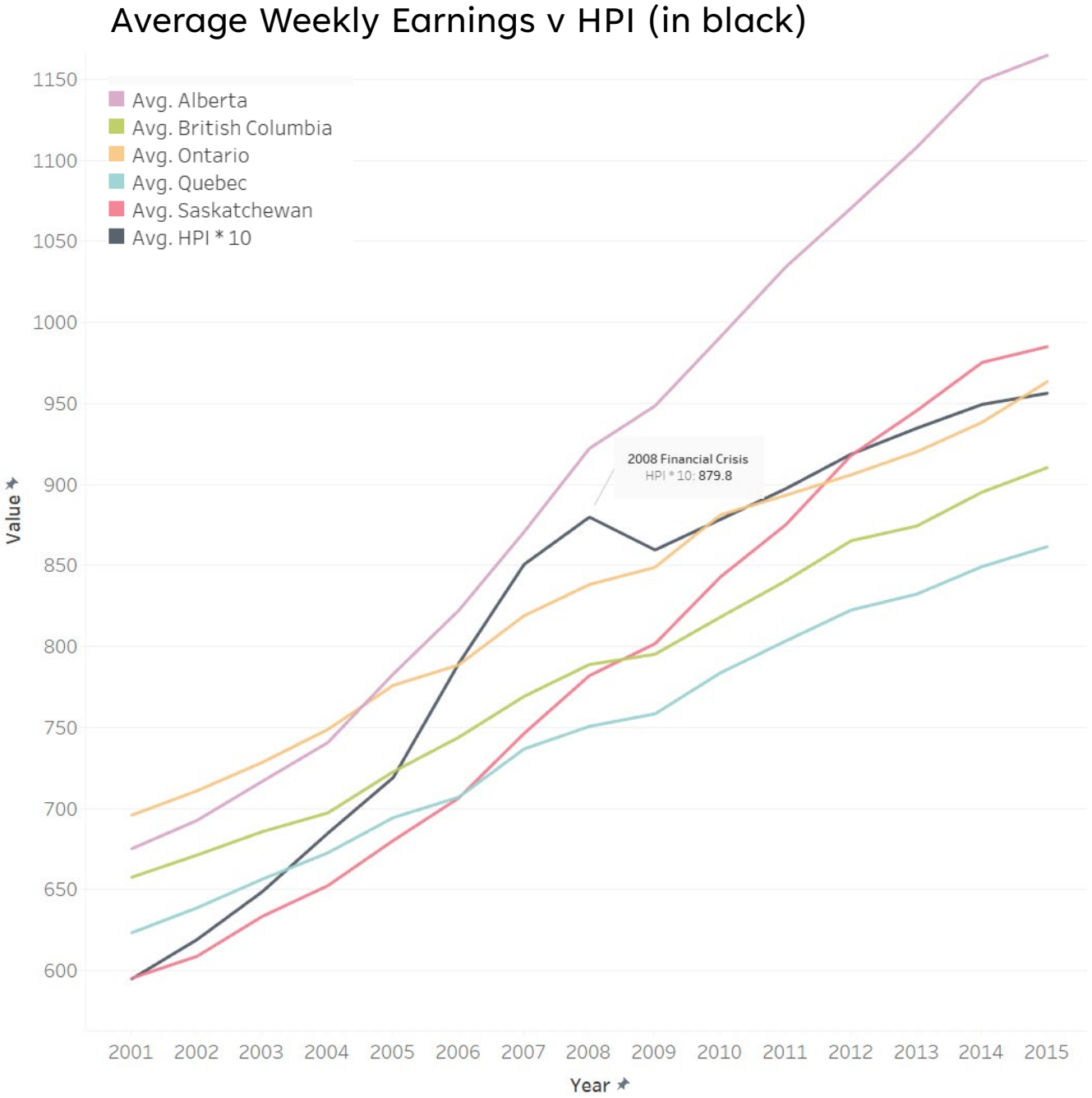


- The average earnings trend in the same direction for all provinces in Canada. For this visualization, I excluded some of the smaller provinces as the data was similar and it was making the graph too crowded

- Alberta’s earnings have increased more dramatically than any other provinces, starting in 2004. Saskatchewan's earnings have seen the most improvement from 2001 to 2015

- I multiplied the HPI by 10 so that it was at the same scale as the earnings. The absolute values do not matter here as the HPI is an index. This shows the HPI rising in line with earnings

- The only exception to this general trend was in the years leading up to the financial crisis (2005-2008), in which the HPI was increasing more dramatically than earnings. In this light, the 2008 crisis can be seen as a housing market correction, bringing house prices back in line with earnings



AREAS FOR FUTURE ANALYSIS

- Why does the standard deviation for housing spike so much more than the standard deviation for land in 2021? What is the relationship of this to the mean, and to the minimum and maximum values of housing and land?

- Are the areas of the Lower Mainland and GTA becoming more populated and has the difference in house prices between these areas and more rural areas increased over time?

- What types of housing do are becoming more/less popular over time and how does this affect the relative pricing (i.e. are more people moving into apartments)?

- How do the results change if different ways are used to calculate the CPI and the HPI?