

Title	Introduction	Housing Trends Over the Past 40 Years	Housing Price Index and Price Trends Po..	Housing Price Index VS Office Price Inde..	Housing Price Map	Housing Price Gap Between Districts	House Prices and Weekly Earnings	Public Expenditure Over the Years	Trends During Key Points in History	Relation ship Be..
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Overview:

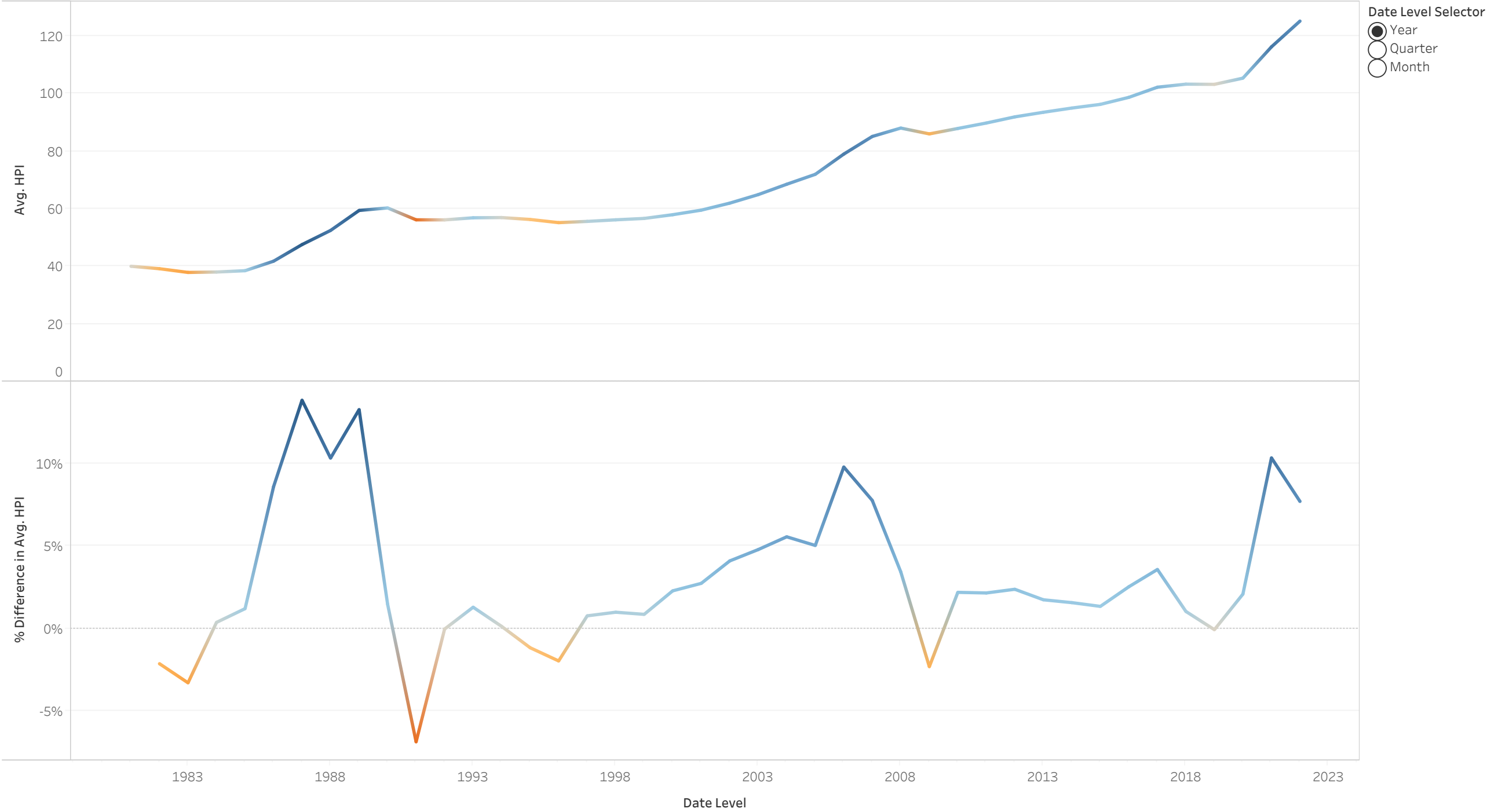
- Project focuses on the Canadian housing market and looking at past trends
- Data set consists of real estate prices, real estate project statuses, housing price index, consumer price index and weekly earnings

Goals:

- Explore the six different datasets in the form of visualizations
- Observe trends, patterns, etc. to form an understanding of the housing market
- Utilize the visualizations to answer the following:
 - Housing price trends over the past 40 years
 - Housing price index VS benchmark prices after 2005
 - Housing prices VS office prices
 - Heat map of Canada with current housing prices
 - Price difference trend between different districts
 - House prices VS weekly earnings
 - Consumer spending in 2001 VS 2014
 - Effect of economic crises over earnings, house prices, office prices, house constructions, consumer spending
 - Relationship between consumer index and house price index
 - Outlier exploration

Observations:

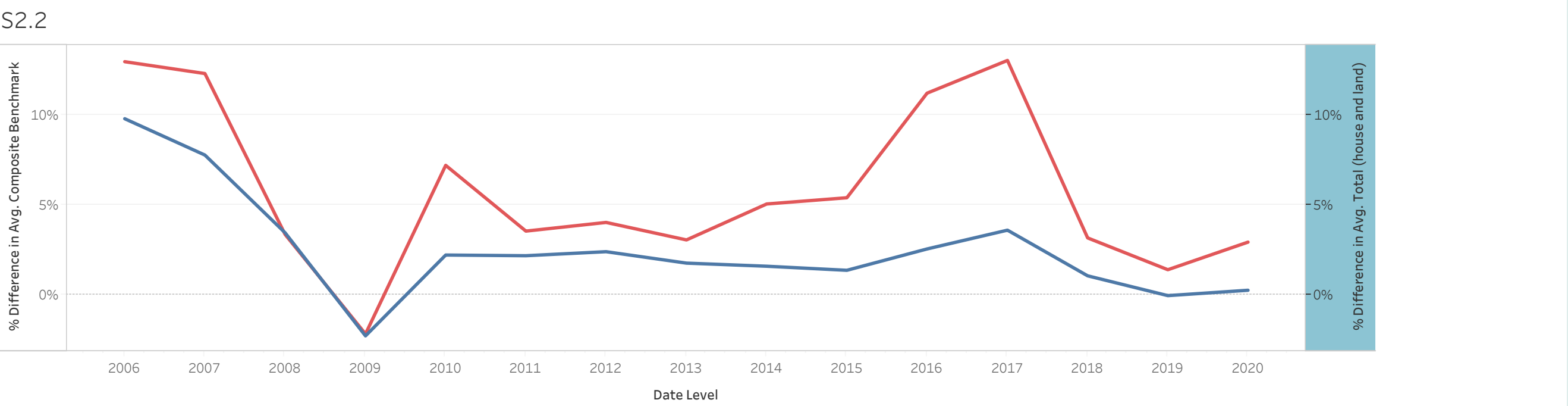
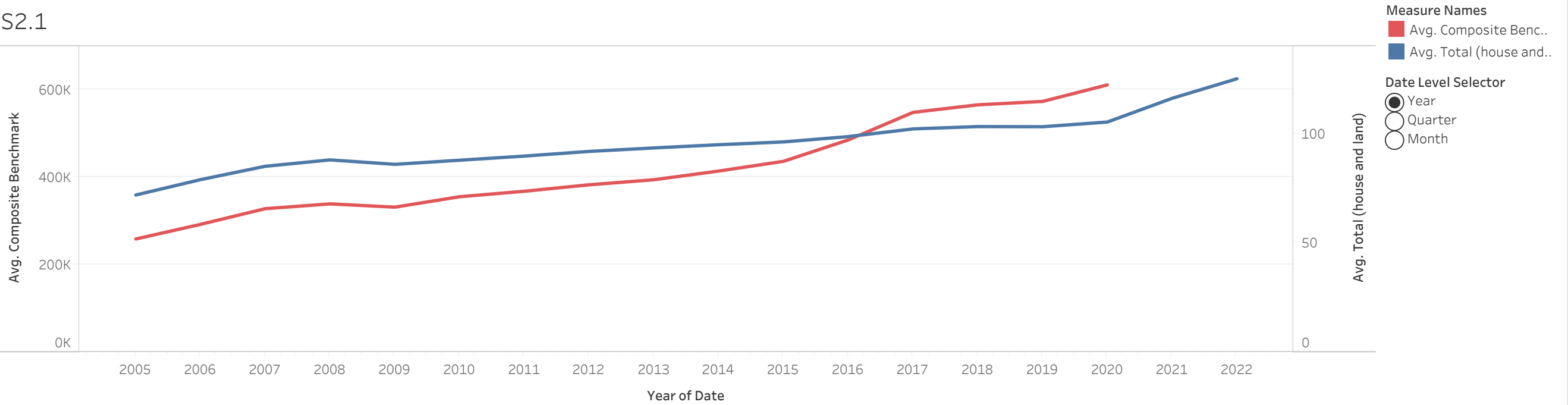
- House price index increased for the most part at a steady rate
- Rapid decreases at a few points in history
- Rapid increases at a few points in history as well



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Observations:

- Both house price index and actual home prices generally increased over time
- Both had similar trends of increase and decrease
- However, the home prices generally increased at a higher rate than the house price index

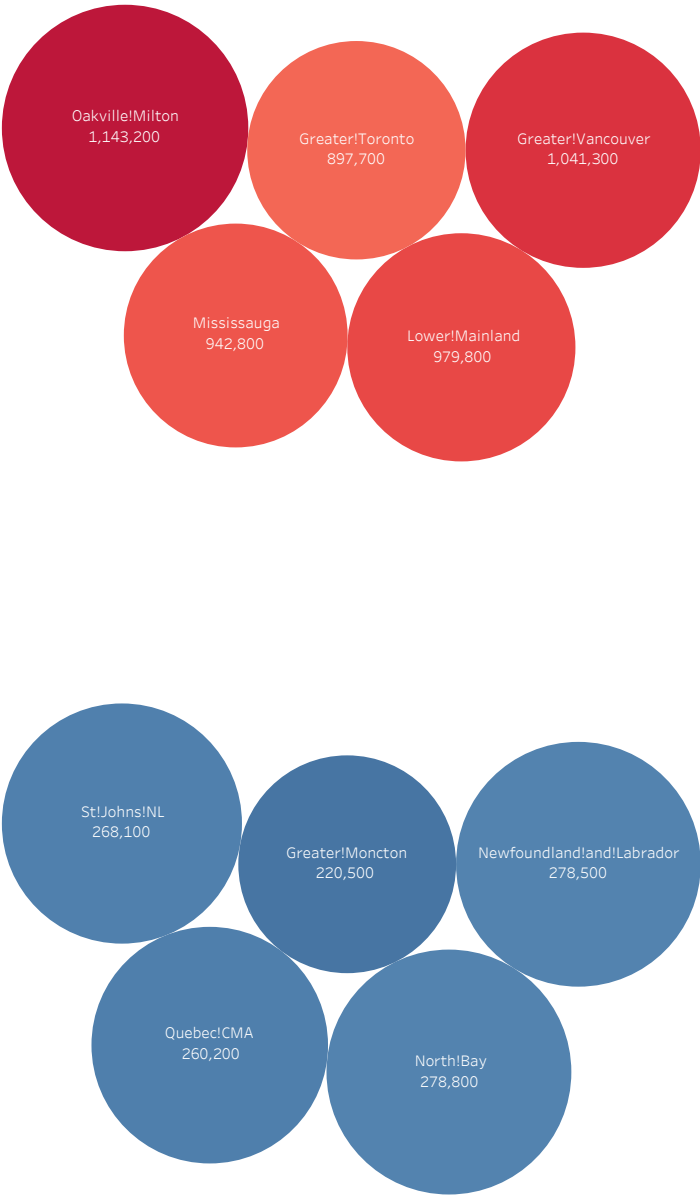
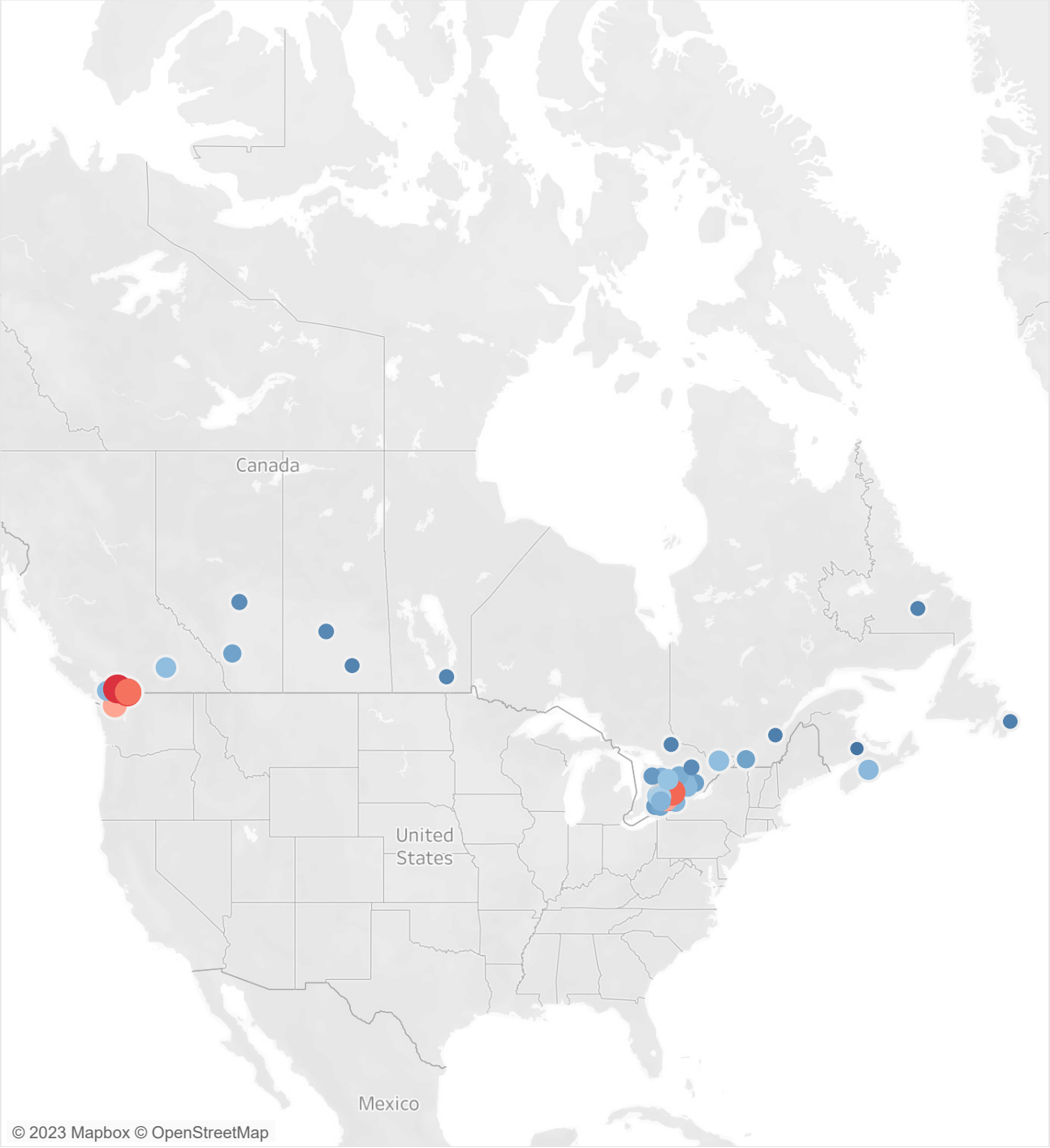


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Observations:

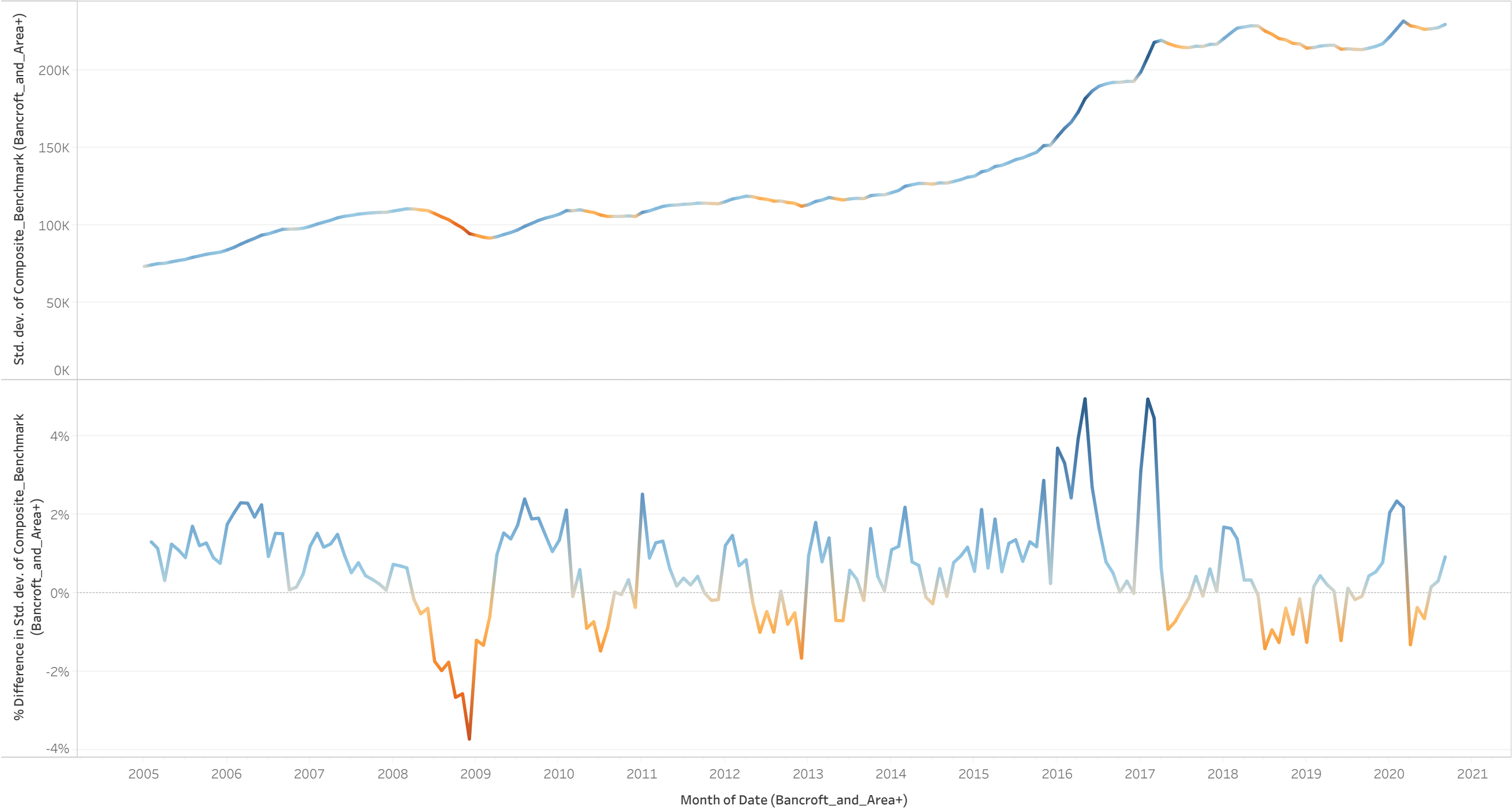
- Most of regions with expensive homes in 2020 tended to be concentrated in two main areas (around the southwest corner of BC and southern Ontario)
- Most of the regions with more affordable housing in 2020 were more spread out in the eastern part of Canada
- The gap between most expensive region and least expensive region was nearly \$900,000!

- Bancroft!and!Area
- Barrie!and!District
- Brantford!Region
- Calgary
- Cambridge
- Edmonton
- Fraser!Valley
- Greater!Moncton
- Greater!Toronto
- Greater!Vancouver
- Grey!Bruce!Owen!Sound
- Guelph!and!District
- Hamilton!Burlington
- Huron!Perth
- Kawartha!Lakes
- Kitchener!Waterloo
- Lakelands
- London!St!Thomas
- Lower!Mainland
- Mississauga
- Montreal!CMA
- Newfoundland!and!Labrador
- Niagara!Region
- North!Bay
- Northumberland!Hills
- Oakville!Milton
- Okanagan!Valley
- Ottawa
- Peterborough!and!Kawarthas
- Quebec!CMA
- Quinte!and!District
- Regina
- Saskatoon
- Simcoe!and!District
- Southern!Georgian!Bay
- St!Johns!NL
- Tillsonburg!District
- Vancouver!Island



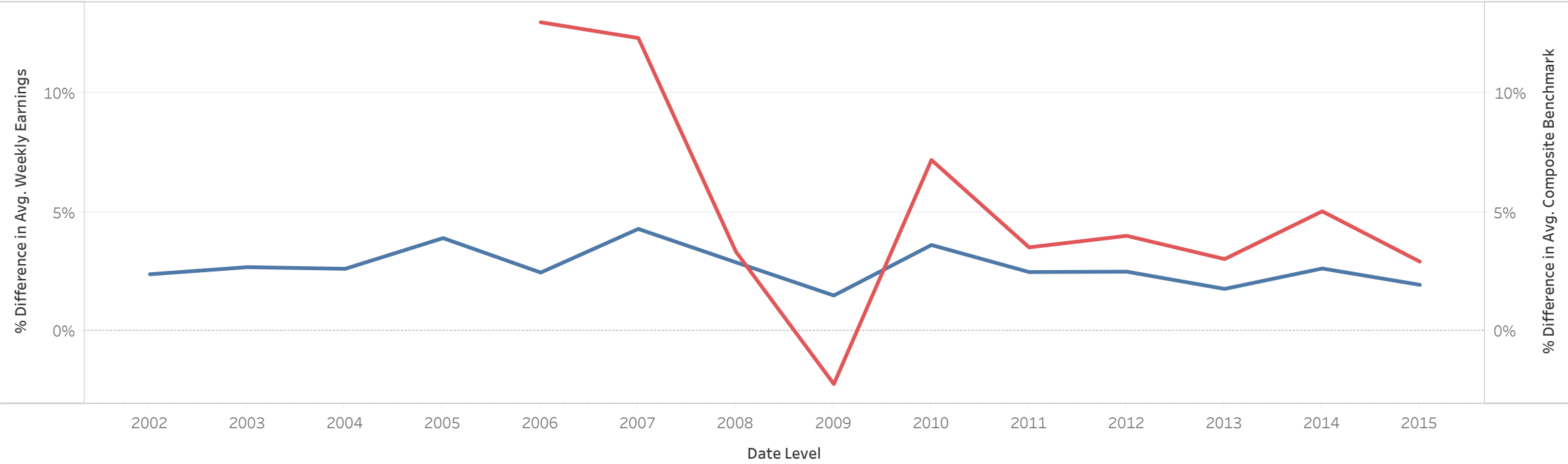
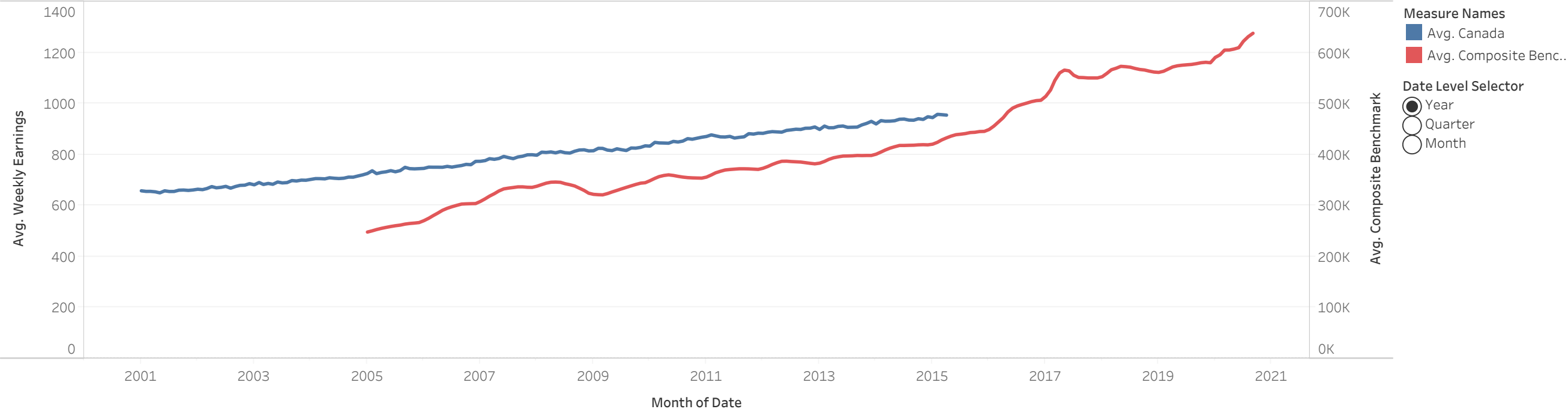
Observations:

- The price differences between districts increased at a slow and steady rate prior to 2015
- One moderate period of decrease that lasted from 2008 to 2009
- Two sharp increases occurred, once in 2016 and once in 2017



Observations:

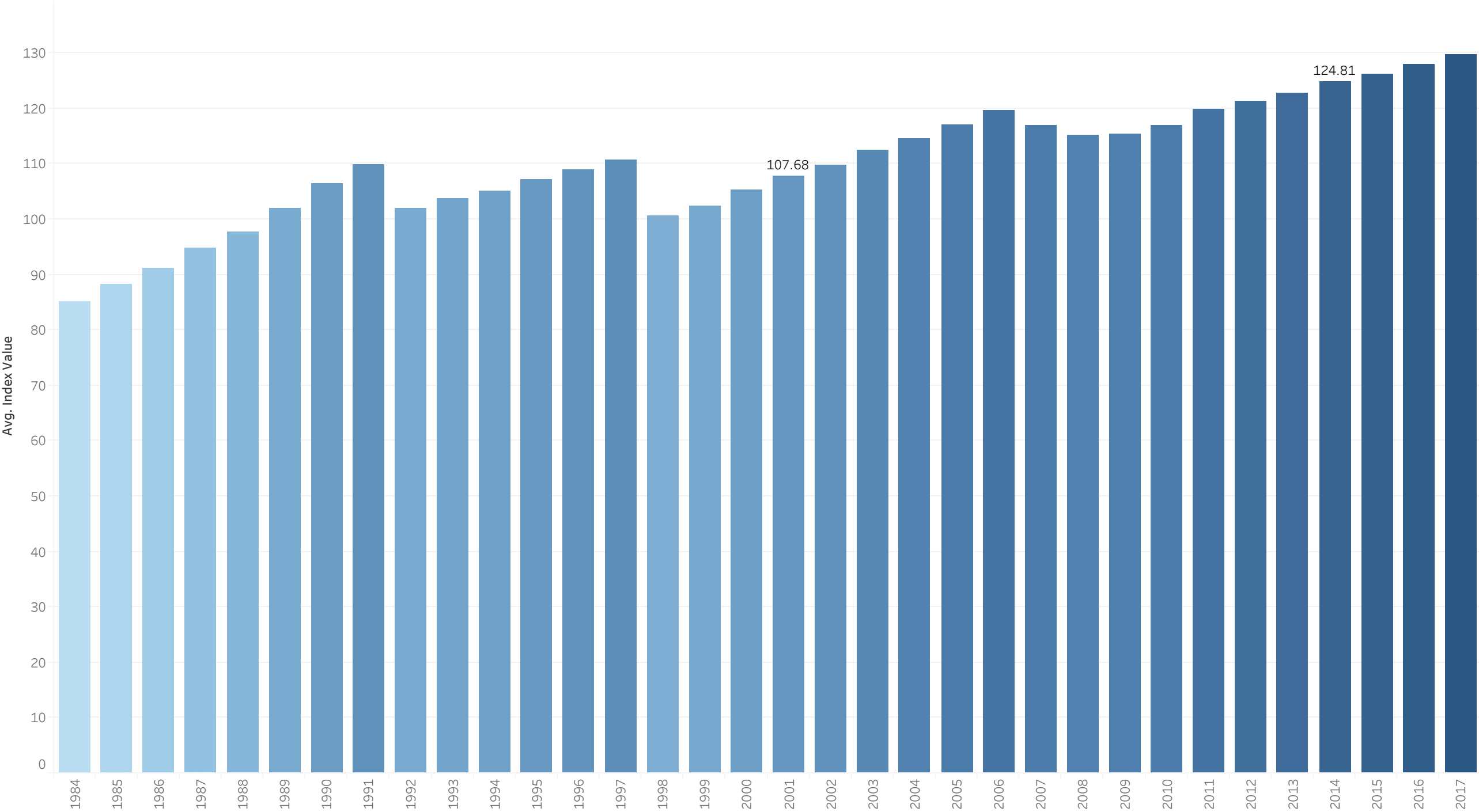
- Both house prices and weekly earnings have steadily increased over time
- House prices had a large dip in 2009 and large increase in 2017
- The rate of change for house prices and weekly earnings show that house prices increased at much higher rates than earnings for the most part



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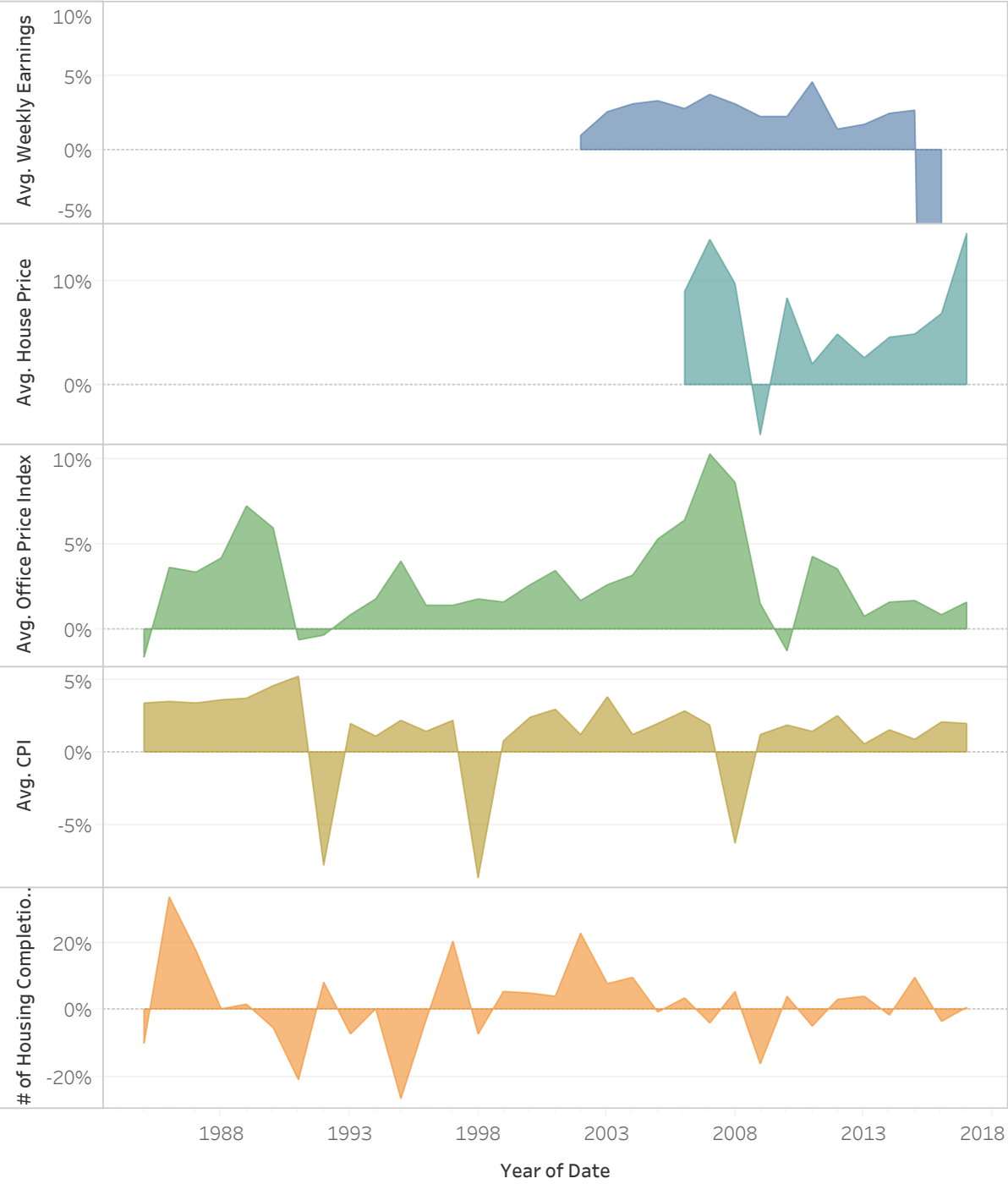
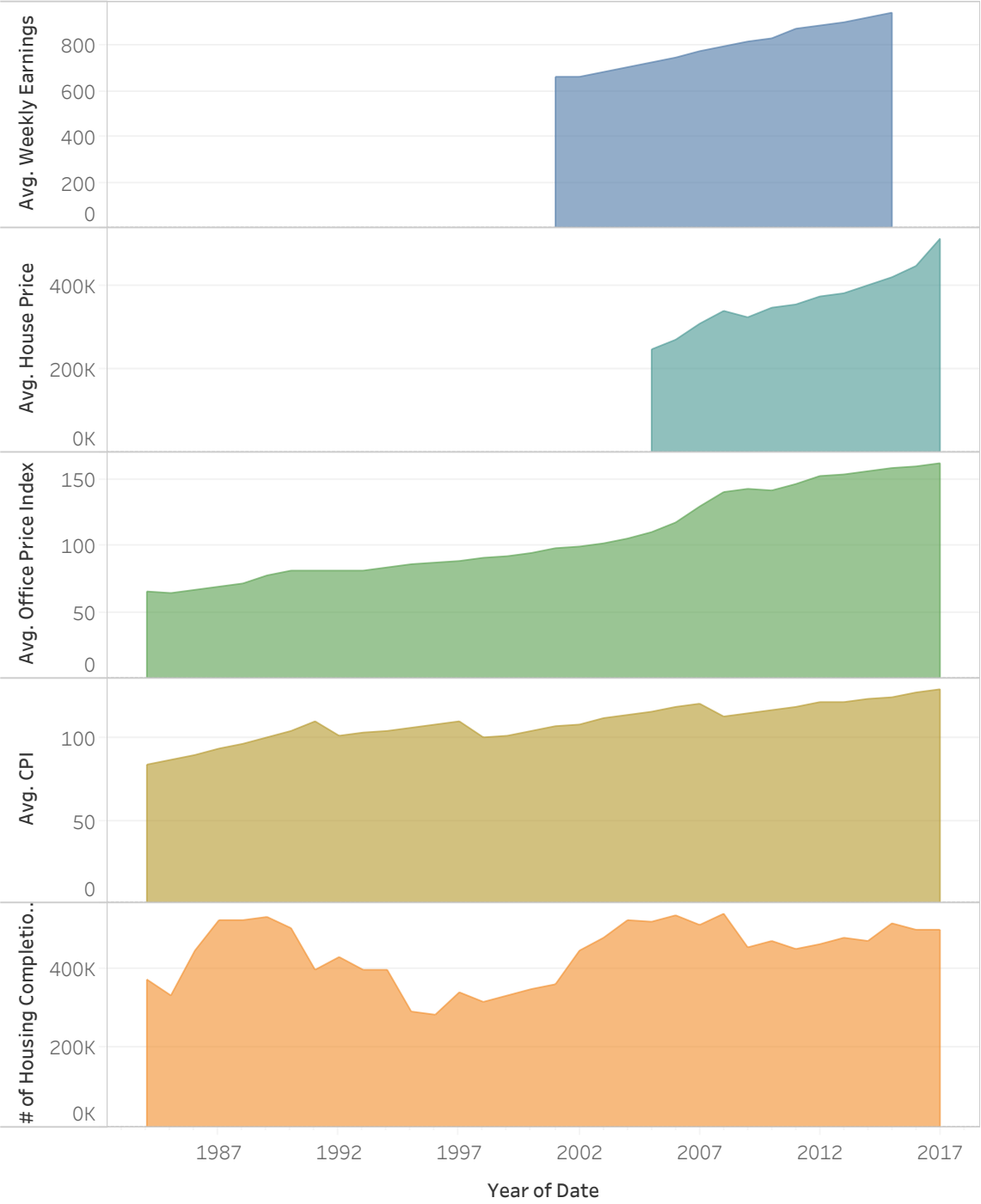
Observations:

- CPI increased over time, with some dips
- CPI of 2014 is roughly 16% higher than 2001's CPI



Observations:

- Black Monday (1987): No negative effect on average office price index or CPI, number of housing constructions lessened
- Recession (early 90's): Large drop in number of housing constructions, CPI and office price index
- Dot com bubble burst (early 00's): No negative effect on office price index, CPI, or number of houses built
- Financial crisis ('07-'09): Growth rate of weekly earnings very slightly dropped, house prices briefly dropped before steadily increasing again, office price index growth rate sharply dropped and even shrank briefly, CPI dropped sharply before steadily growing again, number of houses built dropped before..

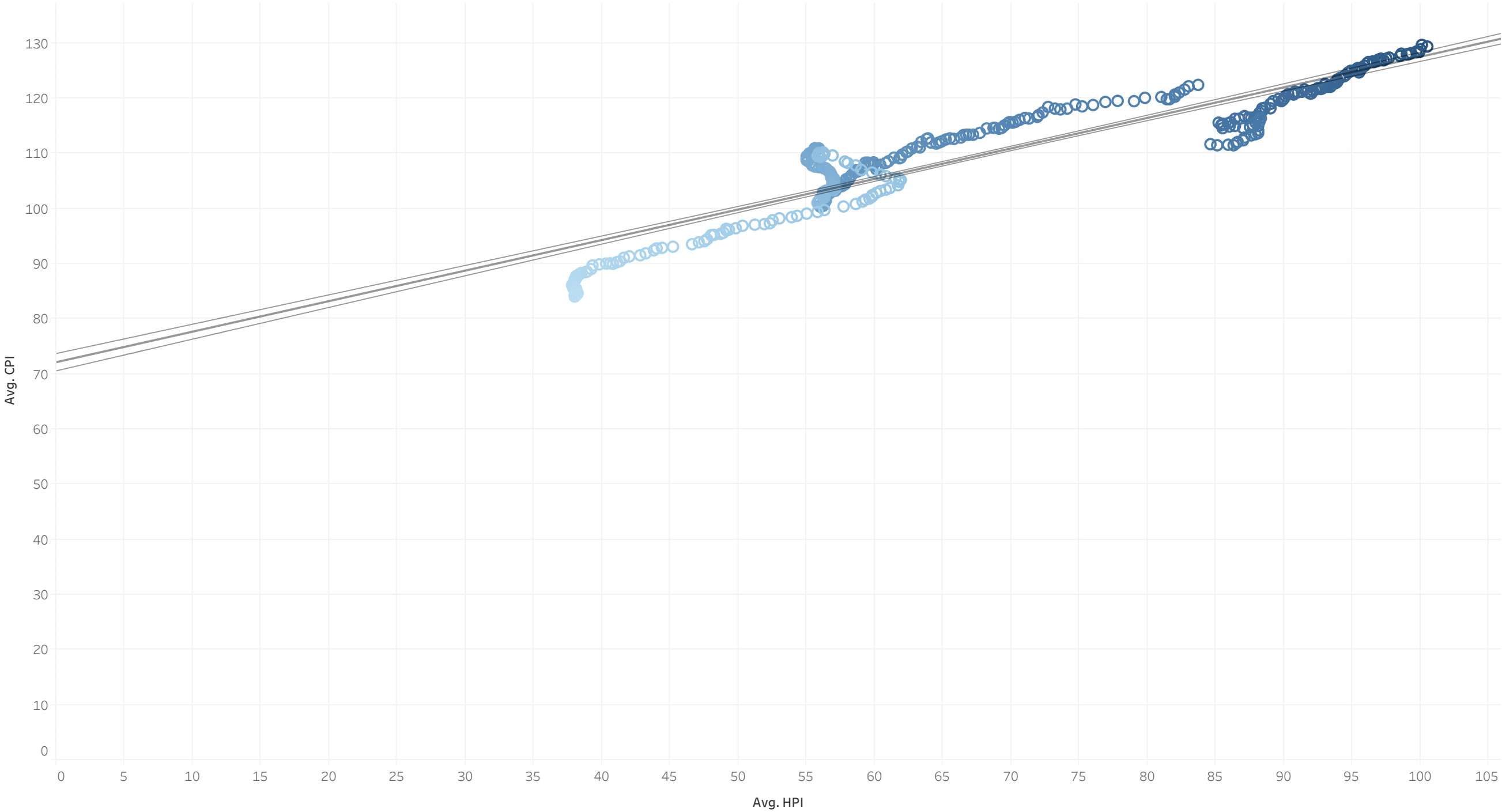


Year of Date
1981 to 2022

Observations:

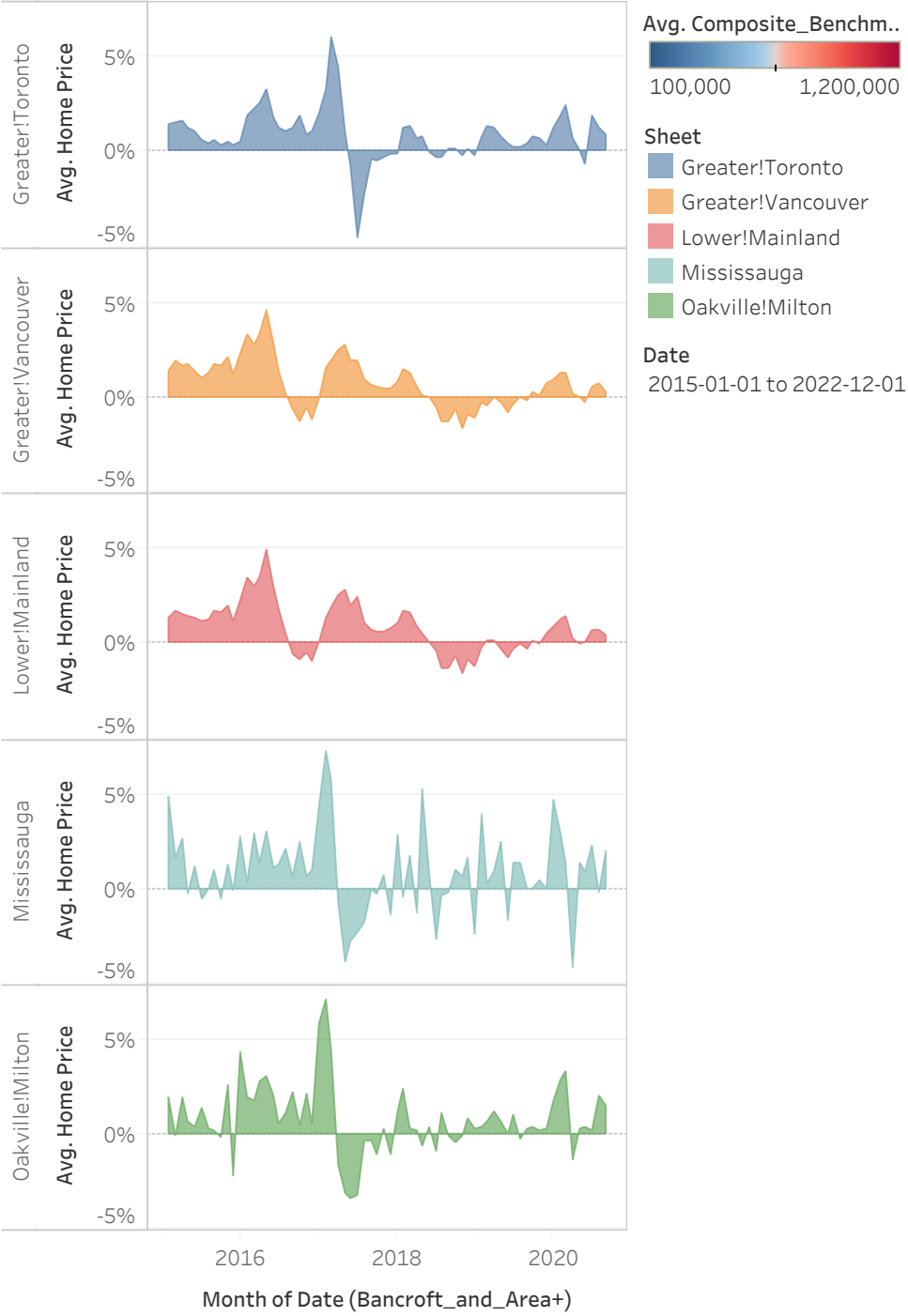
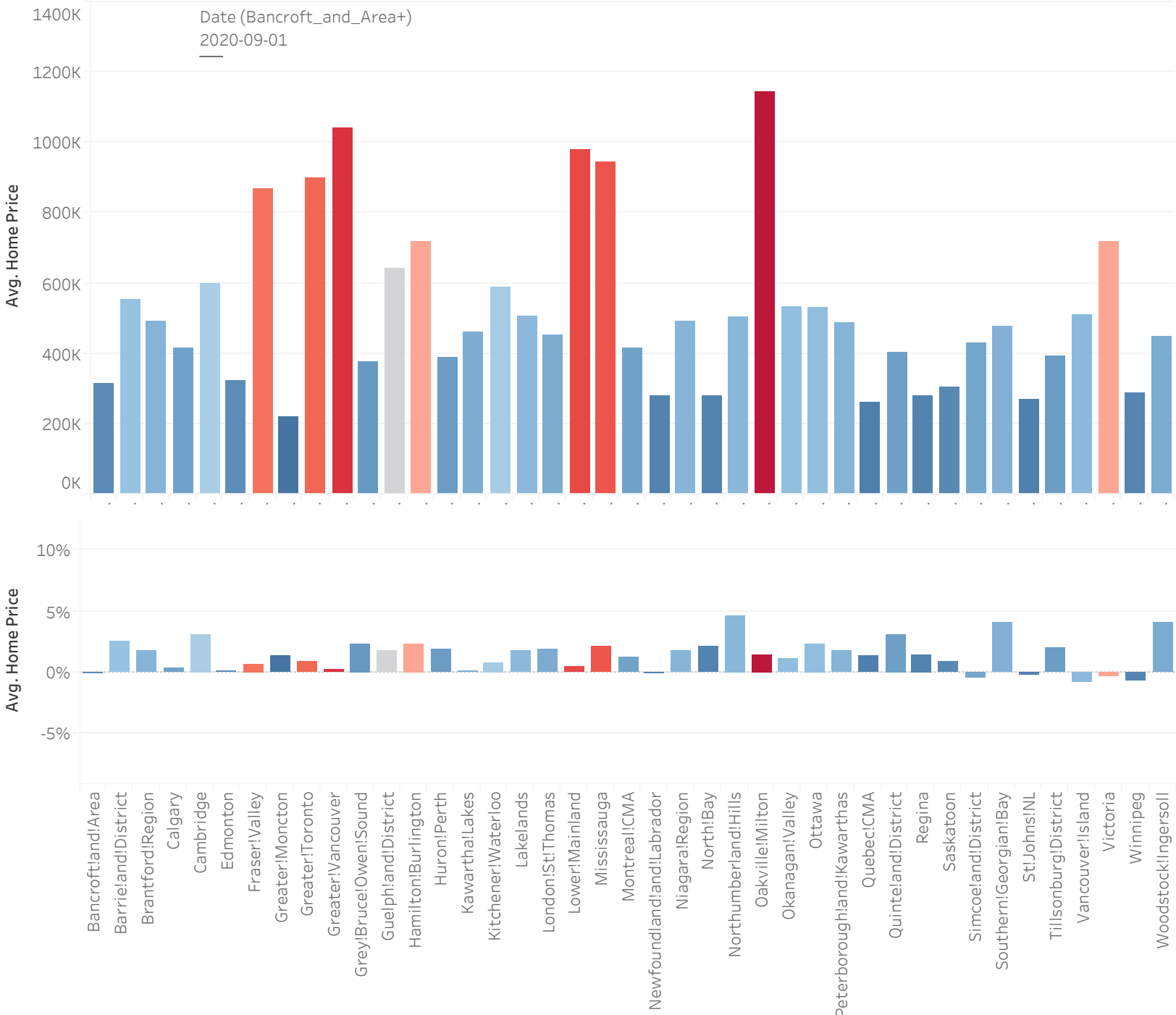
- Housing price index can be fairly reliably used to predict the consumer index

- R-squared value of 0.855 and P-value of less than 0.0001



Observations:

- Certain periods of very steep increases
- 5 most expensive at the end are Oakville, GTA, Mississauga, Vancouver, and the lower mainland area in BC
- The end of the dip in home prices over the west coast (at the end of 2016) almost coincides with the sharp increase in prices over in southern Ontario
- In 2017, home prices in the west coast started rising again, while they dropped in Southern Ontario
- After 2018, prices in these five regions changed (both increased and decreased) at a lower rate than the previous years



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Key Takeaways:

- The cost of home ownership has steadily increased in the last 40 years
- There were brief drops in home prices during certain key points in history (such as the recession in the early 90’s and in 2008)
- While earnings have also been steadily increasing, it is at a lower rate than that of the increase in house prices
- The price differences between regions widened at a greater rate after 2015, with large increases in home prices in the Southwestern BC area and Southern Ontario area
 - Further investigation into this cause is to be continued...

Conclusion:

- For prospective homeowners, the situation is more difficult than it was years ago as the rate at which housing prices are increasing are greater than that of earnings
- Real estate investors or homeowners that bought homes decades ago have made great returns on investment if they sold within the last few years