

**The Effects of Policy and Clustering in Alberta's Expanding Microbrewery Industry**

by

Stephanie Brianne Budynski

A thesis submitted in partial fulfillment of the requirement for the degree of

Master of Science

in

Agriculture and Resource Economics

Department of Resource Economics and Environmental Sociology  
University of Alberta

## **Abstract**

Historically, macrobreweries, such as Keith, Molson, Sleeman, and Labatt, have dominated Canada's brewery industry. However, in the late 1980s microbreweries began to emerge in communities across Canada. In Alberta, the number of microbreweries increased from 16 in 2012 to 80 in 2018 (Alberta Gaming and Liquor Commission, 2018). This growing trend of small, locally owned breweries is part of a larger local food movement that aims to reconnect and reduce the distance between production and consumption, in contrast with the globalized, industrialized food system.

A number of provincial level policies have been introduced in order to support and encourage the microbrewery industry in the Province of Alberta. This includes the introduction of a graduated tax rate: products from microbreweries in Western Canada were taxed at different rates depending upon the brewery's production volume. The graduated tax rate was replaced with a flat tax, and thereafter by the Government of Alberta's Alberta Small Brewers Development program. The most recent policy change in late 2018 has been a reversion to a graduated tax rate by volume of sales, but for breweries from all Canadian provinces. This thesis examines if policy changes are an effective means of stimulating growth within the microbrewery industry.

Calgary, Alberta is home to the 'Barley Belt' and 'Beermuda Triangle' – geographic clusters of numerous microbreweries. In other parts of Alberta there is evidence that microbreweries have emerged in geographic clusters. This thesis evaluates if and why microbreweries in the Province of Alberta exhibit geographic clustering.

The overall goal of this thesis is to identify factors that may have impacted the development of Alberta's microbrewery industry. The specific objectives are: *i) determine if the microbrewing industry in Alberta has exhibited geographic clustering, ii) determine if government policy has impacted the development of Alberta's microbrewery industry, and iii) determine what other factors have contributed to the success of the microbrewing industry in Alberta, specifically focusing on the City of Calgary and the City of Edmonton.* To carry out this research I utilized a combination of qualitative and quantitative methods. Semi-structured interviews, which included Likert scale and open-ended questions, were used to determine if particular factors have impacted the success of local breweries. Particular attention was given to regions that exhibit a clustering of microbreweries. Spatial-analysis methods were used to determine if and where geographic clustering of microbreweries occurred in Alberta. Porter's (1990; 1998; 2000) Diamond of National Advantage model, Kamath et al.'s (2012) Global Economic Management System (GEMS) model, and the Evolutionary Economic Geography serve as the theoretical background for the clustering analysis.

The quantitative analysis presented in this thesis determined that the following variables were correlated with the change in the number of microbreweries within a Census Subdivision between 2011 and 2016: population of a Census Subdivision in 2011; percent change in population within a Census Subdivision between 2011 and 2016 and percentage of the population in 2016 of a Census Subdivision that was between the ages of 20 to 34. The number of microbreweries in a Census Subdivision in 2011 was shown to have a negative effect on the change in number of microbreweries within a Census Subdivision between 2011 and 2016. This latter result suggests that the benefits from clustering were outweighed by the costs of local

market saturation. The results of the qualitative analysis from the City of Calgary and the City of Edmonton suggest that there has been clustering within Census Subdivisions that have attracted multiple new breweries.

The qualitative analysis also shows that microbreweries within the Province of Alberta have benefitted from provincial-level policies and programs. The removal of a minimum brewing requirement and the introduction of Alberta Small Brewers Development program have positively impacted the microbrewery industry across the Province of Alberta. In particular, the City of Calgary experienced substantial growth within their microbrewery industry while the City of Edmonton experienced slower growth. Using Porter's Diamond model and Kamath et al.'s GEMS model, this thesis finds that key factors between the two cities have differed and this likely contributed towards different patterns in the growth of microbreweries. The City of Calgary's microbreweries were shown to have stronger related and supporting industries and have benefited from a unique structure and strategy within the industry. In addition, the City of Calgary has benefitted from the following GEMS model factors: element of chance; anchor effect; and concentration of firms. Chance factors, such as the 1988 Winter Olympics and Calgary Stampede, have shown to have a positive impact on the City of Calgary's microbreweries in particular. The City of Calgary is also home to two anchor firms – Wild Rose Brewery and Big Rock Brewery; whereas, the City of Edmonton is home to one anchor firm – Alley Kat Brewing Company. This has potentially impacted the growth of microbreweries within each city. Furthermore, the City of Calgary has a high concentration of microbrewery firms and is home to distinct brewery districts (e.g., Beermuda Triangle, Barley Belt).

## **Preface**

This thesis is an original work by Stephanie Brianne Budynski. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, “Food Locally Embedded, Globally Engaged”, No. Pro00063666, March, 21, 2016. Revised October 11, 2017.

## **Acknowledgements**

I would like to thank my supervisors, Dr. Mary Beckie and Dr. Brent Swallow for their dedication to this project. Without their support and expertise, this project would not have been possible. Thank you for all that you have done.

I would like to thank the Government of Alberta and Alberta Agriculture and Forestry for the financial support that made this project possible. I would also like to acknowledge the financial and research support I have received from Food Locally Embedded Globally Engaged (FLEdGE) network. FLEdGE has provided me with the opportunity to further engage with individuals interested in local food systems research and this played an important role in the development of this thesis.

I would also like to thank my family members – my parents, Judy and Wayne, my sister, Kelsey, and my Grandma, Edith. This journey would not have been possible without your love and support. I would also like to thank my partner, Wesley, for always believing in me and never letting me give up on my dreams.

Finally, I would like to dedicate this thesis to my Grandpa, Peter Topma, who passed away before the completion of my thesis paper. Thank you for always pushing me to be the best student I could be and for always being the voice of reason that I needed. This one is for you Grandpa.

## Table of Contents

<b>Chapter One: Introduction .....</b>	<b>1</b>
<b>1.0 Introduction.....</b>	<b>1</b>
<b>1.1 Overall Goals and Thesis Objectives .....</b>	<b>5</b>
<b>1.2 Thesis Structure .....</b>	<b>6</b>
<b>1.3 Justification .....</b>	<b>7</b>
<b>1.4 Background Information .....</b>	<b>8</b>
1.4.1 A Global Based Perspective of the Microbrewing Industry .....	10
1.4.2 Canadian Microbrewing Industry .....	11
1.4.3 Alberta’s Microbrewery Industry .....	15
1.4.4 The Nature of the Microbrewing Industry .....	16
<b>1.5 Conclusion: Chapter One.....</b>	<b>18</b>
<b>References: Chapter One .....</b>	<b>18</b>
<b>Chapter Two: Literature Review .....</b>	<b>21</b>
<b>2.0 Literature Review of Clustering.....</b>	<b>21</b>
<b>2.1 The Beginnings of Clustering Research.....</b>	<b>21</b>
2.1.1 Active Clustering versus Co-location .....	22
<b>2.2 Michael Porter and Cluster Analysis .....</b>	<b>24</b>
2.2.1 Applying Porter’s Diamond Model to Different Geographic Scales.....	27
2.2.2 Evaluations of Porter’s Diamond Model .....	29
<b>2.3 Kamath et al. and the Global Economic Management System Model.....</b>	<b>30</b>
2.3.1 Benefits of Kamath et al.’s GEMS Model .....	33
<b>2.4 Advantages of Clusters .....</b>	<b>34</b>
<b>2.5 Clusters and Public Policy.....</b>	<b>36</b>
<b>2.6 Clustering and Food Systems.....</b>	<b>38</b>
<b>2.7 Clustering Conditions for Microbreweries.....</b>	<b>39</b>
<b>2.8 Research Methods for the Analysis of Clusters .....</b>	<b>46</b>
<b>2.9 Conclusion: Chapter Two .....</b>	<b>49</b>
<b>References: Chapter Two.....</b>	<b>50</b>
<b>Chapter Three: Quantitative Research .....</b>	<b>54</b>
<b>3.0 Introduction.....</b>	<b>54</b>
<b>3.1 Quantitative Methods .....</b>	<b>56</b>
<b>3.2 Quantitative Data.....</b>	<b>57</b>
<b>3.3 Quantitative Results.....</b>	<b>60</b>
3.3.1 Spatial Analysis Results.....	60
3.3.2 Regression Analysis Results .....	62
<b>3.4 Quantitative Conclusions .....</b>	<b>72</b>
<b>References: Chapter Three .....</b>	<b>74</b>
<b>Chapter Four: Qualitative Research.....</b>	<b>76</b>
<b>4.0 Qualitative Introduction.....</b>	<b>76</b>
<b>4.1 Qualitative Methods.....</b>	<b>77</b>
<b>4.2 Qualitative Results – Porter’s ‘Determinants of National Competitive Advantage’ – Diamond Model.....</b>	<b>82</b>
4.2.1 Firm Strategy, Structure, and Rivalry .....	82
4.2.2 Factor Conditions.....	83

4.2.3 Demand Conditions .....	88
4.2.4 Related and Supporting Industries .....	88
4.2.4a Related Industries .....	88
4.2.4b Supporting Industries .....	92
4.2.5 External Factors – Government and Chance .....	92
4.2.5a Legislation, Regulations, and Policies for Breweries in Alberta .....	98
4.2.5b: Zoning Bylaws in Alberta.....	105
4.2.6 Conclusions: Porter’s Diamond Model.....	110
4.2.6a Firm Structure, Strategy, and Rivalry .....	111
4.2.6b Factor Conditions.....	112
4.2.6c Demand Conditions.....	113
4.2.6d Related and Supporting Industries .....	114
4.2.6e Chance and Government .....	115
<b>4.3 Qualitative Results – Kamath et al.’s (2012) GEMS Model.....</b>	<b>116</b>
4.3.1 Historical Factors .....	117
4.3.2 Element of Chance.....	120
4.3.3 Anchor Effect.....	122
4.3.4 Business Climate.....	123
4.3.5 Industry Networks.....	125
4.3.6 Public Policy .....	126
4.3.7 Concentration of Firms .....	127
4.3.8 Innovation and Entrepreneurship.....	130
4.3.9 Conclusions: Kamath et al.’s GEMS Model.....	131
<b>References: Chapter Four .....</b>	<b>133</b>
<b>Chapter 5: Limitations and Conclusions .....</b>	<b>137</b>
<b>5.0 Conclusions.....</b>	<b>137</b>
5.0.1 Quantitative Conclusions .....	139
5.0.2 Qualitative Conclusions .....	140
<b>5.1 Limitations and Future Research.....</b>	<b>142</b>
<b>References: Chapter Five.....</b>	<b>143</b>
<b>References .....</b>	<b>144</b>
<b>Appendix A: List of Microbreweries in Alberta as of June 14, 2018.....</b>	<b>152</b>
<b>Appendix B: Map of Alberta Census Subdivisions.....</b>	<b>156</b>
<b>Appendix C: Microbrewery Survey .....</b>	<b>158</b>
<b>References: Appendix.....</b>	<b>164</b>



## List of Figures

Figure 1.1: Map of Alberta Microbreweries (up to the end of 2017) .....	4
Figure 1.2: Composition of the United States Brewing Industry, 2012- 2017 .....	11
Figure 1.3: The Supply Chain for Beer in Canada.....	12
Figure 1.4: The Economic Impact of Canada's Beer Economy, 2016.....	13
Figure 1.5: Fiscal Impacts of Canada's Beer Economy, 2016 .....	14
Figure 2.1: Porter’s (1990) Diamond Model .....	25
Figure 2.2: Spatial Scale of Competitive Advantage and Governance.....	29
Figure 2.3: Kamath et al.’s (2012) GEMS Model .....	31
Figure 2.4: Instruments used in Cluster Policy.....	37
Figure 2.5: The Elements of Collaboration and Alonso et al.'s Findings – A Conceptualization	44
Figure 2.6: Quantitative and Qualitative Dimensions of the Cluster Life Cycle.....	48
Figure 2.7: Dimensions of Clusters .....	49
Figure 3.1: Number of Breweries in Alberta between 2011 and 2017 .....	54
Figure 3.2: Number of Breweries in Calgary, 1985-2017 .....	55
Figure 3.3: Number of Breweries in Edmonton, 1994-2017 .....	56
Figure 3.4: Moran’s I, Spatial Autocorrelation Report.....	61
Figure 3.5: Number of Breweries in 2011 vs. Log Population in 2011.....	64
Figure 3.6: Number of Breweries in 2016 vs. Log Population in 2016.....	64
Figure 4.1: Map of Microbreweries in the Province of Alberta, City of Edmonton, and City of Calgary (up to the end of 2017) .....	81
Figure 4.2: Results – Access to Input Ingredients for Brewing, Calgary and Edmonton.....	86
Figure 4.3: Results – Access to Locally Sourced Input Ingredients for Brewing, Calgary and Edmonton.....	87
Figure 4.4: Results – Positive Policy Impact of the Provincial Government, Edmonton and Calgary.....	93
Figure 4.5: Results – Negative Policy Impact of the Provincial Government, Edmonton and Calgary.....	94
Figure 4.6: Results – Funding and Grant Opportunities Provided by the Provincial Government, Edmonton and Calgary .....	95
Figure 4.7: Results – Municipal-Level Positive Policies, Calgary and Edmonton.....	97
Figure 4.8: Results – Municipal-Level Negative Policies, Calgary and Edmonton .....	98
Figure 4.9: Results –Removal of Minimum Brewing Requirement, Calgary and Edmonton....	100
Figure 4.10: Results – Minimum Brewing Requirement as a Barrier to Entry, Calgary and Edmonton.....	101
Figure 4.11: Results – ASBD Program versus Graduated Tax, Calgary and Edmonton.....	103
Figure 4.12: Results – Evaluating the Success of the ASBD Program, Calgary and Edmonton	104
Figure 4.13: Results – Zoning Regulations as a Barrier to Microbreweries, Calgary and Edmonton.....	108
Figure 4.14: Results – Addressing Zoning Regulations for Microbreweries, Calgary and Edmonton.....	109
Figure 4.15: Results – Impact of a Change in Zoning Regulations for Microbreweries, Calgary and Edmonton .....	110
Figure 4.16: Macrobreweries versus Microbreweries in Alberta .....	119

Figure 4.17: Results – Locating Near Other Microbreweries, Calgary and Edmonton..... 129

### **List of Tables**

Table 3.1: List of Variables and Description .....	59
Table 3.2: The Breakdown of the Number of Breweries, 2011 and 2016 for All Census Subdivisions in Alberta.....	62
Table 3.3: The Increase in the Number of Microbreweries between 2011 and 2016 for All Census Subdivisions in Alberta.....	63
Table 3.4: Descriptive Statistics at Census Subdivision Level.....	65
Table 3.5: Poisson Model with Change in Number of Breweries per Census Subdivision as Dependent Variable, 2011 to 2016 .....	67
Table 3.6: Incidence Response Ratios, Model I and Model II.....	68
Table 4.1: List of Breweries Interviewed and Location .....	80

## List of Equations

Equation 3.1: Moran's I .....	57
Equation 3.2: Poisson Regression, Model I .....	66
Equation 3.3: Poisson Regression, Model II.....	66

## Chapter One: Introduction

### 1.0 Introduction

Microbreweries are capturing headlines across the Province of Alberta. Recent rulings on beer markups and subsidies have pushed the Alberta beer industry into the spotlight. In October 2015, the Government of Alberta introduced a graduated tax structure for beer products. Breweries producing in the New West Partnership<sup>1</sup> region – British Columbia, Alberta and Saskatchewan – were taxed \$0.10 to \$1.25 per litre depending on the size of the brewery. On the other hand, breweries from outside the New West Partnership region – regardless of the brewery size – were taxed a standard rate of \$1.25 per litre. In July 2016, the Government of Alberta made changes to the taxation structure of beer products and implemented a standardized rate of \$1.25 per litre regardless of the production or geographic location of the brewery. This change in taxation was quickly followed by the introduction of the Government of Alberta’s Alberta Small Brewers Development (ASBD) Program which provided funding opportunities for eligible small-scale breweries.

A substantial amount of controversy followed the introduction of Alberta’s beer taxation structures and the ASBD Program. Beer importer, Artisan Ales, launched a complaint with the Agreement on Internal Trade (AIT), based upon the original tax markup structure and the ASBD Program. In July 2017, a panel of Canada’s AIT ruled in favor of Artisan Ales and stated that the ASBD Program was in violation of Canadian trade agreements. The AIT concluded that the graduated tax structure and the ASBD program were “inconsistent with Article 403 and 1005 of

---

<sup>1</sup> The New West Partnership region involves the New West Partnership Trade Agreement (NWPTA). This is an accord between the Governments of Manitoba, Saskatchewan, Alberta, and British Columbia and the accord creates the largest barrier-free, interprovincial market in Canada.

the AIT” and that “Artisan Ales, as well as others importing beer into Alberta or brewing beer for import into Alberta, including Saskatchewan breweries, have suffered injury due to the measures at issue” (Agreement on Internal Trade, 2018, p.4).

Although faced with criticism, the ASBD Program has provided the Alberta microbrewing industry with a substantial amount of financial support. The ASBD Program provided Alberta small-scale brewers with nearly \$16 million in funding during 2016 and 2017 (Government of Alberta, 2017a). The number of breweries and brewpubs in the Province of Alberta continued to grow and by February 2017 there were 51 brewers and brewpubs operating within the Province. From these trends, it appears that the ASBD Program has been successful in supporting the establishment of microbreweries in Alberta. As previously stated, the ASBD has faced criticism, both within the Province of Alberta and from other provinces in Canada. However, despite an increase in opposition to the ASBD Program, the Government of Alberta continues to support Alberta microbrewers. At the Alberta Craft Brew Convention in March 2017, Alberta’s Finance Minister, Joe Ceci, announced that the Government of Alberta would be adding an additional \$25 million dollars to the ASBD Program for the 2018 fiscal year (Government of Alberta, 2017).

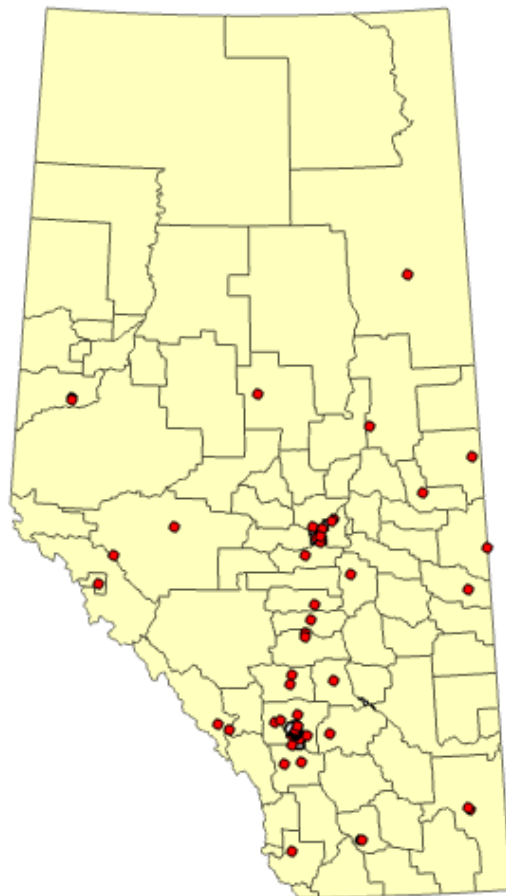
Furthermore, in June 2018, a Court of Queen’s Bench judge ruled that the Province of Alberta must pay restitution of \$2.1 million to Steam Whistle Brewing in Toronto and Great Western Brewing in Saskatoon (Healing, 2018). The judge had concluded that the subsidies under the ASBD Program created trade barriers to those breweries outside of the Province of Alberta (Healing, 2018). As a direct result of these ruling, Alberta’s Finance Minister, Joe Ceci, also announced that the ASBD Program would be repealed as of December 15, 2018 in order to

adhere to Canadian trade law (Healing, 2018). The Government of Alberta has since responded with a graduated markup ranging from 10 to 60 cents per litre for brewers that produce less than 50,000 hectolitres per year. This lower markup will apply to all small brewers, no matter where they are from. At the same time, the Alberta government is challenging the Government of Ontario for applying higher storage and receiving fees to out of province wine, beer and liquor (CBC,2019).

Starting with the removal of the minimum brewing requirement, the Alberta provincial government has attempted to stimulate growth within Alberta's brewing industry. The removal of a minimum brewing requirement removed the need for large amounts of needed upfront capital in order to establish a brewery in the Province of Alberta. Undoubtedly, this removal has helped the microbrewing industry in Alberta grow. Furthermore, in 2015, the New Democratic Party (NDP) government began to examine how regulations directly impacted Alberta's microbrewing industry and therefore the NDP party has made a variety of policy changes in order to better support Alberta microbreweries (Foster, 2017). These provincial policy changes included allowing brewers to sell at farmers' markets, relaxing rules surrounding brewery tap rooms, and offering marketing support to the Alberta Small Brewers' Association (Foster, 2017). However, Foster (2017) argues that the most important policy was the change in beer mark-up structures and then the implementation of the ASBD Program. The growth in the number of microbreweries in Alberta between 2016 and 2017, 56 to 73, perhaps suggest that this policy change may have been successful in stimulating growth within the industry. Furthermore, at the municipal-level there has been changes in zoning bylaws that have impacted the microbrewing industry in the City of Calgary and the City of Edmonton.

Figure 1.1 depicts a map of all the breweries in Alberta that have begun operation between 1985 and June 14, 2018. As shown by this map, particular areas within Province of Alberta have a higher incidence of microbreweries than other areas. Most of the new breweries are located around Calgary and Edmonton, and the corridor area between. Appendix A provides a list of all microbreweries within the Province of Alberta up to January 31<sup>st</sup>, 2017. This includes the microbrewery name, address, and the year of establishment.

Figure 1.1: Map of Alberta Microbreweries (up to the end of 2017)



Source: Author's own figure based on AGLC (2018) data

Within Chapter One of this thesis, I will describe the thesis goal and objectives. Next, I will provide background information on microbreweries. This will include a global, national, and

provincial history of microbrewing. In this chapters I will justify why this research was conducted and the contributions this research will make towards microbrewery research. Lastly, in this chapter I will describe the quantitative and qualitative methods that will be used.

## **1.1 Overall Goals and Thesis Objectives**

To my knowledge, there has been no previous academic study that has examined the rapid growth of the microbrewing industry in Alberta. The overall goal of this thesis will be to identify factors that may have impacted the development of Alberta’s microbrewery industry. This will be done by addressing the following aspects: *i) determine if the microbrewing industry in Alberta has exhibited geographic clustering, ii) determine if government policies have impacted the development of Alberta’s microbrewery industry, and iii) determine what other factors have contributed to the success of the microbrewing industry in Alberta, specifically focusing on the City of Calgary and the City of Edmonton.*

In order to meet these objectives, I will use a combination of quantitative and qualitative methods. First, quantitative methods will be used to determine if factors, such as average age, average income, unemployment rate, population size, change in population size, percentage of the population that is considered a ‘millennial’, and percentage of the population that is considered a ‘baby boomer’, have influenced the change in the number of breweries within a Census Subdivision<sup>2</sup> between 2011 and 2016. In addition, spatial analysis is performed in order to determine if the number of breweries in one Census Subdivision influences the number of

---

<sup>2</sup> As per Statistics Canada (2016), a Census Subdivision is defined as “the general term for municipalities (as determined by provincial/territorial legislation) or areas treated as municipal equivalents for statistical purposes (e.g., Indian reserves, Indian settlements and unorganized territories). Municipal status is defined by laws in effect in each province and territory in Canada”.



breweries in the Census Subdivision in which it surrounds. Second, the thesis presents the results of qualitative analysis of factors affecting the growth of the microbrewing industries in the City of Edmonton and the City of Calgary. A series of interviews, using a semi-structured format, were conducted with participants in the microbrewing industry in both cities. These results will be interpreted using the clustering frameworks of Porter's (1990; 1998; 2000) Diamond of National Advantage Model and Kamath et al.'s (2012) Global Economic Management System Model. These models are discussed in-depth in Chapter Two, where a literature review is provided, and Chapter Four, where the qualitative analysis will utilize the frameworks provided by both these models.

## **1.2 Thesis Structure**

The remainder of Chapter One provides a justification for this research with a background and history of the global, national, and provincial microbrewery industry. Chapter Two provides a background on agglomeration economies, Porter's (1990; 1998; 2000) Diamond of National Advantage Model, and Kamath et al.'s (2012) Global Economic Management System Model. Criticisms of Porter's model by other scholars is examined to provide justification as to why Kamath et al.'s model was also used in the analysis of microbreweries in the City of Calgary and the City of Edmonton. In addition, Chapter Two highlights previous literature that has examined the geographic clustering of microbreweries in the United States and discusses supply- and demand-side factors that may influence the microbrewery industry. Chapter Three presents an analysis of quantitative data to examine the microbrewery industry across the Province of Alberta. This analysis incorporates the role of demographic characteristics (e.g., age, population, income) of areas within the Province of Alberta and also includes spatial analytics of Census

Subdivisions. Chapter Three will also describe the variables and methodological approach used within the quantitative analysis of this thesis. Chapter Four presents an analysis of qualitative evidence, collected with breweries in the City of Calgary and the City of Edmonton, to further inform and better understand the quantitative findings that were are found in Chapter Three. Chapter Four uses data collected through in-person interviews with those involved directly in Alberta's microbrewing industry (e.g., brewery managers, owners, and head brewers). I use a semi-structured interview format, including Likert scale statements and open-ended questions, in order to establish relationships between Alberta's microbrew industry and Porter's (1990; 1998a; 1998b; 2000) Diamond Model and Kamath et al.'s (2012) Global Economic Management System Model. Chapter Four will also provide a further explanation of the qualitative methods that were used in this thesis. Finally, Chapter Five presents a discussion of the limitations of this research, draws conclusions from the results of the study, and provides suggestions for future research.

### **1.3 Justification**

Research on microbreweries in Canada is extremely limited, and to my knowledge, there are no published academic studies that examine Alberta's growing microbrewery industry. Most existing research on this topic has been based on breweries within the United States. In this thesis, I will aim to address the current gap in the literature.

This thesis is a timely analysis of the microbrewery industry in Alberta. The Government of Alberta has invested a substantial amount of fiscal support towards Alberta's microbrewing industry and has amended tax structures to provide greater support to microbreweries within the

province. The provincial government has also implemented programs, such as the ASBD Program, to provide financial support for small-scale brewers. However, these programs have come at a cost, with other stakeholders within the Canadian microbrewing industry disputing the legality of these programs and amendments. Despite strong opposition, the Government of Alberta continues to offer their support to small-scale, microbrewers in the Province of Alberta.

Olds College has acknowledged and responded to the growth in Alberta's microbrewing industry by establishing a Brewmaster and Brewery Operations Management program (Olds College, n.d.[a]). Olds College states that the "rising popularity of microbrew houses and products, specialty beer-making workshops, and beer-tasting events continues to generate growth in the brewing scene and gives the Brewmaster and Brewery Operations Management program broad spectrum appeal" (Olds College, n.d.[b]).

This evidence indicates that government and educational institutions have acknowledged the growth and potential for success within the Alberta microbrewing industry. In this thesis, I examine these and other the factors that may have contributed to the success of the craft brewing industry in Alberta.

#### **1.4 Background Information**

The Brewers Association (2016a) defines American craft brewers as small, independent and traditional. According to the Brewers Association (2016a), there are four distinct market segments in the craft beer industry – brewpubs, microbreweries, regional craft breweries, and

contract brewing companies. The Brewers Association (2016a) defines a microbrewery, as defined as:

“A brewery that produces less than 15,000 barrels (17,600 hectoliters) of beer per year with 75 percent or more of its beer sold off-site. Microbreweries sell to the public by one or more of the following methods: the traditional three-tier system (brewer to wholesaler to retailer to consumer); the two-tier system (brewer acting as wholesaler to retailer to consumer); and, directly to the consumer through carry-outs and/or on-site tap-room or restaurant sales” (Brewers Association, 2016a)

A brewpub is defined as:

“A restaurant-brewery that sells 25 percent or more of its beer on site. The beer is brewed primarily for sale in the restaurant and bar. The beer is often dispensed directly from the brewery’s storage tanks. Where allowed by law, brewpubs often sell beer “to go” and /or distribute to [off-site] accounts” (Brewers Association, 2016a)

A contract brewery is defined as:

“A business that hires another brewery to produce its beer. It can also be a brewery that hires another brewery to produce additional beer. The contract brewing company handles marketing, sales and distribution of its beer, while generally leaving the brewing and packaging to its producer-brewery (which, confusingly, is also sometimes referred to as a contract brewery)” (Brewers Association, 2016a)

A regional craft brewer is “[a]n independent regional brewery with a majority of volume in “traditional” or “innovative” beer(s).

For this thesis, I will be using the term microbrewery. However, I will be using the Brewers Association’s (2016a) definition of microbrewery, brewpub, and contract brewery as a singular entity encompassed through the term microbrewery. In Alberta, the Alberta Gaming and Liquor

Commission (AGLC) makes no distinction between these three definitions, but rather classifies them by what type of license they hold. A brewery that holds Class E Liquor Licence<sup>3</sup> may be a microbrewery, brewpub, or contract brewery under the definitions provided by the Brewers Association (2016a). In this thesis I will therefore simply refer to the group as a microbrewery.

#### ***1.4.1 A Global Based Perspective of the Microbrewing Industry***

Globally, the United States is often accredited with the beginnings of the microbrewery industry (Maier, 2013, p.135). The prohibition era ended in 1933 and the first new brewery to be established post-prohibition was a microbrewery, opening in 1976, called New Albion Brewing (Maier, 2013, p.135). Other countries have experienced similar trends in the microbrewery industry; for example, in the United Kingdom demand side conditions spurred a reform in the microbrewery industry as British consumers began to demand lagers versus traditional British ales (Maier, 2013, p.136).

As of 2017, the United States was home to 6,266 craft breweries, 202 were regional craft brewers, 3,812 were microbreweries, and 2,252 were brewpubs (Brewers Association, 2018). Between 2016 and 2017, microbreweries experienced the most growth (19.3%), followed by brewpubs (10.3%), and regional craft brewers (8.6%). Figure 1.2 displays the composition of the United States brewing industry from 2012 to 2017.

---

<sup>3</sup> The AGLC (n.d.) defines a holder of a Class E Liquor License as “[a] A distiller, vintner or brewer commercially manufactures, blends and packages beverages that contain spirits, wine or beer. The manufacturer has a permanent facility

Figure 1.2: Composition of the United States Brewing Industry, 2012- 2017

	2012	2013	2014	2015	2016	2017	'16 to '17 % Change
<b>CRAFT</b>	<b>2,420</b>	<b>2,898</b>	<b>3,739</b>	<b>4,544</b>	<b>5,424</b>	<b>6,266</b>	<b>+ 15.5</b>
Regional Craft Breweries	97	119	135	178	186	202	+ 8.6
Microbreweries	1,143	1,471	2,076	2,626	3,196	3,812	+ 19.3
Brewpubs	1,180	1,308	1,528	1,740	2,042	2,252	+ 10.3
<b>LARGE NON-CRAFT</b>	<b>23</b>	<b>23</b>	<b>26</b>	<b>30</b>	<b>51</b>	<b>71</b>	
<b>OTHER NON-CRAFT</b>	<b>32</b>	<b>31</b>	<b>20</b>	<b>14</b>	<b>16</b>	<b>35</b>	
<b>Total U.S. Breweries</b>	<b>2,475</b>	<b>2,952</b>	<b>3,785</b>	<b>4,588</b>	<b>5,491</b>	<b>6,372</b>	<b>+ 16.0</b>

Source: Brewers Association, 2018

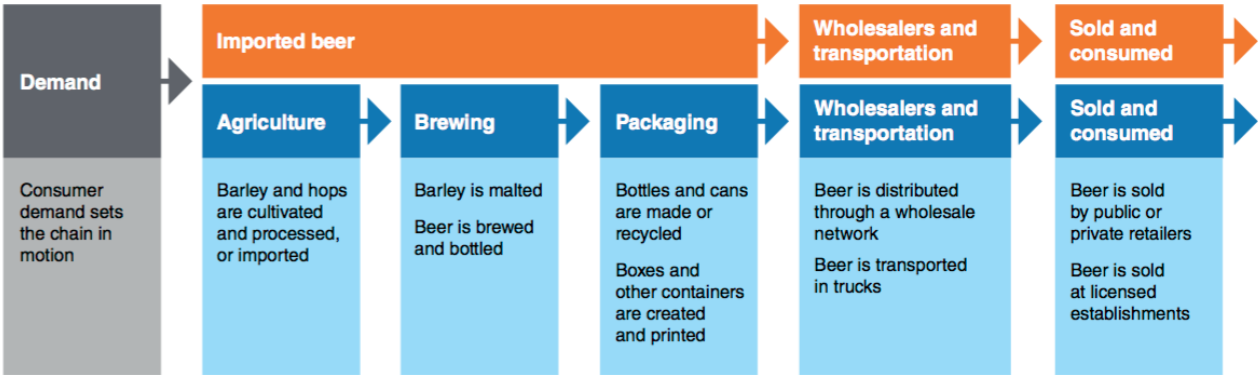
### ***1.4.2 Canadian Microbrewing Industry***

The brewing industry is one of Canada’s oldest industries and today, beer is Canada’s most popular alcoholic beverage (Beer Canada, n.d.), with Canadian brewers holding an 85 percent share of the domestic beer market. Moreover, the Canadian brewing industry is a large contributor to the Canadian economy; in 2016 the beer industry contributed \$13.6 billion towards Canada’s GDP (Beer Canada, n.d.). One in every 120 jobs is supported, either indirectly or directly, by the brewing industry; with 149,000 brewery specific jobs and labour income of approximately \$5.3 billion (Beer Canada, n.d.).

Canada has access to some of the world’s best beer brewing inputs including malt barley and fresh water supplies, as well as workforce educated in brewing processes (Beer Canada, n.d.). As shown in Figure 1.3, the brewing industry in Canada involves a relatively straight forward supply

chain, that includes agriculture (inputs), brewing (production), packaging (processing), transport, wholesale (distribution) and retail.

Figure 1.3: The Supply Chain for Beer in Canada



Source: The Conference Board of Canada, 2018, p.3

However, it is important to note that in Canada the total consumption of beer has declined by 10 percent over the last decade. The decline in consumption may be accredited to a variety of factors, including: increased competition within the beverage market (e.g., alcoholic and non-alcoholic beverages); changes in demographics, and any economic factors that may impact the price of beer products (e.g., increase in price of malt barley, increase in provincial taxes for beer products (The Conference Board of Canada, 2018, p.4).

In 2016, 47 percent of the average price of beer was due to taxes and liquor board markups (The Conference Board of Canada, 2018, p.1). Figure 1.4 exhibits the economic impact of Canada’s beer industry in 2016, with provincial and territorial breakdown of the brewing industry’s contribution towards Canada’s GDP. Figure 1.5 exhibits the fiscal impacts of Canada’s beer economy in 2016. As previously noted, the brewing industry contributed over \$13.6 billion

towards the Canadian economy in 2016. Alberta’s brewing industry contributed \$1.5 billion towards Canada’s GDP, the third highest provincial contribution (The Conference Board of Canada, 2018, p.7). More specifically, Alberta’s brewing industry contributed over \$59.8 million towards Canada’s labour income (The Conference Board of Canada, 2018, p.7). In terms of employment, the brewing industry in Canada in 2016 employed 148,788 and in Alberta, the brewing industry employed 13,482 people (The Conference Board of Canada, 2018, p.7).

Figure 1.4: The Economic Impact of Canada's Beer Economy, 2016

### **Economic Impact of Canada’s Beer Economy, 2016**

(GDP and labour income, \$ 000s; jobs, number)

	<b>GDP</b>	<b>Labour income</b>	<b>Jobs</b>
Newfoundland and Labrador	307,612	101,337	2,639
Prince Edward Island	50,725	15,578	656
Nova Scotia	351,183	122,413	4,120
New Brunswick	320,179	124,776	3,349
Quebec	3,155,941	1,473,781	43,365
Ontario	5,158,068	1,905,545	52,435
Manitoba	387,877	127,302	4,097
Saskatchewan	440,483	146,723	4,564
Alberta	1,572,071	598,439	13,482
British Columbia	1,788,287	687,146	19,370
Yukon	25,909	11,993	401
Northwest Territories	22,418	7,185	210
Nunavut	8,527	4,026	100
<b>Canada*</b>	<b>13,589,289</b>	<b>5,326,252</b>	<b>148,788</b>

\*includes the sum of provinces/territories plus Canadian territorial enclaves abroad

Source: The Conference Board of Canada, 2018, p.7

In addition to economic impacts, the Canadian brewing industry also provides fiscal impacts at the federal, provincial and municipal level, as shown in Figure 1.5. Over \$1.85 billion in federal



tax revenue was contributed by the Canadian brewing industry in 2016 (The Conference Board of Canada, 2018, p.9). The overall provincial tax revenue from the brewing industry during that same year was just under \$3.5 billion, and the total municipal tax revenue was over \$377 million (The Conference Board of Canada, 2018, p.9 (The Conference Board of Canada, 2018, p.9). Alberta's beer industry, alone, contributed over \$239 million in federal taxes, over \$307 million in provincial taxes, and over \$27 million in municipal taxes (The Conference Board of Canada, 2018, p.9).

Figure 1.5: Fiscal Impacts of Canada's Beer Economy, 2016

### **Fiscal Impacts of Canada's Beer Economy, 2016**

(\$ 000s in taxes)

	<b>Federal</b>	<b>Provincial</b>	<b>Municipal</b>	<b>Total</b>
Newfoundland and Labrador	41,110	101,303	3,143	145,555
Prince Edward Island	7,293	21,359	243	28,895
Nova Scotia	52,157	139,961	7,967	200,085
New Brunswick	40,244	100,973	4,446	145,663
Quebec	456,539	672,884	74,126	1,203,549
Ontario	642,108	1,359,672	214,026	2,215,806
Manitoba	60,975	144,690	8,243	213,908
Saskatchewan	61,539	135,782	5,628	202,949
Alberta	239,051	307,406	27,905	574,362
British Columbia	248,112	498,973	31,328	778,413
Yukon	3,650	6,037	454	10,142
Northwest Territories	3,074	8,831	263	12,168
Nunavut	962	522	102	1,586
<b>Canada*</b>	<b>1,856,814</b>	<b>3,498,392</b>	<b>377,874</b>	<b>5,733,080</b>

\*includes the sum of provinces/territories plus Canadian territorial enclaves abroad

Source: The Conference Board of Canada, 2018, p.9

### ***1.4.3 Alberta's Microbrewery Industry***

Between 2011 and 2017, the number of breweries in Alberta had grown dramatically. In 2011, Alberta was home to 10 microbreweries. By 2017, the number of microbreweries increased to 73. My interest in development of microbreweries as a part of the local food trend was motivated by previous work in which we examined eight regions in Canada to determine what factors are most important to the success of local food systems (Budynski et al. (2018)<sup>4</sup>. In this research, four key themes emerged as being particularly important to the success of local food systems across Canada: (1) rural farmland conservation and urban agriculture; (2) food safety; (3) food processing; and (4) government and governance.

I analyzed the four key themes above and applied them specifically to the microbrewery industry in Alberta. Three of the themes remained relevant to a study of the microbrewery industry – food safety, food processing, government and governance. However, the theme of rural farmland conservation and urban agriculture was altered in order to relate more specifically to the microbrewery industry. Zoning bylaws, rather than rural farmland conservation and urban agriculture, was used as a key theme in this paper in order to more accurately analyze the microbrewery industry.

---

<sup>4</sup> Budynski et al. (2018) examined eight regions across Canada (Annapolis Valley, Nova Scotia; Gaspésie Region, Quebec; Waterloo Region, Ontario; Thunder Bay Region, Ontario; Winnipeg Region, Manitoba; Saskatoon Region, Saskatchewan; The City of Vancouver, British Columbia; Whitehorse, Yukon. This paper aimed to identify policies and/or programs which have acted as enablers to the success of local food systems within the eight aforementioned region within Canada. Nine areas of study were identified as having the potential to influence local food systems. These areas of study included: rural farmland conservation and urban agriculture; food safety; marketing, market channels, and infrastructure; finance; incentive programs and the role of education; food processing; aggregation; institutional sourcing; and government and governance.

#### ***1.4.4 The Nature of the Microbrewing Industry***

The Brewers Association (2016b) states that innovation is the trademark of the craft beer and microbrew industries. In addition, the Brewers Association (2016b) states that “[c]raft brewers interpret historic styles with unique twists and develop new styles that have no precedent”.

Although craft beer is usually made with traditional brewing ingredients (e.g., malt barley, hops, water, and brewer’s yeast), microbrewers will often include non-traditional and unique ingredients in order to add distinctness to their brews (Brewers Association, 2016b).

Schnell and Reese (2014) argue that the appeal of microbrews stems from consumers’ desire to connect with place and therefore microbreweries often employ marketing strategies that speak to the locality of their product (p.167). Microbreweries may utilize ale names and visual marketing to speak to the notion of localism, which in turn aims to develop local identities and loyalties (Schnell and Reese, 2014, p.167). Furthermore, Schnell and Reese argue that growth within the microbrewing industry marks a change in consumer preferences (p.168). Schnell and Reese state that microbreweries mainly produce much more traditional European beers (e.g., hoppier, darker ales); whereas, the macrobrewers or ‘industry giants’ produce paler lagers (p.168). As such, Schnell and Reese argue that the proliferation of microbreweries within the United States marks a change in consumer preferences as many consumers have now moved away from pale lager consumption (p.168). In addition, Schnell and Reese argue that the consumption of microbreweries products marks a consumer’s connections with local settings, economies, and

communities (p.168). The authors state that this connection is a part of a larger movement of neolocalism<sup>5</sup>.

Furthermore, microbreweries are able to ease competition through product differentiation (Nilsson et al., 2018, p.122). In economics or business analysis, product differentiation may be defined as “the real or illusory distinction between competing products in a market” (Collins Dictionary). For microbreweries, differentiation in beer products allows for microbreweries to reap benefits from locating near other microbreweries while not competing as strongly on their product price (d’Aspremont, Jaskold, and Thisse 1979; De Palma et al. 1985). Nilsson et al. (2018) state that the clustering of microbreweries also aids in the development of tourist destinations (p.122). Breweries may drive consumers, both locals and visitors, to visit particular geographic locations in order to sample multiple products from multiple breweries (Nilsson et al., 2018, p.122).

The brewing industry may be considered value-added agriculture as the process of brewing involves the conversion of agricultural products (e.g., hops, barley) into beer products (Berning and McCullough, 2017, p.1). Hops and malt barley are important to the brewing industry. In addition, other grains – such as wheat, corn, or rice – may also be used as a primary ingredients or adjuncts in the brewing process (Berning and McCullough, 2017, p.2). Malted grain, or malt extract, are a value-added product and hop extracts, or condensed pellets, are a value-added products of raw hops process (Berning and McCullough, 2017, p.2). Furthermore, as the brewing industry has transitioned from macrobrewers to microbrewers, the demand for differentiated

---

<sup>5</sup> Schnell and Reese (2014) define neolocalism as a “conscious attempt of individuals and groups to establish, rebuild, and cultivate local ties, local identities, and increasingly, local economies” (p.168).

ingredients has also changed. For example, malted grain were once considered the staple of brewing, however, unmalted grain (e.g., corn, rice, wheat, and barley) have been used by microbrewers to balance their brewing processes process (Berning and McCullough, 2017, p.2).

### **1.5 Conclusion: Chapter One**

This Chapter has introduced the topic of my thesis, outlined my goal and thesis objectives, and gave a brief summary of the global, national, and provincial level microbrewing industry. Since 2011, the Province of Alberta has witnessed a rapid growth in the number of breweries and some geographic locations, such as the City of Edmonton and the City of Calgary, have witnessed a particularly large number of microbrewery openings. In Chapter Two, previous microbrewery literature is examined and a literature review of Porter's (1990; 1998; 2000) Diamond of National Advantage model and Kamath et al.'s (2012) Global Economic Management System model is provided.

### **References: Chapter One**

AGLC. (n.d.). Class E. Retrieved from <https://aglc.ca/liquor/liquor-licences/class-e>

Agreement on Internal Trade. (2018). Appeal of the Report Of The Panel in the Dispute Between Artisan Ales Consulting Inc. and The Government Of Alberta Regarding Mark-Ups On Beer. Retrieved from <https://www.cfta-alec.ca/wp-content/uploads/2018/06/GOA-vs.-Artisan-Ale-appeal-report-Final.pdf>

Beer Canada. (n.d.). Economic Impact of Beer. Retrieved from <https://industry.beercanada.com/economic-impact-beer>

Berning, J., & McCullough, M. P. (2017). The US Brewing Industry from Farm to Pint. *Choices*, 32(3), 1-7.

- Brewers Association. (2018). Number of Breweries. Retrieved from <https://www.brewersassociation.org/statistics/number-of-breweries/>
- Brewers Association. (2016a). Craft brewer defined. <https://www.brewersassociation.org/statistics/craft-brewer-defined/>
- Brewers Association. (2016b). Today's craft beer lovers: Millennials, women and Hispanics. 15 August 2016. <https://www.brewersassociation.org/communicating-craft/understanding-todays-craft-beer-lovers-millennials-women-hispanics/>
- Budynski, S. Map of Alberta Microbreweries (up to the end of 2017) [map]. Scale Not Given. "The Effects of Policy and Clustering in Alberta's Expanding Microbrewery Industry." November 2018. (November 9, 2018). Using: *ArcGIS* [GIS software]. Version 10.0. Edmonton, AB: 2018.
- Budynski, S., J. Kowalski, K. Pierzchajlo, B. Swallow, and M. Beckie. (2018). Cross-Canada Review of the Policy Landscape for Local and Place-Based Foods in Canada. Department of Resource Economics and Environmental Sociology. University of Alberta.
- CBC (2019). The year in beer: strong growth and a heady future for Alberta's craft scene. CBC News (<https://www.cbc.ca/news/canada/edmonton/edmonton-alberta-craft-beer-1.4968128>, accessed 16 January 2019).
- Carroll, G. R., & Wheaton, D. R. (2009). The organizational construction of authenticity: An examination of contemporary food and dining in the US. *Research in Organizational Behavior*, 29, 255-282.
- d'Aspremont, C., Gabszewicz, J. J., & Thisse, J. F. (1979). On Hotelling's "Stability in competition". *Econometrica: Journal of the Econometric Society*, 1145-1150.
- De Palma, A., Ginsburgh, V., Papageorgiou, Y. Y., & Thisse, J. F. (1985). The principle of minimum differentiation holds under sufficient heterogeneity. *Econometrica: Journal of the Econometric Society*, 767-781.
- Foster, J. (2017, November 22). Politics of Brew. VUE Weekly. Retrieved from <http://www.vueweekly.com/politics-of-brew/>
- Government of Alberta (2017, March 29). *More support brewing for Alberta's liquor industry*. Retrieved from <https://www.alberta.ca/release.cfm?xID=465640EF51E8D-F1AC-F22F-AE52F6096A39A242>

- Healing, D. (2018, November 26). Alberta declares beer-trade fight with Ontario over access to liquor stores. *The Globe and Mail*. Retrieved from <https://www.theglobeandmail.com/business/article-alberta-declares-beer-trade-fight-with-ontario-over-access-to-liquor/>
- Maier, T. (2013). Selected aspect of the microbreweries boom. *Agris on-line Papers in Economics and Informatics*, 5(4), 135.
- Nilsson, I., Reid, N., & Lehnert, M. (2018). Geographic Patterns of Craft Breweries at the Intraurban Scale. *The Professional Geographer*, 70(1), 114-125.
- Olds College. (n.d.[a]). Olds College Brewery. Retrieved from <https://www.oldscollege.ca/shopoc/brewery/index.html>
- Olds College. (n.d.[b]). Brewmasters & Brewery Operations Management. Retrieved from <https://www.oldscollege.ca/programs/service-industry/brewmaster/index.html>
- Schnell, S. M., & Reese, J. F. (2014). Microbreweries, place, and identity in the United States. In *The geography of beer* (pp. 167-187). Springer, Dordrecht.
- Statistics Canada. (2016). Census subdivision (CSD). Retrieved from <https://www12.statcan.gc.ca/census-recensement/2011/ref/dict/geo012-eng.cfm>
- The Conference Board of Canada. (2018). *Brewing Up Benefits: The Economic Footprint of Canada's Beer Economy*. Retrieved from [https://www.conferenceboard.ca/temp/34f15666-867a-446d-be36-5803fc8b2230/9329\\_Brewing\\_BR](https://www.conferenceboard.ca/temp/34f15666-867a-446d-be36-5803fc8b2230/9329_Brewing_BR)

## **Chapter Two: Literature Review**

### **2.0 Literature Review of Clustering**

This literature review introduces the key concepts associated with geographic clustering, also referred to as agglomeration economies, particularly drawing upon the work of Porter (1990; 1998a; 1998b; 2000) and Kamath et al. (2012) for the theoretical basis for this thesis. Concepts of clustering and agglomeration economies will be examined. Then a brief summary of the seminal works of Porter (1990; 1998a; 1998b; 2000) and Kamath et al. (2012) will be provided. In the sections following, additional literature will be drawn upon in order to distinguish between geographic and active clustering, and to examine the role of clustering in food systems, the benefits of clustering and the relationship between clustering and public policy.

### **2.1 The Beginnings of Clustering Research**

Alfred Marshall (1890) first discussed the concept of clustering when he proposed the theory of ‘localisation economies’. Marshall (1920) furthered his work on industrial districts by identifying three reasons for industry clustering. First, there are benefits from pooling resources, especially labor (Marshall, 1920; Kamath et al., 2012). Second, clustering plays a role in developing information flow between firms and people (Marshall, 1920; Kamath et al., 2012). Third, clustering provides improved access to specialized inputs (Marshall, 1920; Kamath et al., 2012).

Agglomeration economics is closely linked to the study of clustering. Agglomeration economics stems from the field of geographical economics, which aims to “explain why economic activities choose to establish themselves in some particular places” (Thisse, 2011, p.141). Agglomeration



economics identify and analyze “the benefits that come when firms and people locate near one another together in cities and industrial clusters” (Glaser, 2010, p.1). Agglomeration economies benefit from reduced transportation costs (e.g., goods, people, ideas) and the “only real difference between a nearby firm and one across the continent is that it is easier to connect with a neighbor” (Glaser, 2010, p.1). Furthermore, Ellison et al. (2010) states that firms may receive benefits by locating in particular geographic locations (p.12). For example, firms may reduce costs associated with selling and buying goods by locating near customers or suppliers, firms may take advantage of a large pool of employees by locating near other firms, or firms may reduce the cost of accessing new knowledge and innovations by locating near other firms (Ellison et al., 2010, p.12).

Clustering theory is also related to the work of Harold Hotelling (1929). Hotelling’s Law is also referred to as the principle of minimum differentiation and may provide insight into why firms locate in close proximity to one another (Ridley, 2012). For example, Ridley (2012) states that firms may choose to locate near one another in order to attract consumers who are traveling to a nearby firm. Ridley also states that Hotelling’s Law offers two key insights into firm behavior. First, firms, despite price pressures, tend to locate near other rival firms (Ridley, 2012). Second, a change in prices does not necessarily cause consumers to move from one firm to another due to product differentiation by the two firms (Ridley, 2012).

### ***2.1.1 Active Clustering versus Co-location***

It is important to note the distinction between active clustering and co-location of firms. As Beckie et al. (2012) note, there is “a distinction between spatial agglomeration or co-location and

active clustering” and “[f]irms may be located near one another but have little interaction, sharing of ideas or resources” (p.336). As a result, active clustering, opposed to co-location, can be characterized by factors such as collaborative and competitive forces, interaction and functional relationships, and knowledge sharing (Beckie et al., 2012, p.336).

Furthermore, Johansson and Forslund (2008) state that firms cluster in a particular place because they have something in common (p.4). The authors state that these commonalities may include: resource endowments that are available in the location, input suppliers that are present in the location, or customers that are accessible from that location (Johansson and Forslund, 2008, p.4). Additionally, Johansson and Forslund (2008) argue that the clustering of firms within the same industry may be attributed to two forms of clusters: clustering of input-selling firms and clustering of input-buying firms (p.5). Clustering of input-selling firms is defined as “many firms that supply differentiated and distance-sensitive products to a locally concentrated demand for these inputs” (Johansson and Forslund, 2008, p.5). Inputs may also include services and knowledge (Johansson and Forslund, 2008, p.5). Clustering of input-buying firms is defined as “clustering of firms producing differentiated product varieties in a given place” and “firms are attracted to stay in this particular place, because this place has a concentrated supply of distant-sensitive inputs that the firms demand” (Johansson and Forslund, 2008, p.5). In the case of the clustering of input-buying firms, “the co-location force is not primarily that the clustered firms produce the same kind of outputs, but that they use similar inputs” (Johansson and Forslund, 2008, p.5).

## 2.2 Michael Porter and Cluster Analysis

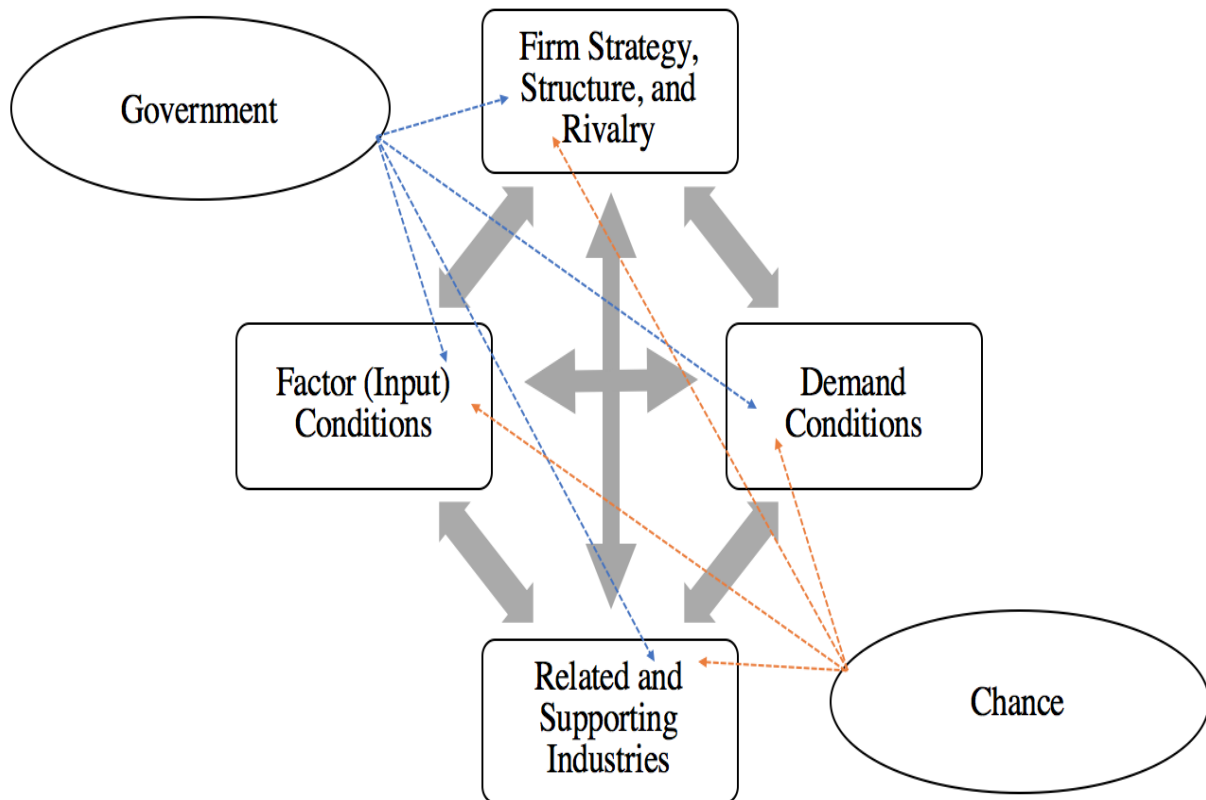
Michael Porter is a key figure in the development of cluster theory and analysis (1990, 1998a, 1998b, 2000). Porter (1998) originally defined a cluster as “a geographically proximate group of interconnected companies and institutions in a particular field, linked by commonalities and complementarities” (p.199), but he later extended this definition:

“geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (e.g., universities, standards agencies, trade associations) in a particular field that compete but also cooperate” (Porter, 2000, p.16)

Porter (1990) developed the Diamond Model in an attempt to understand “the competitive advantage of nations, or the national attributes that foster competitive advantage in particular industries, and the implications both for firms and for governments.”. This theory states that there are particular determinants of national success – firm structure, strategy, and rivalry, factor conditions, demand conditions, and related and supporting industries – that allow particular firms to have a locational competitive advantage (p.77).

In addition to these four determinants of success, Porter (1990), theorizes that there are two exogenous determinants – chance and government – affecting success. Porter’s (1990) Diamond Model implies that innovation and competitiveness are exhibited through the interaction of these four locational determinants and two exogenous determinants. Figure 2.1 depicts the interactions that exist between the aforementioned determinants.

Figure 2.1: Porter's (1990) Diamond Model



Source: Author's own figure based on Porter (1990)

As per Porter's (1990), firm strategy, structure, and rivalry are defined as "conditions in the nation governing how companies are created, organized, and managed, as well as the nature of domestic rivalry" (Porter, 1990, p.78).

The second attribute that Porter (1990) proposed is factor conditions. Factor conditions include those factors that directly impact production within a particular industry cluster, for example, the availability of land for to grow grapes for winery clusters. Furthermore, Porter (1990) states that

factor conditions, according to standard economic theory, would include the costs and quality of land, labor, natural resources, and capital infrastructure.

The third attribute that Porter (1990) proposed is demand conditions. Demand conditions may be defined as the demand for the particular industry's product or service. Furthermore, Porter (1998a) additionally considers demand conditions to include the level of sophistication of local consumers (p.90). Home demand conditions may result in a competitive advantage. For example, Porter (1990) argues competitive advantage is created for an industry when the industry is greater in size or more noticeable with a domestic market than in foreign markets (p.82). This is because a larger domestic market segment directly equates to more attention from a nation's companies (Porter, 1990, p.82). Furthermore, the nature of consumer demands may be responsible for creating competitive advantage. Porter (1990) states that if the demand of domestically-based buyers are the most sophisticated and demanding for the product or services then this provides information into consumers' desires (p.82). In that context, firms are compelled to meet advanced customer needs, improve and innovate products, upgrade, and advance their standards (Porter, 1990, p.82). Consequently, specific home demand may create a competitive advantage for firms within an industry.

The fourth attribute that Porter (1990, p.78) proposed are the related and supporting industries, which he defines as the existence, or likewise the non-existence, of industries that act as suppliers (e.g., malt barley producers) and those that are related (e.g., other microbreweries, microbrewery tourism companies). Porter (1998a) expands upon this definition and states that this factor is also impacted by the sophistication and size of related and supporting industries.

The extension of Porter's (1998a; 2000) definition of a cluster illustrates the important role that third parties, such as governments and universities, play in geographic clustering. Porter (1990) argues that governments should support the development of competitive advantage by encouraging change, promoting domestic rivalry, and stimulating innovation. Furthermore, Porter (1990) argues that there are specific policy approaches that government bodies should follow as they aim to gain competitive advantage for the industries they support. These policy approaches include: focus on specialized factor creation; avoid intervening in factor and currency markets; enforce strict product safety, and environmental standards; sharply limit direct cooperation among industry rivals; promote goals that lead to sustained investment; deregulate competition; enforce strong domestic antitrust policies; and, reject managed trade (Porter, 1990, 87-89). Clusters may help to inform policy making decisions. Porter (2000) argues that they may inform government bodies at the municipal, provincial, and federal levels about roles they will need to consider (p.16).

### ***2.2.1 Applying Porter's Diamond Model to Different Geographic Scales***

Porter (1995) states that although his original 1990 Diamond Model is applied to "relatively large geographic areas of nations and states [...] it is just as relevant to smaller areas such as the inner city". In the case of an inner city, the Diamond Model may be applied but "we must first identify the inner city's competitive advantages<sup>6</sup> and the ways inner city businesses can forge connections with the surrounding urban and regional economies". Furthermore, Porter (1997)

---

<sup>6</sup> Porter (1985) states that competitive advantage "grows fundamentally out of value a firm is able to create for its buyers that exceeds the firm's cost of creating it" (p.3). There are two types of competitive advantage: cost leadership and differentiation (Porter, 1985, p.3).

also utilizes the notions of economic development in order to apply the learnings to a city-level analysis. Stimson et al. (2006) contends that although Porter primarily focused upon the competitiveness of a nation, Porter's model may also be extended to provide understanding into the competitiveness of particular regions as well (p.208). This is demonstrated through regional-based studies of competitiveness which includes works by Daly and Roberts (1998), who examined the competitiveness of tradeable services in North Queensland, and Lewis (1993), who studied the competitiveness of Australia through a strategic management perspective.

Moreover, Raines (2001) argues that the spatial scale of competitive advantage within industries and the spatial scale of governance may be used concurrently in the policy analysis of clusters (p.4). Raines (2001) defines the spatial scale of competitive advantage within industries as "whether cluster development is conceived of in national terms or as localized/geographically-proximate sectoral groups" (p.4). On the other hand, Raines (2001) defines the spatial scale of governance as the "institutional level at which cluster policy is defined" (p.4). Figure 2.2 displays the matrix that is created with the spatial scale of competitive advantage and governance with the interaction of national and local-level policies. This figure may also be applied at a different scale with spatial scale of competitive advantage and governance with the interaction of municipal- or provincial-level and local-level policy. This matrix may help government bodies to decide when to take policy action on their own or when to encourage policy action by another level of government when a clustered industry is involved.

Figure 2.2: Spatial Scale of Competitive Advantage and Governance

		Spatial scale of competitive advantage	
		<i>National</i>	<i>Local</i>
Spatial scale of governance	<i>National</i>	<u>National advantage policy</u> National policy to improve national industrial competitiveness	<u>Centralized cluster policy</u> National policy to improve local industrial competitiveness
	<i>Local</i>	Local policy to improve national industrial competitiveness	<u>Decentralized cluster policy</u> Local policy to improve local industrial competitiveness

Source: Raines, 2001, p.4

### 2.2.2 Evaluations of Porter’s Diamond Model

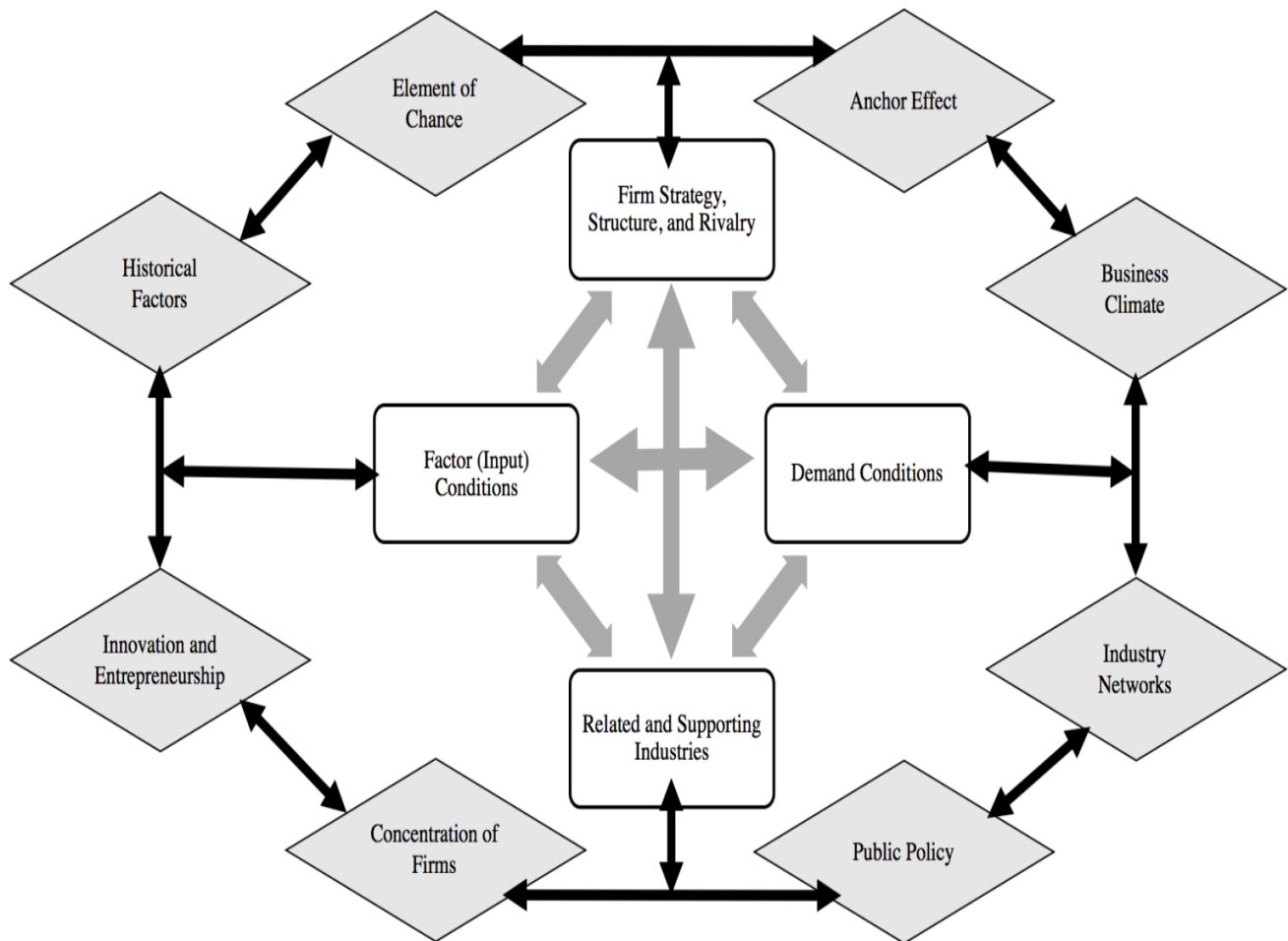
Porter’s Diamond Model and theory of national advantage has been criticized by a number of academics. Gordon and McCann (2000), Martin and Sunley (2003), and Duranton (2011) criticize Porter’s work on clusters as it fails to provide a concrete definition of a cluster. A second problem that is also frequently mentioned is that the model is not supported by a well-defined theory (Nathan and Overman, 2013, p.390). For example, Duranton (2011) states that “the [main] problem with the cluster policy literature is one of a lack of well-articulated theory: what is the “problem” that cluster initiatives are trying to fix?” (p.5). To counter, Nathan and Overman (2013) argue that cluster policy usually aims to improve productivity or local competitiveness (p.390). The third problem is that Porter’s model fails to acknowledge fundamental drivers (e.g. labour and firm mobility, land use and availability) (Nathan and Overman, 2013, p.390).



### **2.3 Kamath et al. and the Global Economic Management System Model**

Kamath et al.'s (2012) Global Economic Management System (GEMS) model provides an extension to Porter's Diamond model. Kamath et al. claims the GEMS model provides a more comprehensive understanding of the reasons why some clusters succeed while others fail (p.190). Kamath et al. argues that the GEMS model may be used by multi-national enterprises (MNEs) and policymakers to understand regional-based successes, location decisions, and cluster development (p.190). The GEMS model is rooted in the idea that economic outcomes are rarely due to a singular cause and thus it is important to account for other potential factors (Kamath et al., p.190). Figure 2.3 outlines the GEMS model. As shown by Figure 2.3, Porter's original Diamond Model is the core of the GEMS model, however, variables that have shown to be important from theoretical literature in economics, management, and other social sciences have been added (Kamath et al., 2012, p.190).

Figure 2.3: Kamath et al.'s (2012) GEMS Model



Source: Author's own figure based on Kamath et al. (2012)

In the GEMS model, Kamath et al. (2012) utilize the four diamond factors which include: firm structure, strategy, and rivalry; demand conditions; factors conditions; and related and supporting industries. The definitions of these factors remain consistent with the definitions developed by Porter (1990) as reviewed in Section 2.2 above.

Kamath et al. (2012) include eight additional variables that interact with Porter's original Diamond Model. These additional variables include:

*Element of Chance* which is defined through a variety of sub-variables. For example, these sub-variables include whether the cluster is recognized as a leading location, the particular geographical location of the cluster, and the backgrounds of those who have founded a cluster within a certain area (Kamath et al., 2012, p.195). As such, the element of chance variable may have come to impact a cluster, however the exact influencing factor may not be attributable to any other specific sub-factor (Kamath et al., 2012, p.195).

*Historical Factors* which is defined as variables that have come to influence a cluster through interaction with historical characteristics. For example, these variables may include whether or not there have been key firms within the region or whether a relationship exists between firms already existing in the region and those who are incoming to the region (Kamath et al., 2012, p.199).

*Innovation and Entrepreneurship* which may be demonstrated through measurable variables (e.g., wage, employment, locational decisions) (Kamath et al., 2012, p.198). For example, this may include the availability of human capital (e.g., managers, technologists), presence of incubators who may aid in new businesses or startups (e.g., providing technical or financial support), the presence of other local businesses or firms, and the extent to which intellectual property or patents are protected within the region (Kamath et al., 2012, p.198).

*Concentration of Firms*, defined as agglomeration economies or the concentration of firms' variable (Kamath et al., 2012, p.197). For example, this variable may include: benefits reaped from locating near other firms within a region, potential knowledge spillovers, and a large number of firms and/or suppliers within a particular region (Kamath et al., 2012, p.197-198).

*Public Policy*, defined also as favorable government. For example, this variable may include the presence of trade and investment policies that are favourable to the cluster, research and development policies and incentives, educational backgrounds of policy advisors that positively impact the firms within a cluster, tax laws or subsidies that present advantages to the firms in the cluster, and financial incentives (Kamath et al., 2012, p. 194).

*Industry Networks* are the inter-linkages that may exist between firms within a cluster (Kamath et al., 2012, p.196). For example, this may include: intra- or inter- firm linkages; industry associations (e.g., Alberta Small Brewers Association), collaborative efforts between research institutions (e.g., universities) and firms within the cluster; and sharing of resources between firms in the cluster (e.g., labour, inputs) (Kamath et al., 2012, p.197).

*Business Climate*, defined as two sub-variables of which favorable business climate and favorable socio-political climate. Favorable business climate may include: characteristics of business regulations; tax rates; lack of corruption within the industry; business climate that is favourable to risk taking; and the existence of business innovation (Kamath et al., 2012, p. 195). Whereas, favorable socio-political climate may be defined include: a stable political environment; the use of a common language that is largely used (e.g., English); low rates of crime and/or corruption; and high quality of life (Kamath et al., 2012, p.196).

*Anchor Effect*, defined as “large firms that are first-movers to a particular cluster” (Kamath et al., 2012, p.198).

### ***2.3.1 Benefits of Kamath et al.’s GEMS Model***

Kamath et al.’s GEMS Model offers an extension to Porter’s original Diamond Model. Kamath et al. (2012) states that the GEMS Model integrates important factors that were either overlooked or underemphasized within Porter’s model (p.185). Kamath et al. argues that “business and socio-political climate, facilitative government policy, path dependence and a culture of innovation and entrepreneurship, agglomeration economies, and the role of anchor firms provide a deeper understanding of why some clusters success and others do not” (p.210). Therefore, my analysis of microbrewery clusters will begin by using Porter’s Diamond Model and will then be extended by analyzing the industry using Kamath et al.’s GEMS Model.

## 2.4 Advantages of Clusters

Porter (1990) found that clusters can be vertically and horizontally integrated. Vertical clusters refer to buyer-seller relationships and horizontal clusters refer to industries which share commonalities in areas such as technology and labor force (Porter, 1990). Clusters may offer particular advantages to firms depending upon whether they are horizontally or vertically integrated. For example, in the case of Western Canadian farmers' markets, Beckie et al. (2012) found that horizontal relationships are formed between market managers and vendors, whereas, vertical relationships are formed with outside resources (e.g., private, public, and social economy sectors) (p.337). Furthermore, Beckie et al. (2012) states that these vertical relationships are important to farmers' market as they provide linkages to the community and neighborhoods in which they are geographically situated (p.337).

Porter (2007) states that clusters are "dense networks of interrelated firms that arise in a region because of powerful externalities and spillovers across firms (and various types of institutions) within a cluster" (p.2). Porter (2007) argues that clusters are not only effective in driving productivity and innovation but they are also advantageous to firms as they allow firms to "transact more efficiently, share technologies and knowledge more readily, operate more flexibly, start new businesses more easily, and perceive and implement innovations more rapidly" (p.2) Furthermore, specialized infrastructure, skilled employees, and technical knowledge may be accessed efficiently by industry firms (Porter, 2007, p.2).

Clusters may provide a variety of advantages for those industries that operate within them. For example, clusters have the opportunity to provide and increase in productivity and/or efficiency (Porter and Ketels, 2003; Porter, 2003). The increase in productivity and/or efficiency may be due to a variety of factors including: efficient access to services, employees, information, specialized inputs, and institutions, coordination and transactions across firms, diffusion of best practices, and performance comparisons and incentives to improve (Porter and Ketels, 2003; Porter, 2003). Clusters also provide the opportunity for the stimulation and enabling of innovation and this may be achieved through the presence of innovation opportunities, knowledge creation, and experimentation (Porter and Ketels, 2003; Porter, 2003). In addition, cluster formation may facilitate commercialization. This may provide opportunities for new companies as well as new lines for established business (Porter and Ketels, 2003; Porter, 2003). Commercializing may be easier for those in clusters as there is a greater access to skills, suppliers, and other inputs for operation (Porter and Ketels, 2003; Porter, 2003).

As per Porter and Ketels (2003), clusters may capture the presence of linkages. Skills, technology, information, marketing, and customer needs across both the entire industry and across firms may provide linkages between firms. In terms of clustering of farmers' markets, Beckie et al. (2012) states that there are marketing advantages to co-location (p.334). Furthermore, farmers' market clusters offer a chance for vendors to collaborate, share knowledge, share resources, and develop a network that may create competitive advantages. The authors also note that besides being located near one another, active clustering involves other factors. This includes knowledge sharing as well as collaboration and competition among vendors and managers (Beckie et al., 2012, p.334)). Wolfe (2009) also supports the importance

of knowledge transfer within clustering. Wolfe (2009) states that “a cluster’s viability depends on its ability to sustain a dense network of knowledge sharing and a high degree of common purpose” (p.190).

## **2.5 Clusters and Public Policy**

Public policy has the opportunity to impact the development and success of industry clusters.

Njøes and Jakobsen (2016) state that “[c]lusters can develop not only organically but also because of targeted efforts by policy-makers and practitioners, most notably through cluster projects”

(p.146). The OECD (2010) states that the purpose of cluster policies is “to strengthen a particular regional economy, and thus the national economy”; however, OECD (2010) notes that “the purpose of the different policy instruments will vary depending on the type of cluster and regional needs”. Figure 2.4 identifies cluster-based goals and the correlating policy instruments that are used to achieve those goals.

Figure 2.4: Instruments used in Cluster Policy

Common instruments used in clusters	
Goal	Instruments
<b>Engage actors</b>	
Identify clusters	<ul style="list-style-type: none"> <li>Conduct mapping studies of clusters (quantitative and qualitative)</li> <li>Use facilitators and other brokers to identify firms that could work together</li> </ul>
Support networks/ clusters	<ul style="list-style-type: none"> <li>Host awareness raising events (conferences, cluster education)</li> <li>Offer financial incentives for firm networking organisations</li> <li>Sponsor firm networking activities</li> <li>Benchmark performance</li> <li>Map cluster relationships</li> </ul>
<b>Collective services and business linkages</b>	
Improve capacity, scale and skills of suppliers (mainly SMEs)	<ul style="list-style-type: none"> <li>SME business development support</li> <li>Brokering services and platforms between suppliers and purchasers</li> <li>Compile general market intelligence</li> <li>Co-ordinate purchasing</li> <li>Establish technical standards</li> </ul>
Increase external linkages (FDI and exports)	<ul style="list-style-type: none"> <li>Labels and marketing of clusters and regions</li> <li>Assistance to inward investors in the cluster</li> <li>Market information for international purposes</li> <li>Partner searches</li> <li>Supply chain linkage support</li> <li>Export networks</li> </ul>
Skilled labour force in strategic industries	<ul style="list-style-type: none"> <li>Collect and disseminate labour market information</li> <li>Specialised vocational and university training</li> <li>Support partnerships between groups of firms and educational institutions</li> <li>Education opportunities to attract promising students to region</li> </ul>
<b>Collaborative R&amp;D and commercialisation</b>	
Increase links between research and firm needs	<ul style="list-style-type: none"> <li>Support joint projects among firms, universities and research institutions</li> <li>Co-locate different actors to facilitate interaction (<i>i.e.</i>, science parks, incubators)</li> <li>University outreach programmes</li> <li>Technical observatories</li> </ul>
Commercialisation of research	<ul style="list-style-type: none"> <li>Ensure appropriate intellectual property framework laws</li> <li>Overcome barriers to public sector incentives in commercialisation</li> <li>Technology transfer support services</li> </ul>
Access to finance for spinoffs	<ul style="list-style-type: none"> <li>Advisory services for non-ordinary financial operations</li> <li>Public guarantee programmes and venture capital</li> <li>Framework conditions supporting private venture capital</li> </ul>

Source: OECD (2010)

The OECD (2010) states that evaluation of cluster policies are uncommon and often times are not robust. Difficulty in identifying clusters and then isolating the impact of policy implementation provide obstacles for those studying cluster policies. (OECD, 2010). However, clusters may be evaluated based on three evaluation criteria: cluster performance (e.g., sales, productivity, exports, R&D spending, patents, etc.); cluster initiative/organization actions (e.g., satisfaction of



members with cluster services, joint projects among members, etc.); and, impact of policy (e.g., long-term outcome, short-term outcome, or output) (OECD, 2010).

## **2.6 Clustering and Food Systems**

Research that has specifically examined clustering within food systems will be the focus of this section. Historically, research on clustering has involved a broad variety of disciplines. For example, clustering is often witnessed in the banking sector (e.g., New York and London), high-tech sector (e.g., Silicon Valley), and the film industry (e.g., Hollywood and Bollywood). However, a large amount of the clustering literature is dedicated towards industrial production and manufacturing (Beckie et al., 2012, p.334), but research on clustering within the food industry has only emerged in recent years. Steiner and Ali (2011) provide a literature review of regional food clusters and highlight the factors or features that have contributed to the success of particular local food clusters. In their research, they state that in typical industry clusters “firm strategy is often embedded in global markets” (p.187). However, in terms of local food systems, the goal may be to enhance local economies rather than global economies (Beckie et al., 2012, p.337). According to Beckie et al. (2012), clustering of alternative food initiatives (e.g., organic, local food) has been witnessed and studied in a variety of regions around the world, as is illustrated through the works of Donald (2009), Ilbery et al. (2006), Lawson et al. (2008) Marsden (2010), and Ricketts et al. (2005) (p.333).

Donald (2009) examined clustering in relation to the food and wine industry in Canada. She states that previous clustering literature, in terms of food and wine clusters, has focused upon the notion of national policy directives, skilled capital, knowledge base and flow, and external

shocks (p.263). However, Donald examines the role of the retailer-distributor in shaping the quality direction of the cluster and makes two other significant contributions to cluster literature. First, Donald highlights the way quality is thought about in the making and shaping of regional clusters (p.278). She states that “localities and regions are starting to turn to food and wine as a viable local economic development alternative and/or as a complement to higher-technology clusters” and clusters are constructed differently depending on a variety of region-specific characteristics (e.g. place-based, production-related, socio-cultural, environmental, or technical) (p.278). Second, the author examines the role that knowledge flows play in the shaping of food and wine clusters within Canada. For example, Donald argues that entrepreneurs have played a particularly significant role in the formation and development of wine and food clusters within Canada.

## **2.7 Clustering Conditions for Microbreweries**

Esparza (2016) utilized Porter’s Diamond Model to evaluate the “role of geography as a key component in an industry’s ability to foster a competitive advantage” and applied this specifically to the craft beer industry in Northern Colorado. In doing so, the author set out to determine “whether proximity is a vital component in each of the four points of Porter’s Diamond” and what “geographic scale that is most significant for understanding each point of the diamond” (p.1). Furthermore, Esparza stated that if “Porter’s Diamond Model is capable of explaining the geographic advantage of the regional craft beer industry in Northern Colorado, its implications can be applied to similar industry clusters in other regions” (p.1). Esparza argues that “[t]hough it was intended to gauge the competitive nature of an industry on a national scale, Porter’s work has influenced how we think and analyze both the business performance and

economic development of regions” (p.17). Esparza applied Porter’s Diamond Model to a regional-level analysis because “multiple sources of economic development theory and practice (e.g., Stimson et al., 2006; Shaffer et al., 2004) [state that] all of the factors within Porters Diamond model rely on a sense of spatial proximity” and there “is no specific description of the level of spatial proximity required in each determinant” (p.17).

Similar to most consumer products, microbrew consumption has the potential to be influenced by demographic factors. Baginski and Bell (2012), Elzinga et al. (2015), McLaughlin et al. (2016), Moore et al. (2016), Reid et al. (2016), Weersink et al. (2018) and Carpenter et al. (2013) examined particular demographic characteristics. For example, Weersink et al. (2018) states the decline in macro-produced beer consumption and the increase in the consumption of microbrew products can be partially accredited to shifts in demographics (p.102-103). Furthermore, Weersink et al. (2018) concludes that the factor that has highest influence on beer consumption is age (p.99). Moreover, the baby boomer generation – those born between 1946 and 1965 – in particular exerts the most influence over the industry (Weersink et al., 2018, p.99).

In the United States, research has been conducted on the relationship between microbrew and inter-metropolitan and inter-state scales. There is evidence that metropolitan areas, with a high number of microbreweries, have a larger share of millennials, creatives, whites, and a stronger neolocalism movement (Reid et al., 2016; Baginski and Bell, 2012; McLaughlin et al., 2016; Moore et al., 2016). Likewise, evidence shows that interstate areas, with a high number of microbreweries, have higher incomes, population size, median age, brewpub legality, and knowledge spillovers (Reid et al., 2016; Florida, 2012; Elzinga et al., 2015). Elzinga et al. (2015)

concluded that the geographic distribution of beer in the United States was not random. To determine the cause of breweries geographic clustering, Elzinga et al. (2105) used three demand variables – consumer income, population, and age – in their empirical models. Consumer income was used because the authors assumed that microbrew is relatively more expensive, therefore, they expected microbreweries to locate in states with higher consumer incomes (Elzinga et al., 2015, p. 263). The second demand variable, population, was chosen by the authors as they assumed that demand would be higher and transportation costs to consumer would be lower if the brewery located in an area with a larger population (Elzinga et al., 2015, p. 263). The third demand variable, age, was chosen as previous surveys suggested that young adults, especially those in their twenties and early thirties, preferred lighter beer styles compared to those in their later adult years who preferred ales and darker beers (Elzinga et al., 2015, p. 263; Beer Marketer’s Insights, 2010, pp. 310–318).

Furthermore, Carpenter et al. (2013) examined the United States microbrew market and determined that there are four distinct microbrew consumers. These four types of consumers include: (1) the Explorer; (2) the Enthusiast; (3) the Loyalist; and (4) the Novice (Carpenter et al., 2013). According to Carpenter et al. (2013), the Explorer makes up the largest segment of craft beer consumers. The Explorer is characterized by an openness to try different styles and flavours, visits many breweries as a social opportunity or a way to relax, and enjoys the experience of visiting a brewery, but also values the quality of the beer (Carpenter et al., 2013). For the Explorer, loyalty to a brewery is not as important and breweries must continually offer new products in order to attract this type of craft beer drinkers (Carpenter et al., 2013). The second type of craft beer consumer is the Enthusiast. The Enthusiast differs from the Explorer in

their appreciation for the history of brewing and brewing processes (Carpenter et al., 2013). Carpenter et al. states that the Explorers, unlike the Enthusiasts, fail to engage in the scientific processes of brewing. The Enthusiast is characterized by the following: appreciation for brewing processes and history; education on the craft brewing industry; open to trying new flavours and styles of beer; and visits many breweries (Carpenter et al., 2013). The Enthusiast is also proud of their contribution to the local economy and often act as opinion leaders or influencers within the craft beer industry (Carpenter et al., 2013). The third type of craft beer consumer is the Loyalist. According to Carpenter et al. the Loyalist is a craft beer consumer who is loyal to a certain brand or beer, does not try new flavours or styles, knows what they like and generally stays loyal to that, and a variety of factors (e.g., location, convenience, local economy/time of year) impact their drinking choice. The Loyalist may not necessarily be an advocate for local beer, unlike the Enthusiast or Explorer, but may simply just like the brand or product (Carpenter et al., 2013).

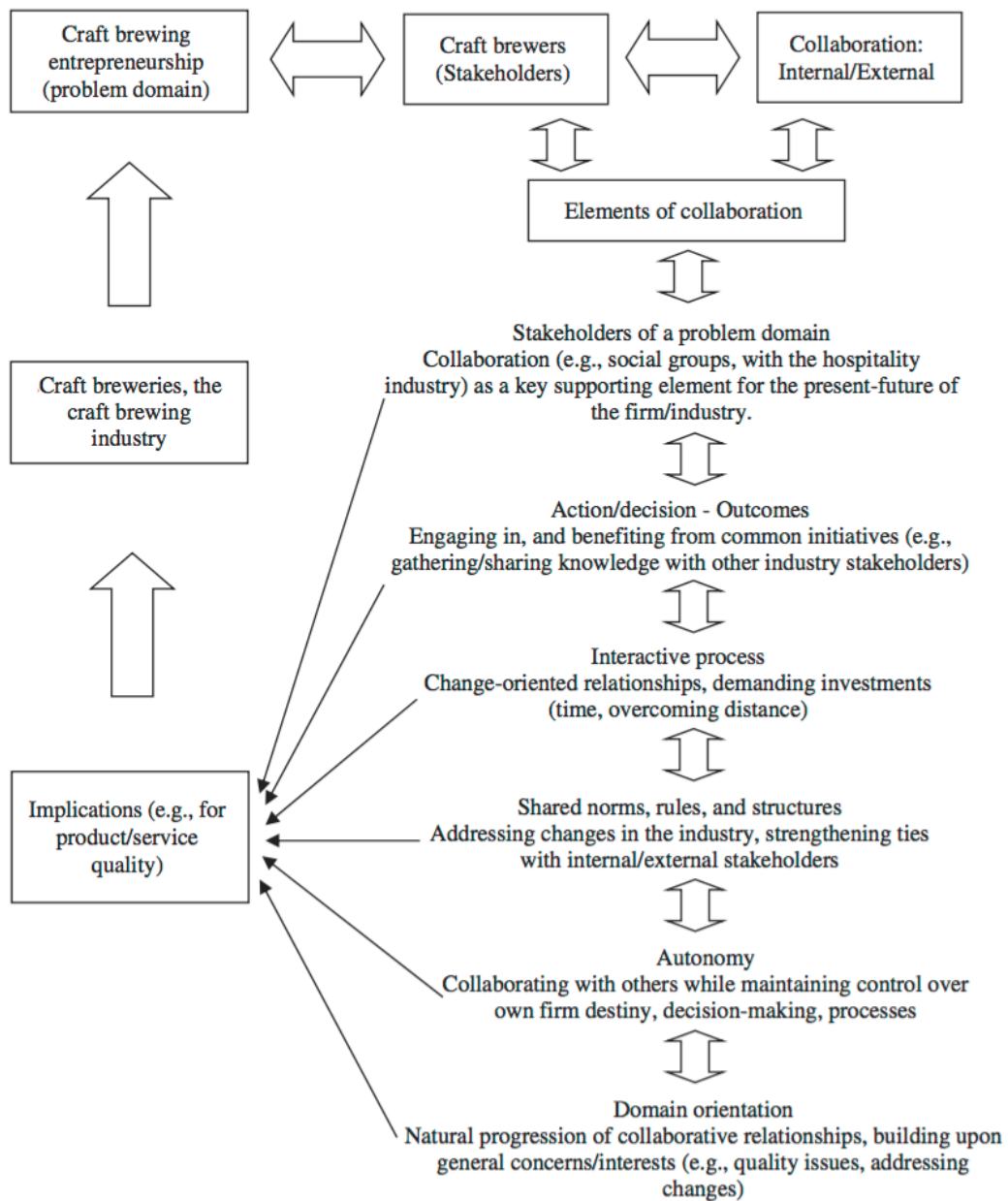
Carroll and Swaminathan (1992), Nilsson et al. (2018), and Alonso et al. (2018) examined the benefits that microbreweries gain when they locate near one another. According to Nilsson et al (2018) the benefits of microbreweries locating near one another outweigh the costs that may be associated with an increase in competition (p.122). Moreover, Nilsson et al. (2018) and the Brewers Association (2016b) contend that collaboration and knowledge sharing is crucial to the microbrewing industry as it is a strategy that is used to compete successfully against macrobrewers. In the microbrew industry collaboration may be exhibited in a variety of ways, however, the most common form of collaboration is collaborative brewing (Nilsson et al., 2018, p.116). Nilsson et al. (2018) argues that collaboration creates consumer interest as “[c]onsumers get excited about collaborative brews and they are another way that craft breweries generate

consumer excitement” (p.117). Nilsson et al. (2018) also states that a high concentration of firms in one area offers benefits to breweries in the form of beer-related tourism (Nilsson et al., 2018, p.116). Another example of collaboration within the microbrewing industry is when larger breweries assist smaller breweries (Nilsson et al., 2018, p.117). Microbrewing firms will often share equipment in addition to offering one another technical assistance (Brown 2015; Nilsson et al., 2018, p.117). In short, Nilsson et al. (2018) concludes that clustering may be particularly beneficial to microbrewers as the “art of craft brewing is more of a “know-how” (i.e., tacit) type of knowledge that cannot be standardized, codified, and easily transmitted via written text or other mediums, spatial proximity facilitates knowledge sharing among brewers through face-to-face interactions” (p.117).

In terms of collaboration of breweries, Alonso et al. (2018) investigates the collaboration that is witnessed in the micro- and small-scale brewing industries within Australia. The authors utilized an online questionnaire which yielded 59 responses. Alonso et al. (2018) determined that most participants stated that they participated in collaborative relationships: 77.2% stated they collaborated with one to five other breweries; 14% stated they collaborated with six to ten breweries; and, 8.8% stated they had no collaborations with other breweries (p.10). Alonso et al. determined that forming collaborative relationships with other breweries provided particular benefits (p.10). They found that perceived benefits of collaboration include quality improvements, increased basic knowledge of recipes and equipment, increased strategic knowledge of what others are doing in the brewing industry, gaining a lobby voice, and increasing the number and styles of beer (p.10). Figure 2.5 shows the elements of collaboration

and the findings of Alonso et al.'s examination of the Australian micro- and small-scale brewing industry.

Figure 2.5: The Elements of Collaboration and Alonso et al.'s Findings – A Conceptualization



Source: Alonso et al., 2018, p.15

Carroll and Swaminathan (1992) studied the American brewing industry from 1975 to 1990 and drew a variety of conclusions around density and breweries. In this research they determined that the founding rate of brewpubs and microbreweries increase with density and then decline (p.65). Furthermore, Carroll and Swaminathan concluded that there is a decline in mortality of brewpubs with density and that the mortality rate of microbreweries decline with industry concentration (p.65). In terms of firm size, those firms that were intermediate sized firms had the highest mortality rate for mass production breweries (p.65).

Furthermore, McGrath and O'Toole (2013) examine the Irish microbrewing network in terms of enablers and inhibitors to the development of network capability in entrepreneurial firms. The authors conducted empirical research of nineteen firms in Northern Ireland and the Republic of Ireland and used multiple level of network analysis (p.1141). McGrath and O'Toole concluded that those facts inhibiting the development of network capability were greater than the factors that enabled the development of network capability (p.1141). Those factors that enabled the development of network capability included: information sharing; coordinated consumer events; and previous network experience (McGrath and O'Toole, 2013, p.1141). On the other hand, factors that inhibited the development of network capability included: "a desire for control over decision making"; "a lack of knowledge sharing or joint problem solving and the perception of value chain activity links and resources as unnecessary inhibits network capability" (McGrath and O'Toole, 2013, p.1141). The authors state that the main contribution of this paper is the development of a framework of the factors that may inhibit or enable network capability which is based upon the use of multi-level network analysis (McGrath and O'Toole, 2013, p.1141).



## 2.8 Research Methods for the Analysis of Clusters

Empirical research on clustering focuses on the location of firms relative to other firms in the same or related industries. Particular attention is given to the location decisions of firms that enter or exit the industry.

In terms of clustering of microbreweries, Nilsson et al. (2018) examined the location behavior of craft breweries of ten cities within the United States. These cities included: Austin, TX; Charlotte, NC; Chicago, IL; Denver, CO; Minneapolis, MN; New York City, NY; Portland, OR; San Diego, CA; San Francisco, CA; and, Seattle, WA (Nilsson et al., 2018, p.118). In order to measure the extent of clustering among the craft breweries in these cities, the authors utilized Ripley's K-function. Ripley's K-function measures the pattern of point observations over a given area, calculated for a range of distances (Nilsson et al., 2018, p.118-119). Figure 2.5 displays the authors' results of the Ripley's K analysis. From these results, Nilsson et al. (2018) concluded that there is evidence that craft breweries tend to locate themselves in certain areas of most of the selected cities (Nilsson et al., 2018, p.119).

Figure 2.5: Results of Nilsson et al.'s (2018) Ripley's K Analysis

<b>City</b>	<b>Ripley's K for all craft breweries</b>	<b>Number of craft breweries</b>
Austin, TX	No	18
Charlotte, NC	Yes	17
Chicago, IL	Yes	36
Denver, CO	Yes	47
Minneapolis, MN	Weak	21
New York, NY	Yes	17
Portland, OR	Yes	52
San Diego, CA	Yes	54
San Francisco, CA	Weak	19
Seattle, WA	Yes	50

Source: Nilsson et al. (2018), p. 119

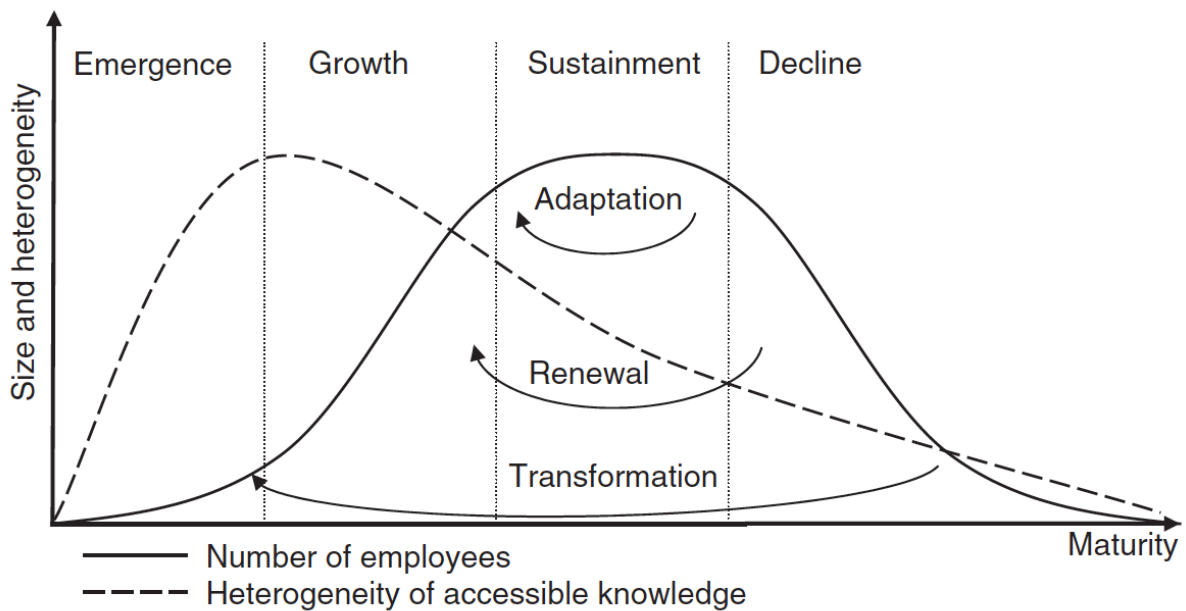
In a broader perspective than that of microbreweries, previous work has analyzed why clusters emerge in some places more than others. Boschma and Frenken (2011) review Evolutionary Economic Geography and the empirical methods that have been used in its analysis.

Evolutionary Economic Geography (EEG) considers why clusters tend to develop in some locations rather than others. This question is approached through analysis of the locations of firms that enter or exit a particular industry over a particular time period. EEG studies of several industries suggest an evolutionary process in which new firms' spinoff from successful existing firms, with the more successful new firms tending to locate near more successful parent firms. As this process continues, a successful cluster is formed around the most successful parent firms. Cluster formation thus becomes a path-dependent process best studied using approaches that trace the development of a cluster back to a successful parent company and may assess the geography of firms which enter and exit within a clustered industry. One additional empirical question is whether agglomeration externalities are more likely to arise from local firms in the same industry or from local firms in other related industries.

Furthermore, Menzel and Fornahl (2009) describe the life cycle of clusters and include the dimensions and rationales of a cluster's evolution. They note that empirical studies show that clusters follow different life cycles than their respective industry: we should thus expect a micro-brewing cluster to have a different life cycle than a specific micro-brewing company. The authors base their model on two processes: (1) "the emergence, growth, decline and renewal of the cluster depend on the technological heterogeneity of firms"; and (2) "firms have a larger relative absorptive capacity, when they are in the same location, and thus especially localized learning changes heterogeneity: it leads to a technological convergence when learning takes

place within the cluster and technological divergence, when learning takes place outside the cluster, yet in the same region” (Menzel and Fornahl, 2009, p.205). As such, Menzel and Fornahl (2009) argue that firms within a cluster are subjected to production and innovation systems which are influenced by interconnections with other firms (p.229). The authors state that there is a quantitative systemic dimension which “illustrates the perception of the cluster by external actors and the capability of the companies to take collective action” and a qualitative systemic dimension that details the learning and innovation processes of the firms (Menzel and Fornahl, 2009, p.229). Figure 2.6 displays the quantitative and qualitative dimensions of the cluster life cycle and Figure 2.7 depicts the dimensions of a cluster. Clusters go through distinct stages of emergence, growth, sustainment and decline.

Figure 2.6: Quantitative and Qualitative Dimensions of the Cluster Life Cycle



Source: Menzel and Fornahl, 2009, p.218

Figure 2.7: Dimensions of Clusters

---

	Quantitative	Qualitative
Direct	Size (number of organizations, actors, and employees)	Diversity (knowledge, competencies, and organizational forms)
Systemic	Utilization of the size (perception of the cluster, capacity for collective action)	Utilization of the diversity (exploitation of synergies, networks and value chains)

---

Source: Menzel and Fornahl, 2009, p.221

## 2.9 Conclusion: Chapter Two

In this chapter, I introduced the literature behind clustering which included a review of agglomeration economies and clustering framework. Furthermore, I introduced two clustering models – Porter’s Diamond Model and Kamath et al.’s GEM Model – that will be used in Chapter Four, of this thesis.

Firstly, Porter’s Diamond Model serves as the main theoretical background of this thesis. The four main factors that comprise this model – firm structure, strategy and rivalry, demand conditions, factor conditions, and related and supporting industries – and two external factors – government and chance – will be used to examine the microbrewery industries within the City of Edmonton and the City of Calgary. This model will help to uncover any differences between the two cities that may have contributed to the differential growth in microbreweries.

Secondly, Kamath et al.’s GEMS Model is used to tackle any gaps that the more simplified Diamond Model did not address. Again, my goal is to use the GEMS to uncover any potential differences between the two cities that may have contributed to the differential growth in

microbreweries by revealing any factors that Porter's model may have overlooked. Following the insights of evolutionary economic geography, I will give special attention to the processes of microbrewery cluster formation and growth.

The next chapter will examine the microbrewery industry in the Province of Alberta in order to determine if microbreweries exhibit spatial clustering and to determine what factors may influence the location of microbreweries within Census Subdivisions in Alberta.

## References: Chapter Two

- Alonso, A. D., Alexander, N., and O'Brien, S. (2018). Collaboration and the emerging craft brewing industry: An exploratory study. *Journal of Asia-Pacific Business*, 19(3), 203-224.
- Beckie, M.A., Kennedy, E. H., & Wittman, H. 2012. Scaling Up Alternative Food Networks: Farmers' Markets and the Role of Clustering in Western Canada. *Agriculture and Human Values*, 29(3): 333 – 345.
- Boschma, R., & Frenken, K. (2011). The emerging empirics of evolutionary economic geography. *Journal of economic geography*, 11(2), 295-307.
- Brouthers, K. D., & Brouthers, L. E. (1997). Explaining national competitive advantage for a small European country: A test of three competing models. *International Business Review*, 6(1), 53-70.
- Carpenter, A. J., W. Darlington, D. Frick, T. Garver, H. C. Kane, R. Mimken, & K. Serwitz. (2013). Craft beer and consumer behavior. Paper submitted to Professor V. R. Lane for Marketing 6060: Buyer/Consumer Behavior, University of Colorado, Denver.
- Carroll, G. R., & Swaminiathan, A. (1992). The organizational ecology of strategic groups in the American brewing industry from 1975 to 1990. *Industrial & Corporate Change*, 1(1), 65-99.

- Daly, M. and B. Roberts. (1998). The Application of Porter's Diamond Model to Evaluate the Competitiveness of Tradable Services in a Regional Economy: A Case Study of Tropical North Queensland.
- Donald, B. (2009). Contested notions of quality in a buyer-driven commodity cluster: The case of food and wine in Canada. *European Planning Studies*, 17(2), 263-280.
- Duranton, G. (2011). California dreamin': The feeble case for cluster policies. *Review of Economic Analysis*, 3, 3.
- Dunning, J. H. (1993). Internationalizing Porter's diamond. *MIR: Management International Review*, 7-15.
- Ellison, G., Glaser, E., Kerr, W. (2010). What causes industry agglomeration?: Evidence from coagglomeration patterns. *American Economic Review*, 100(3), 195-1213.
- Esparza, T. R. (2016). Crafting clusters: an analysis of the craft beer industry in northern Colorado.
- Glaser, E. (2010). *Agglomeration Economics*. University of Chicago Press and National Bureau of Economic Research, Chicago IL. Retrieved from <http://www.nber.org/chapters/c7977.pdf>
- Ilbery, B., Watts, D., Simpson, S., Gilg, A., & Little, J. (2006). Mapping local foods: evidence from two English regions. *British Food Journal*, 108(3), 213-225.
- Johansson, B., & Forslund, U. (2008). The analysis of location, co-location and urbanisation economies. *Handbook of Research on Cluster Theory*, 1, 39-66.
- Kamath, S., J. Agrawal, & K. Chase. (2012). Explaining Geographic Cluster Success—The GEMS Model. *American Journal of Economics and Sociology*, 71(1), 184-214.
- Lawson, R., Guthrie, J., Cameron, A., & Fischer, W. C. (2008). Creating value through cooperation: An investigation of farmers' markets in New Zealand. *British Food Journal*, 110(1), 11-25.
- Lewis, G. (1993). Australia's Competitiveness: A Strategic – Management Approach. *Australian strategic management*. Prentice Hall Australia, Sydney, 345-359

- Marsden, T. (2010). Mobilizing the regional eco-economy: evolving webs of agri-food and rural development in the UK. *Cambridge Journal of Regions, Economy and Society*, 3(2), 225-244.
- Marshall, A. (1920). "Industrial Organization: The Concentration of Specialized Industries in Particular Localities." In *Principles of Economics*. Ed. A. Marshall, Book IV, Chapter 10, 8th Ed. Macmillan
- Marshall, A. (1890). *Principles of economics*. London: Macmillan.
- Martin R., and Sunley P. (2003), 'Deconstructing Clusters: Chaotic Concept or Policy Panacea?', *Journal of Economic Geography*, 3(1), 5–35.
- McGrath, H., & O'Toole, T. (2013). Enablers and inhibitors of the development of network capability in entrepreneurial firms: A study of the Irish micro-brewing network. *Industrial Marketing Management*, 42(7), 1141-1153.
- Menzel, M. P., & Fornahl, D. (2009). Cluster life cycles—dimensions and rationales of cluster evolution. *Industrial and corporate change*, 19(1), 205-238.
- Nathan, M. and H. Overman. (2013). Agglomeration, clusters, and industrial policy, *Oxford Review of Economic Policy*, 29(2), 383–404.
- Nilsson, I., Reid, N., & Lehnert, M. (2018). Geographic Patterns of Craft Breweries at the Intraurban Scale. *Professional Geographer*, 70(1), 114-125.  
doi:10.1080/00330124.2017.1338590
- Njøs, R., & Jakobsen, S. E. (2016). Cluster policy and regional development: Scale, scope and renewal. *Regional Studies, Regional Science*, 3(1), 146-169.
- OECD. (2010). OECD Innovation Policy Platform: Cluster Policies. [PDF]. Retrieved from <http://www.oecd.org/innovation/policyplatform/48137710.pdf>
- Porter, M. E. (2000). Location, competition, and economic development: Local clusters in a global economy. *Economic development quarterly*, 14(1), 15-34.
- Porter, M. E. (1998a). *Clusters and the new economics of competition* (Vol. 76, No. 6, pp. 77-90). Boston: Harvard Business Review.
- Porter, M. (1998b) *On Competition*. HBS. New York

- Porter, M. E. (1997). New strategies for inner-city economic development. *Economic Development Quarterly*, 11(1), 11-27
- Porter, M. E. (1996). Competitive advantage, agglomeration economies, and regional policy. *International regional science review*, 19(1-2), 85-90.
- Porter, M. E. (1990). The competitive advantage of nations. *Harvard business review*, 68(2), 73-93.
- Raines, P. (2001). *Local or national competitive advantage?: the tensions in cluster development policy*. University of Strathclyde, European Policies Research Centre.
- Ricketts, H.J., B. Illbery, and M. Kneafsey. (2005). The distribution of local food activity in England and Wales: An index of food relocalization. *Regional Studies* 40(3): 289–301
- Ridley, D. B. (2012). Hotelling's Law. Retrieved from <https://faculty.fuqua.duke.edu/~dbr1/research/Hotellings-Law.pdf>
- Rugman, A. M. (1991). Diamond in the rough. *Business quarterly*, 56(3), 61-64.
- Shaffer, R., Deller, S., Marcouiller, D. (2004). *Community economics: Linking Theory and Practice*. Second Edition. Blackwell Publishing.
- Steiner, B. E., & Ali, J. (2011). Government support for the development of regional food clusters: Evidence from Alberta, Canada. *International Journal of Innovation and Regional Development*, 3(2), 186-216.
- Stimson, R. J., Stough, R. R., & Roberts, B. H. (2006). *Regional economic development: analysis and planning strategy*. Springer Science & Business Media.
- Thisse, J. F. (2011). Geographical economics: A historical perspective. *Recherches Économiques de Louvain/Louvain Economic Review*, 77(2-3), 141-168.
- Weersink, A., Probyn-Smith, K., & Von Massow, M. (2018). The Canadian craft beer sector. In *Economic Perspectives on Craft Beer*. Palgrave Macmillan, Cham. 89- 11.

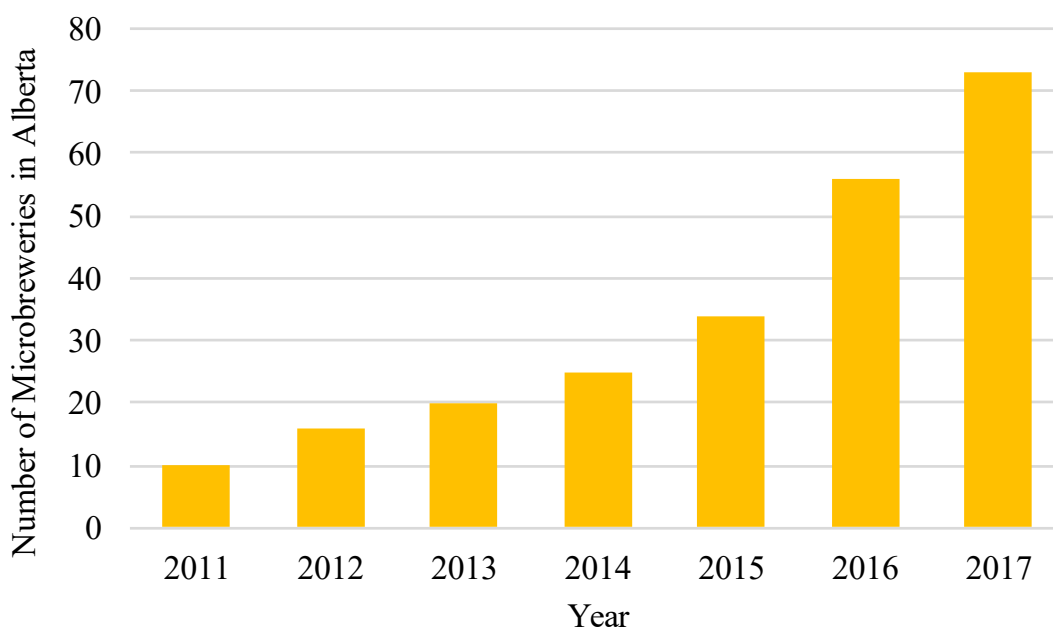


## Chapter Three: Quantitative Research

### 3.0 Introduction

Over the past half-decade, the number of microbreweries has grown dramatically in Alberta. In 2011, Alberta was home to 10. In 2017, Alberta was home to 73 microbreweries and contract brewers. This is over a 356 percent increase in the number of microbreweries in five years. Figure 3.1 shows the increase in microbreweries across the Province of Alberta between 2011 and 2017. Over that time period, very few microbreweries closed. On Beer reports only two recent closures of microbreweries in Alberta (On Beer, 2019).

Figure 3.1: Number of Breweries in Alberta between 2011 and 2017

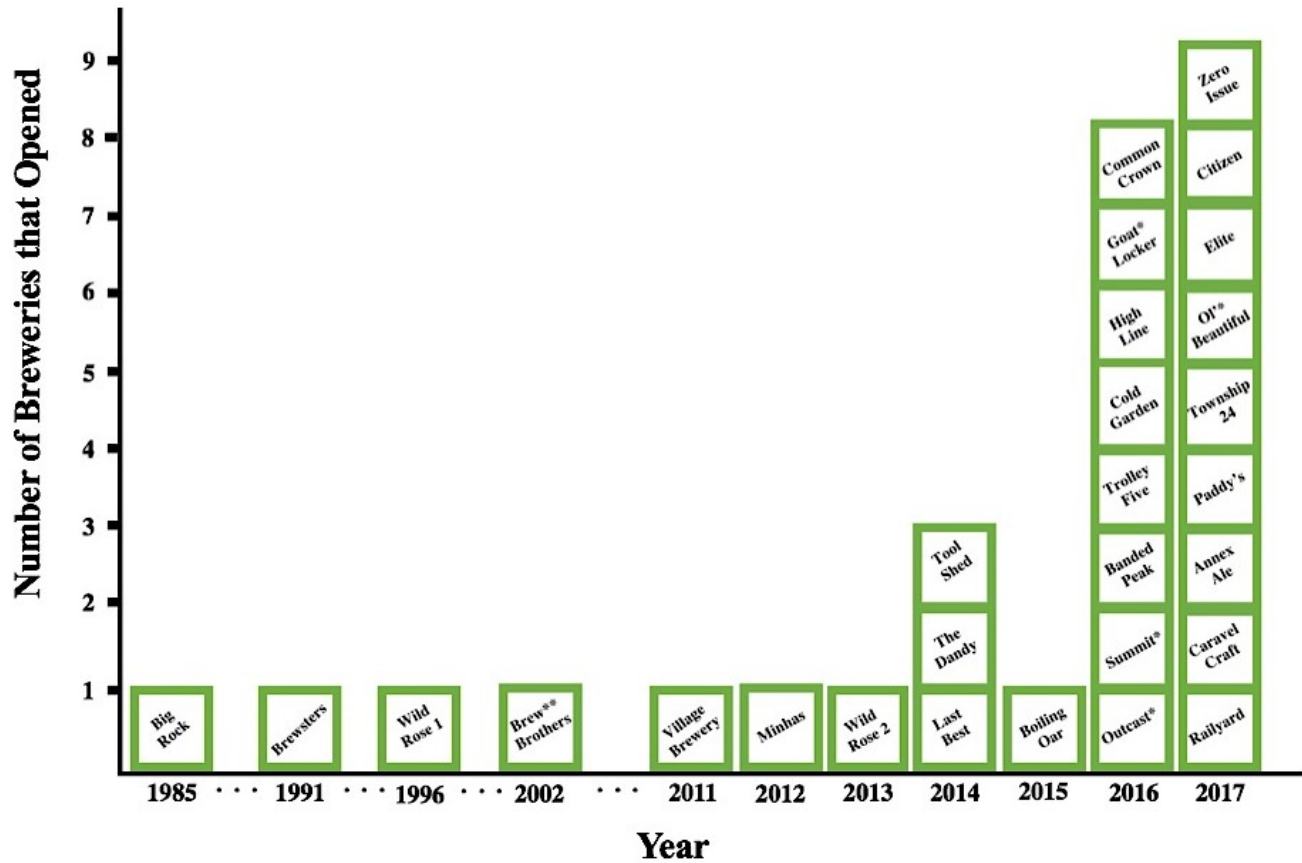


Source: Author's analysis of AGLC (2018) data

While the number of breweries in Alberta has obviously grown, however certain regions in the province have experienced substantially more growth in the number of brewers compared to

other regions. As shown in Figure 3.2, Calgary experienced a large increase in the number of breweries between 2014 and 2017, with 21 breweries opening during this period of time. On the other hand, as shown in Figure 3.3, only five breweries opened in Edmonton in the same period.

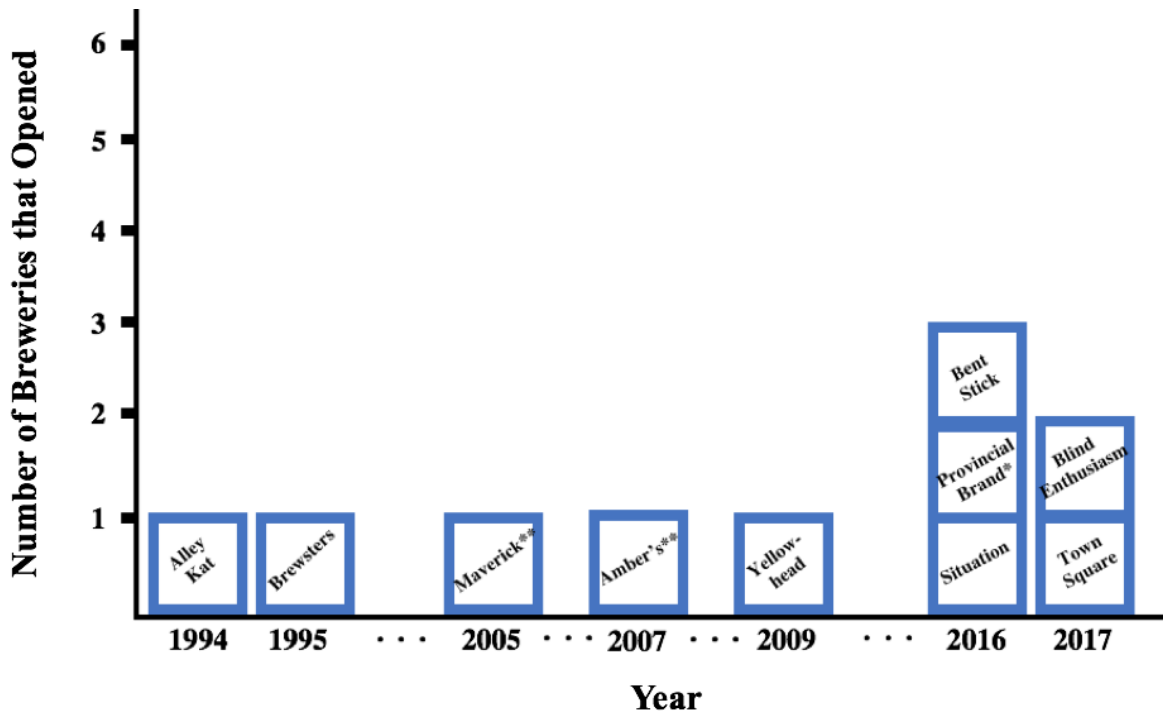
Figure 3.2: Number of Breweries in Calgary, 1985-2017



\* indicates contract brewery \*\*indicates brewery has since closed

Source: Author's analysis of AGLC (2018) data

Figure 3.3: Number of Breweries in Edmonton, 1994-2017



\* indicates contract brewery \*\*indicates brewery has since closed

Source: Author's analysis of AGLC (2018) data

### 3.1 Quantitative Methods

Spatial analysis serves as the methodological background for this analysis. It should be noted that different options for analysis were considered, including a Hot Spot analysis, however, this data set particular data set was not large enough (e.g., 78 microbreweries) to produce any reportable results.

In order to test if there is a spatial component present, a non-spatial regression must be performed and then the regression residuals must be tested for spatial autocorrelation using Moran's I. In this model, Moran's I is a correlation coefficient that measures the overall spatial

autocorrelation of the data. The following Equation 3.1 shown Moran's I where one variable at one location is compared to the value at all other locations.

Equation 3.1: Moran's I

$$I = \frac{\sum_i \sum_j W_{i,j} (X_i - \bar{X})(X_j - \bar{X})}{\sum_i (X_i - \bar{X})^2}$$

In Equation 3.1, N is the number of observations (points or polygons),  $\bar{X}$  is the mean of the variable,  $X_i$  is the variable value at a particular location,  $X_j$  is the variable value at another location, and  $W_{ij}$  is a weight indexing location of i relative to j.

### 3.2 Quantitative Data

An evolutionary economic geography approach is taken to evaluate changes in the number and clustering of microbreweries in Alberta. The period 2011-2016 was chosen for study, as it coincides with the period of rapid growth in breweries and the dates of the last two Population Censuses of Canada. The dependent variable is the change in the number of breweries in each Census Subdivision. Explanatory variables capture factors related to demand and clustering.

Data for this analysis was collected from a variety of sources. The number of breweries in Alberta was collected through the AGLC Class E License database (AGLC, 2018). The addresses for each brewery were found by reverse searching the brewery name through Google Maps and any missing information was filled by visiting the breweries' websites and/or Facebook pages. The longitude and latitude information was retrieved by entering the addresses into a Google Sheet and using the add-on feature, Geocode by Awesome Tables. In addition to

the aforementioned sources, any remaining gaps were filled through the examination of online news articles and through conversations with other microbreweries in Alberta.

In order to collect data that was specific to Census Subdivisions in Alberta, the 2016 Canadian Census was used. The following data was collected through this resource – Census Subdivision specific population for 2011 (in thousands), Census Subdivision specific population for 2016 (in thousands), Census Subdivision specific percent change in population between 2011 and 2012, the average age of the population in a Census Subdivision in 2016, the average income in 2015 for the population aged 15 years and over in private households in a Census Subdivision (in thousands of CAD\$), the unemployment rate in 2016 for a Census Subdivision, the percent of the population in a Census Subdivision that is considered a ‘millennial’ in 2016, and the percent of the population in a Census Subdivision that is considered a ‘baby boomer’ in 2016.

Microbrew market research in the United States has examined the role of demographic characteristics and consumption. Research conducted by the Brewers Association (2016b) concluded that in 2016, the majority of weekly microbrew consumers were Millennials (57%), Gen Xers (24%), Boomers (17%), and Mature (2%). Therefore, this research uses two variables – MILLP and BBP– which represent what percentage of the population in a Census Subdivision is considered a millennial and what percentage of the population in a Census Subdivision is considered a baby boomer. Millennial and baby boomer variables relate to the literature provided by Weersink et al. (2018). In Chapter Two, I referred to Weersink et al. (2018). The authors state that the decline in macro-produced beer consumption and the increase in the consumption of microbrew products can be partially accredited to shifts in demographics (e.g., age) (p.102-103).

Weersink et al. (2018) states that, the baby boomer generation exerts the most influence over the industry (Weersink et al., 2018, p.99). Therefore, I have chosen to include variables that represent particular age demographics within a Census Subdivision (e.g., millennials and baby boomers).

Table 3.1: List of Variables and Description

<b>Variable Name</b>	<b>Description</b>	<b>Source</b>
<b>P2011</b>	Population of a Census Subdivision (in thousands), 2011	CHASS Data Centre: 2016 Census
<b>P2016</b>	Population of a Census Subdivision (in thousands), 2016	CHASS Data Centre: 2016 Census
<b>CPOP</b>	The percent change in population of a Census Subdivision between 2011 and 2016	CHASS Data Centre: 2016 Census
<b>AGE16</b>	Average age of the population of a Census Subdivision in 2016	CHASS Data Centre: 2016 Census
<b>AGE216</b>	Average age of the population of a Census Subdivision in 2016 squared	CHASS Data Centre: 2016 Census
<b>INC16</b>	Income statistics in 2015 of a Census Subdivision for the population aged 15 years and over in private households (in thousands of CAD\$)	CHASS Data Centre: 2016 Census
<b>INC216</b>	Income statistics in 2015 of a Census Subdivision for the population aged 15 years and over in private households squared (in thousands of CAD\$)	CHASS Data Centre: 2016 Census
<b>UNE16</b>	Unemployment rate of a Census Subdivision in 2016	CHASS Data Centre: 2016 Census
<b>B2011</b>	Number of microbreweries in a Census Subdivision in 2011	AGLC (2018)
<b>B2016</b>	Number of microbreweries in a Census Subdivision in 2016	AGLC (2018)
<b>MILLP</b>	The percentage of the population in 2016 of a Census Subdivision that was between the ages of 20 to 34. This is the 'millennial' generation.	CHASS Data Centre: 2016 Census
<b>BBP</b>	The percentage of the population in 2016 of a Census Subdivision that was between the ages of 50 to 74. This is the 'baby boomer' generation.	CHASS Data Centre: 2016 Census
<b>CBREW1116</b>	change in number of breweries within a Census Subdivision between 2011 and 2016	AGLC (2018)

A census subdivision (CSD) is defined as “is the general term for municipalities (as determined by provincial/territorial legislation) or areas treated as municipal equivalents for statistical purposes (e.g., Indian reserves, Indian settlements and unorganized territories)” (Statistics Canada, 2016).

The AGLC defines what constitutes a Class E license. The AGLC (2017) states that “Class E Manufacturer licenses are issued for the manufacture of liquor and include breweries, wineries and distilleries”. Furthermore, a brewer is defined as “a company that commercially manufactures, blends, and packages beverages containing beer at a permanent facility (“the premises”) located within Alberta” (AGLC, 2017).

### **3.3 Quantitative Results**

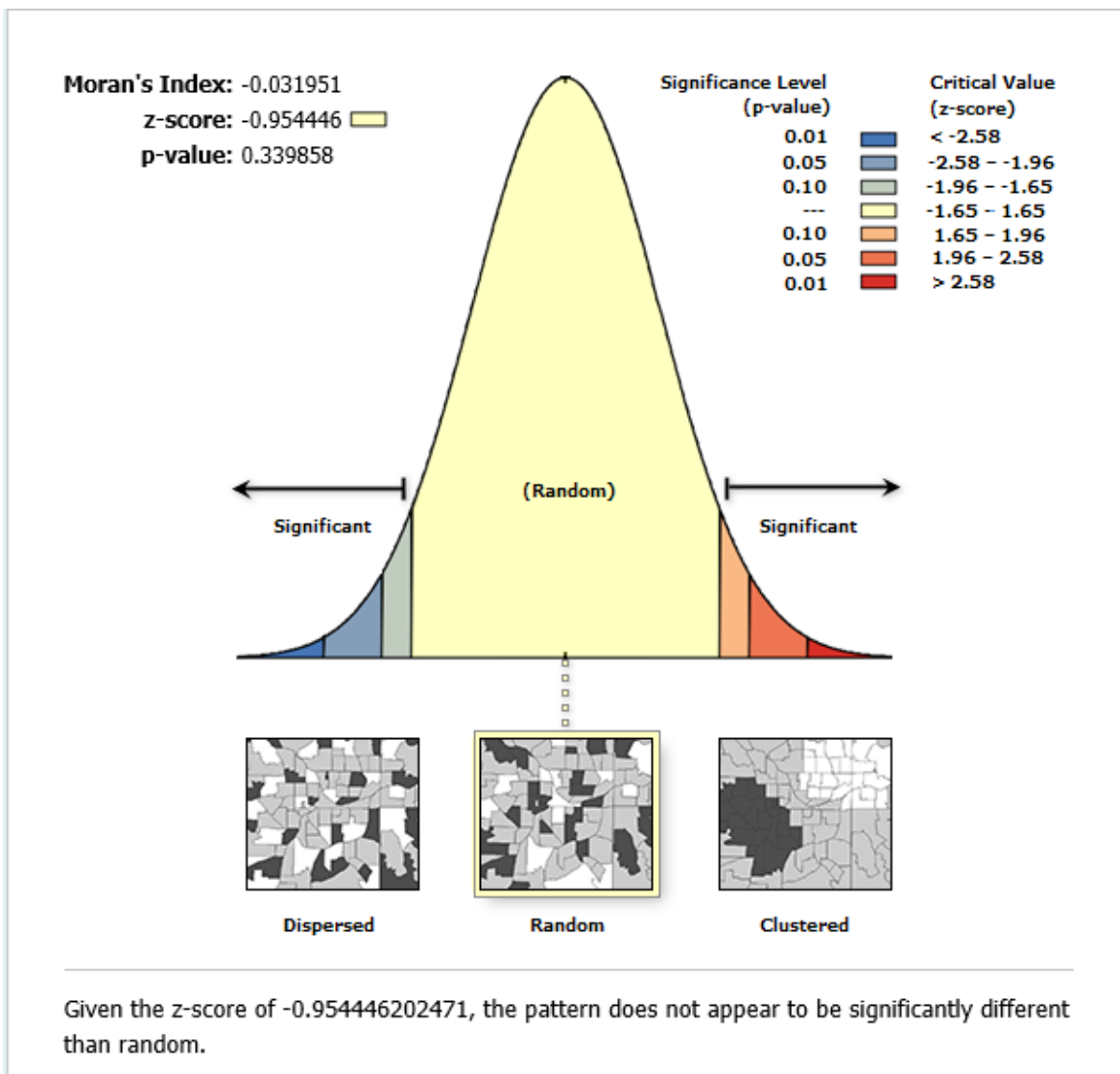
In this section, I will perform analysis on the microbrewery data that I have collected. I will begin by determining if microbreweries in Alberta exhibit spatial clustering. Next, I will perform a regression analysis using the change in microbreweries within a Census Subdivision as the dependent variable. I will use a number of explanatory variables – these will be discussed in detail below.

#### ***3.3.1 Spatial Analysis Results***

In order to determine if microbreweries in Alberta exhibit spatial clustering, I will conduct a Moran’s I test. As previously noted, Moran’s I is a correlation coefficient that measures the overall spatial autocorrelation of the data set that is used. Figure 3.4 shows the result of the

Moran's I spatial autocorrelation report. This analysis, conducted through ArcMap, concludes that the pattern of microbreweries within the Province of Alberta, when using year of establishment as the input field, does not appear to be significantly different than random. Therefore, it can be concluded that an existing microbrewery does not necessarily attract other microbreweries to situate themselves nearby.

Figure 3.4: Moran's I, Spatial Autocorrelation Report



Source: Author's analysis of AGLC (2018) and Altalis (2018) data



### 3.3.2 Regression Analysis Results

The change in the number of microbreweries across Alberta between 2011 and 2016 was analyzed. Table 3.2 describes the changes in the number of breweries, as per the regions defined as census subdivisions, for 2011 and 2016. As Table 3.3 suggests, there has been an increase in the number of regions which have at least one brewery between 2011 and 2016. While the Calgary area experienced a rapid growth in the number of breweries, many breweries also located in municipalities that previously had no breweries.

Appendix B provides a map of the Census Subdivisions within the Province of Alberta.

Table 3.2: The Breakdown of the Number of Breweries, 2011 and 2016 for All Census Subdivisions in Alberta

<b>Year</b>	<b>Number of Breweries</b>	<b>Frequency</b>	<b>Percentage</b>
<b>2011</b>	0	90	91.84%
	1	6	6.12%
	4	1	1.02%
	5	1	1.02%
<b>2016</b>	0	74	75.51%
	1	16	16.33%
	2	5	5.10%
	3	1	1.02%
	6	1	1.02%
	19	1	1.02%

Source: Author's analysis of AGLC (2018)

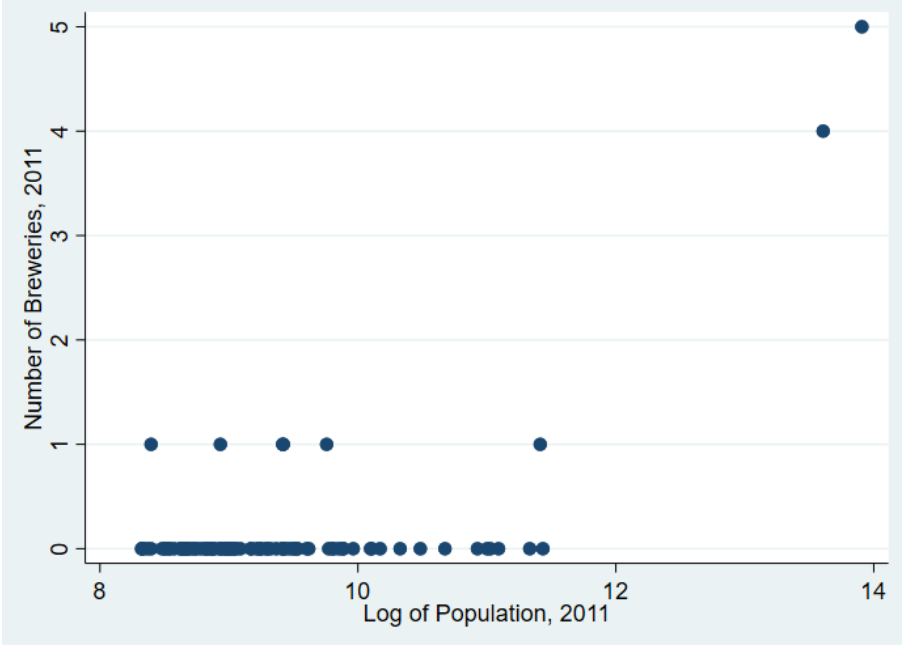
Table 3.3: The Increase in the Number of Microbreweries between 2011 and 2016 for All Census Subdivisions in Alberta

<b>Years</b>	<b>Number of Breweries</b>	<b>Frequency</b>
<b>2011 to 2016</b>	0	78
	1	13
	2	6
	14	1

Source: Author’s analysis of AGLC (2018)

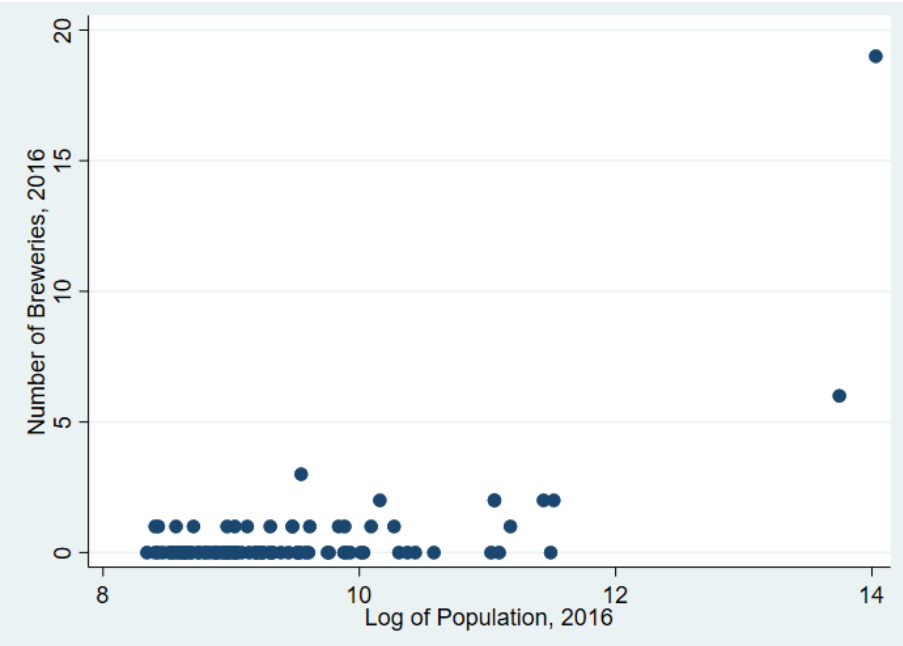
Furthermore, the relationship between the number of breweries and the population of census subdivisions was examined. As shown by Figures 3.5 and 3.6, there were a large number of Census Subdivisions that did not have a brewery. However, those Census Subdivisions that had more than one brewery in 2011 tended to also have a larger population size. A similar story holds for 2016. In 2016, there were more Census Subdivisions with at least one brewery and those that had more than one brewery again tended to have a larger population size. As shown, many Census Subdivisions in the Province of Alberta have no microbreweries, therefore, to account for a large number of zeros, only Census Subdivisions with population greater than 4,000 people were used in the analysis. Census Subdivisions with a population greater than 4,000 were used as to not eliminate any microbreweries from the analysis, while at the same time reducing the number of Census Subdivisions with zero microbreweries.

Figure 3.5: Number of Breweries in 2011 vs. Log Population in 2011



Source: Author's analysis of AGLC (2018) and Altalis (2018) data

Figure 3.6: Number of Breweries in 2016 vs. Log Population in 2016



Source: Author's analysis of AGLC (2018) and Altalis (2018) data

Table 3.4 displays the descriptive statistics, including the mean, standard deviation, maximum value, and minimum value, for the 93 Census Subdivisions in the Province of Alberta that were included in our analysis.

Table 3.4: Descriptive Statistics at Census Subdivision Level

<b>Variable</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
<b>P2016</b>	39.86442	155.5856	4.200	120.0000
<b>P2011</b>	35.88177	139.980	4.117	110.0000
<b>CPOP</b>	8.17957	10.277	-12.9	48.1
<b>AGE16</b>	38.51398	3.288867	28.6	46.1
<b>INC16</b>	42.33009	6.799749	31.563	77.481
<b>UNE16</b>	8.495699	2.426973	3.3	15.7
<b>B2011</b>	.1612903	.6961122	0	5
<b>B2016</b>	.5806452	2.112708	0	19
<b>MILLP</b>	19.09139	4.417403	12.53843	34.26752
<b>BBP</b>	29.00096	5.812379	15.17426	42.84436
<b>CBREW1116</b>	.4193548	1.534548	0	14

In this analysis, I use a count model, more specifically a Poisson model. This data set may be considered a count model as the dependent variable, the change in the number of microbreweries within a Census Subdivision between 2011 and 2016, is a non-negative count variable. As such,

a linear regression would not be suitable to use for this data set as a linear regression would not take into account the limited number of values of that the dependent variable may take on.

A number of tests were performed in order to determine which count model, negative binomial or Poisson, was best suited to use for this data set. Firstly, a negative binomial regression was used. This generated a likelihood ratio test that alpha equal zero and this test compares a negative binomial model to a Poisson model. (UCLA: Statistical Consulting Group, n.d.). The chi-squared value was equal to zero with one degree of freedom; therefore, this suggest that alpha is equal to zero and that a Poisson model may be more appropriate than a negative binomial model (UCLA: Statistical Consulting Group, n.d.). A Goodness-of-Fit test was performed on the Poisson model in order to assess the fit of this model. I conclude that the Poisson model fits the data reasonably well as the Goodness-of-Fit chi-squared is not statistically significant.

Equation 3.2: Poisson Regression, Model I

$$Y(\text{CBREW1116})_i = \alpha + \beta_1(\text{P2011})_i + \beta_2(\text{PCPOP})_i + \beta_3(\text{AGE16})_i + \beta_4(\text{AGE16}^2)_i + \beta_5(\text{INC16})_i + \beta_6(\text{INC16}^2)_i + \beta_7(\text{UNE16})_i + \beta_8(\text{B2011})_i + \beta_9(\text{MILLP})_i + \beta_{10}(\text{BBP})_i + \varepsilon_i$$

Equation 3.3: Poisson Regression, Model II

$$Y(\text{CBREW1116})_i = \alpha + \beta_1(\text{P2011})_i + \beta_2(\text{PCPOP})_i + \beta_3(\text{INC16})_i + \beta_4(\text{INC16}^2)_i + \beta_5(\text{UNE16})_i + \beta_6(\text{B2011})_i + \beta_7(\text{MILLP})_i + \beta_8(\text{BBP})_i + \varepsilon_i$$

Table 3.5: Poisson Model with Change in Number of Breweries per Census Subdivision as Dependent Variable, 2011 to 2016

Explanatory variable	Coefficient (Standard Error)	
	Model I	Model II
<b>P2011</b>	0.010** (0.004)	0.010** (0.004)
<b>PCPOP</b>	0.035* (0.021)	0.029 (0.020)
<b>AGE16</b>	1.412 (1.520)	- -
<b>AGE216</b>	-0.016 (0.020)	- -
<b>INC16</b>	0.089 (0.209)	0.052 (0.179)
<b>INC216</b>	-0.001 (0.002)	-0.000 (0.002)
<b>UNE16</b>	-0.066 (0.118)	-0.101 (0.102)
<b>B2011</b>	-1.550* (0.877)	-1.496 (0.922)
<b>MILLP</b>	0.194** (0.095)	0.200** (0.092)
<b>BBP</b>	0.032 (0.098)	0.124 (0.084)

Note: Stars indicate significance at the 10% (\*), 5% (\*\*), and 1% (\*\*\*) levels

Table 3.6: Incidence Response Ratios, Model I and Model II

Explanatory variable	IRR	
	Model I	Model II
<b>P2011</b>	1.010***	1.010**
<b>PCPOP</b>	1.036*	1.029
<b>AGE16</b>	4.103	-
<b>AGE216</b>	0.984	-
<b>INC16</b>	1.093	1.054
<b>INC216</b>	0.999	1.000
<b>UNE16</b>	0.936	0.904
<b>B2011</b>	0.211*	0.224
<b>MILLP</b>	1.214**	1.221**
<b>BBP</b>	1.032	1.132

Note: Stars indicate significance at the 10% (\*), 5% (\*\*), and 1% (\*\*\*) levels

In the above Poisson model (Equation 3.2, Equation 3.3, and Table 3.5), Model I includes the explanatory variables of age and age squared; whereas Model II does not include the age and age squared variables. The elimination of the age and age squared variables was done to reduce the effects of multicollinearity or ‘double counting’ that may have occurred due to the inclusion of the age based variables of percentage of the population that is a millennial (MILLP) and the percentage of the population that is a baby boomer (BBP). However, through comparing Model I and Model II, there was no substantial difference in the coefficients or the standard errors. Therefore, most further interpretations of this regression will utilize the results under Model I.

Table 3.6 displays the interpretation for the Poisson regressions (Model I and Model II) in regards of incidence rate ratios (IRR). The IRRs are generated by exponentiating the Poisson regression coefficients that are shown in Table 3.5. The IRRs represent the effect that the explanatory variable have on the dependent variable.

In both Model I and Model II, the variable P2011, which is the population of the Census Subdivision in 2011 (in thousands), is statistically significant at the 10% level. In Model I, the coefficient for P2011 was 0.010. This suggests, all else equal, that the population of a Census Subdivision in 2011 has a positive effect on the change in number of microbreweries within the same Census Subdivision between 2011 and 2016. As such, if a Census Subdivision were to increase their population in 2011 by one unit, the difference in the logs of expected counts would be expected to increase by 0.010 units while holding the other variables in the model constant. Furthermore, the IRR for this P2011 represents the estimated rate ratio for a thousand-unit increase in a Census Subdivision in 2011, given the other variables are held constant in the model. If a Census Subdivision was to increase their population in 2011 by a one point, the rate ratio for CBREW1116 would be expected to increase by a factor 1.010, while holding all other variables in the model constant. This may also be interpreted as a one-unit increase in a Census Subdivision's 2011 population is associated with a 1.0% increase in the change in the number of microbreweries within a Census Subdivision between 2011 and 2016.

In Model I, the variable PCPOP, which is the percent change in population of a Census Subdivision between 2011 and 2016, is statistically significant at the 10% level. In Model I, the



PCPOP variable had a coefficient of 0.35. Therefore, all else being equal, a positive change in population within a Census Subdivision would have a positive impact on the change in number of breweries within the same Census Subdivision between 2011 and 2016. As such, if a Census Subdivision were to increase their percent change in population between 2011 and 2016 by one percentage point, the difference in the logs of expected counts would be expected to increase by 0.35 units while holding the other variables in the model constant. The IRR for this variable represents the estimated rate ratio for a one-unit increase in the percent change in population of a Census Subdivision between 2011 and 2016, given the other variables are held constant in the model. If a Census Subdivision was to increase the percent change in population of a Census Subdivision between 2011 and 2016 by one percentage point, the rate ratio for CBREW1116 would be expected to increase by a factor 1.036, while holding all other variables in the model constant. This may also be interpreted as a one percentage point increase in a Census Subdivision's 2011 population is associated with a 3.6% increase in the change in the number of microbreweries within a Census Subdivision between 2011 and 2016.

In Model I, the variable B2011, which is the number of breweries within a Census Subdivision in 2011, is statistically significant at the 10% level. In Model I, the coefficient on the B2011 variable is -1.550. As such, if a Census Subdivision were to increase their number of microbreweries in 2011 by one point, the difference in the logs of expected counts would be expected to decrease by 1.550 units while holding the other variables in the model constant. The IRR for this variable represents the estimated rate ratio for a one-unit decrease in the number of breweries within a Census Subdivision in 2011, given the other variables are held constant in the model. If a Census Subdivision was to decrease the number of breweries within a Census

Subdivision in 2011 by one point, the rate ratio for CBREW1116 would be expected to decrease by a factor 0.224, while holding all other variables in the model constant. This may also be interpreted as a one-point increase in a Census Subdivision's microbreweries in 2011 is associated with a 77.6% decrease in the change in the number of microbreweries within a Census Subdivision between 2011 and 2016. This suggests that all else being equal, the more microbreweries in 2011, the fewer the number that were added during the five-year period between 2011 and 2016. This perhaps suggests that a brewery may put greater emphasis on demand-side, rather than supply-side, concerns when they choose where to establish a new microbrewery. Furthermore, this may also suggest that microbreweries situate themselves where there are fewer suppliers of microbrew products as there is a high competition to capture consumers. However, it is important to note that there are clear benefits to microbreweries who choose to establish themselves in close geographical proximity to other microbreweries. This will be discussed within Chapter Four of this thesis.

In Model I, the variable MILLP, the percentage of the population within a Census Subdivision that would be considered a "millennial" in 2016, is statistically significant at the 5% level with a coefficient of 0.194. As such, if a Census Subdivision were to increase their percent of millennial population between 2011 and 2016 by one percentage point, the difference in the logs of expected counts would be expected to increase by 0.194 units while holding the other variables in the model constant. This suggests that all else equal, the higher the percentage of millennials within a Census Subdivision, the greater the number of microbreweries were established within the same Census Subdivision between 2011 and 2016. The IRR for this variable represents the estimated rate ratio for a one-unit increase in the percentage of the population within a Census

Subdivision that would be considered a “millennial” in 2016, given the other variables are held constant in the model. If a Census Subdivision was to increase the percentage of the population within a Census Subdivision that would be considered a “millennial” in 2016 by one point, the rate ratio for CBREW1116 would be expected to increase by a factor 1.214, while holding all other variables in the model constant. This may also be interpreted as a one percentage point increase in a Census Subdivision’s millennial population is associated with a 21.4% increase in the change in the number of microbreweries within a Census Subdivision between 2011 and 2016.

### **3.4 Quantitative Conclusions**

This Chapter aimed to address the following gap in Alberta microbrewery literature in order to *determine if the microbrewing industry in Alberta has exhibited geographic clustering*. Spatial analytic tools were used to address literature gaps. It can be concluded that there exists geographic ‘hotspots’ of microbreweries within the City of Edmonton and the City of Calgary. However, results from a Moran’s I test suggest that across the Province Alberta, an existing microbrewery does not necessarily attract other microbreweries to situate themselves nearby or within the same Census Subdivision.

As previously noted, an evolutionary economic geography (EEG) was utilized to evaluate the change in the number of microbreweries in the Province of Alberta between 2011 and 2016. The dependent variable in this analysis was the change in the number of microbreweries in Census Subdivision with a population greater than 4,000 in 2011 and 2016. The explanatory variables used in this analysis aimed to capture factors related to demand and clustering.

Furthermore, previous literature suggests that a number of variables may impact the establishment of a microbrewery within a Census Subdivision. In this analysis, the following explanatory variables were included: population of a Census Subdivision in 2011 (P2011); percent change in population within a Census Subdivision between 2011 and 2016 (PCPOP); average age of the population within a Census Subdivision (AGE16); average age of the population within a Census Subdivision squared (AGE216); income statistics in 2015 for the population aged 15 years and over in private households within a Census Subdivision (INC16); income statistics in 2015 for the population aged 15 years and over in private households within a Census Subdivision squared (INC216); unemployment rate within a Census Subdivision (UNE16); number of microbreweries in a Census Subdivision in 2011 (B2011); percentage of the population in 2016 of a Census Subdivision that was between the ages of 20 to 34 (MILLP); and percentage of the population in 2016 of a Census Subdivision that was between the ages of 50 to 74 (BBP). The dependent variable was the change in number of breweries within a Census Subdivision between 2011 and 2016 (CBREW1116).

Through a Poisson regression analysis, it was shown that the following variables may impact the establishment of microbrewery within a Census Subdivision: P2011, PCPOP, B2011, and MILLP. Three of these variables would be considered demand-side variables – size of a Census Subdivision’s population (P2011), change in the population of a Census Subdivision (PCPOP) and composition of the population of a Census Subdivision (MILLP). One of these variables would be considered a supply-side variable – the number of microbreweries within a Census Subdivision (B2011).

The number of breweries within a Census Subdivision in 2011 had the most negative impact on the establishment of a microbrewery within a Census Subdivision. On the other hand, the variable that most positively impacted the establishment of microbrewery within a Census Subdivision was the percentage of the population that would be considered a millennial in 2016. However, the variable that represented the percentage of the population that would be considered a baby boomer in 2016 within a Census Subdivision was insignificant. This finding contrasts with previous work of Weersink et al. (2018) in which the authors state that Weersink the factor that has highest influence on beer consumption is age and that the baby boomer generation – those born between 1946 and 1965 – in particular exerts the most influence over the industry (p.99).

In terms of supply-side factors, the main finding was that the number of microbreweries in a Census Subdivision in 2011 has a negative effect on the establishment of other microbreweries. It may be concluded that negative effect of competition of other microbreweries appears to outweigh the positive effects (e.g., cooperation and/or collaboration) of locating near other microbreweries.

### **References: Chapter Three**

- AGLC. (2017). Class E Licences. Retrieved from [https://aglc.ca/sites/aglc.ca/files/aglc\\_files/Class\\_E\\_Licences\\_\\_5233\\_.pdf](https://aglc.ca/sites/aglc.ca/files/aglc_files/Class_E_Licences__5233_.pdf)
- AGLC. (2018). Liquor Licensee List. Retrieved from [https://aglc.ca/sites/aglc.ca/files/LicenseeReports/Licensee\\_Report\\_06\\_04\\_18\\_11\\_42\\_38.pdf](https://aglc.ca/sites/aglc.ca/files/LicenseeReports/Licensee_Report_06_04_18_11_42_38.pdf)

- Altalis. (2018). Municipal Boundaries [Data File]. Retrieved from <https://beta.altalis.com/map?id=113>
- Baginski James, and Bell Thomas L. (2011). Under-Tapped?: An Analysis of Craft Brewing in the Southern United States. *Southeastern Geographer*, (1), 165.
- Brewer Beer Marketer's Insights. (Semi-weekly newsletter, various issues) Nanuet, NY: Beer Marketer's Insights.
- Elzinga, K. G., Tremblay, C. H., & Tremblay, V. J. (2015). Craft beer in the United States: History, numbers, and geography. *Journal of Wine Economics*, 10(3), 242-274.
- Florida, R. (2012). The geography of craft beer. *The Atlantic Cities*.
- McLaughlin, R. B., Reid, N., & Moore, M. S. (2016). Inter-Metropolitan Location Patterns of Craft Breweries in the United States. *地域学研究*, 46(1), 115-129.
- Moore, M. S., Reid, N., & McLaughlin, R. B. (2016). The locational determinants of micro-breweries and brewpubs in the United States. In *Brewing, Beer and Pubs*. Palgrave Macmillan, London. 182-204.
- On Beer (2019). Prairie Beer.( <http://www.onbeer.org/prairie-beer/>, accessed Jan 16, 2019).
- Reid, N., I. Nilsson, and M. Lehnert. (2016). Geographic Clustering of Craft Breweries in Select American Cities. [PDF]. Presented at the Regional Science Academy Conference on Urban Empires—Cities as Global Rulers on the Urban New World. Retrieved from <https://www.slideshare.net/regionalscienceacademy/geographic-clustering-of-craft-breweries-in-select-american-cities>
- UCLA: Statistical Consulting Group. (n.d.). Introduction to SAS. Retrieved from <https://stats.idre.ucla.edu/stata/output/negative-binomial-regression/>

## Chapter Four: Qualitative Research

### 4.0 Qualitative Introduction

As stated in Chapter One, the overall goal of this thesis is to: *i) determine if the microbrewing industry in Alberta has exhibited geographic clustering and, if so, what effects this has had, ii) determine if government policy has impacted the development of Alberta's microbrewery industry, and iii) determine what other factors have contributed to the success of the microbrewing industry in Alberta, specifically focusing on the City of Calgary and the City of Edmonton.* Chapter Four builds upon Chapter Three. Chapter Three determined that geographic clustering of microbreweries has occurred within the City of Edmonton and the City of Calgary, but that elsewhere, most of the new microbreweries were established in locations that had fewer existing microbreweries. However, Chapter Three failed to address why microbreweries may choose to locate in close proximity to one another in Calgary and Edmonton and what other specific factors have led to successful microbreweries in these cities. Chapter Four addresses these questions and builds upon the results reported in Chapter Three.

In this chapter I begin by describing the qualitative methods used in this research – key informant interviews and survey – and I also provide a brief description about those who participated in the interview processes. Next, I analyze the qualitative data gathered about microbreweries in the City of Calgary and the City of Edmonton using Porter's Diamond Model framework, followed by further analysis using Kamath et al.'s GEMS Model framework. I conclude this chapter with a synthesis and interpretation of the results, reflecting on the future of the microbrewing industry.

## 4.1 Qualitative Methods

Semi-structured interviews<sup>7</sup> were conducted with those directly involved with microbreweries within the City of Edmonton and the City of Calgary, including microbrewery owners, head brewmasters, and brewery managers. Research participants were asked to rate statements and answer a series of open-ended questions in an interview-type structure. Questions and statements addressed four main themes – zoning bylaws, food safety, food processing, and the role of government and governance. These four themes relate back to previous research results (Budynski et al., 2018), where it was determined that specific factors have been particularly important to the success of local food systems across Canada. As noted in Chapter One, the microbrewing industry in Alberta has been subjected to a variety of provincial-level policy changes (e.g., removal of minimum brewing requirement, tax structure changes, introduction of Alberta Small Brewers Development Program) and municipal-level policy changes (e.g., zoning bylaws). The open-ended question structure contributed heavily to the conclusions that were drawn within this research. Interviewees, through the open-ended structure, were able to share their experiences within the microbrewery industry and opinions without being constrained by a rating scale as in the Likert-scale questions. Appendix C provides a sample of the interview that was used for this research.

The Alberta Gaming and Liquor Commissions (AGLC) ‘liquor provider search’ tool (<https://aglc.ca/liquor/liquor-provider-search>) provided a list of microbreweries within the Province of Alberta. A search of Class E Licenses was performed. As per the AGLC (2017), “Class E Manufacturer licenses are issued for the manufacture of liquor and include breweries,

---

<sup>7</sup> It should be noted that the interview process received human ethics approval through the University of Alberta Research Ethics Board, No. Pro00063666.



wineries and distilleries”. From this search, a PDF file was generated and all the breweries with the sub-class of Manufacturer-Small (MFS) were extracted into a Microsoft Excel file. From there, a separate file was generated with all the microbreweries that are located within the City of Edmonton and City of Calgary. This file also included email addresses of the microbreweries that were collected from Google. From there, I emailed all breweries within the City of Edmonton and the City of Calgary asking if they would be interested in participating in an interview. If no email was available, I reached out to these breweries through contact boxes on their websites or through Facebook Messenger. Table 4.1 gives a brief description of the breweries included in this thesis research. Breweries are distinguished by alphabetical designation in order to provide respondents with anonymity. A total of ten in-person interviews were conducted – seven in the City of Calgary region and three in the City of Edmonton region. The interviews were conducted in-person and used a semi-structured format. All interviews were recorded and then transcribed. On average, the interviews lasted twenty-five minutes; however, interviews ranged from just over twenty minutes to fifty-five minutes.

Data saturation was achieved within ten interviews as common themes began to arise in all interviews that were being conducted. Common themes that arose included the following: the role of collaboration versus competition within the microbrewery industry in the City of Calgary and the City of Edmonton; the benefits of locating near other breweries; the beneficial impact of provincial-level policies (e.g., ASBD program, the removal of a minimum brewing requirement); and, the impact of municipal-level zoning bylaws.

My positionality relative to this project should be noted. I represent a young, female demographic; whereas, all those that participated in this research were male and older than myself. Therefore, my positionality within this thesis research may have impacted the responses which I received from interview respondents. For example, my gender being female and all interviewees being male may have impacted the results I received. The gender dynamic between myself and the interviewees may have come across more proper and less than it would have if I were a male interviewing other male. This may have inhibited the respondents from providing more honest or perhaps 'rough' responses. Furthermore, my age combined with my gender impacted the response I received. The older, male respondents may have made assumptions about the extent of my brewery and beer knowledge as beer products are often coded as being masculine. Interview respondents may have provided more basic explanations with less nuance as they may have assumed that I lacked extensive knowledge about microbrewing and/or microbrew products.

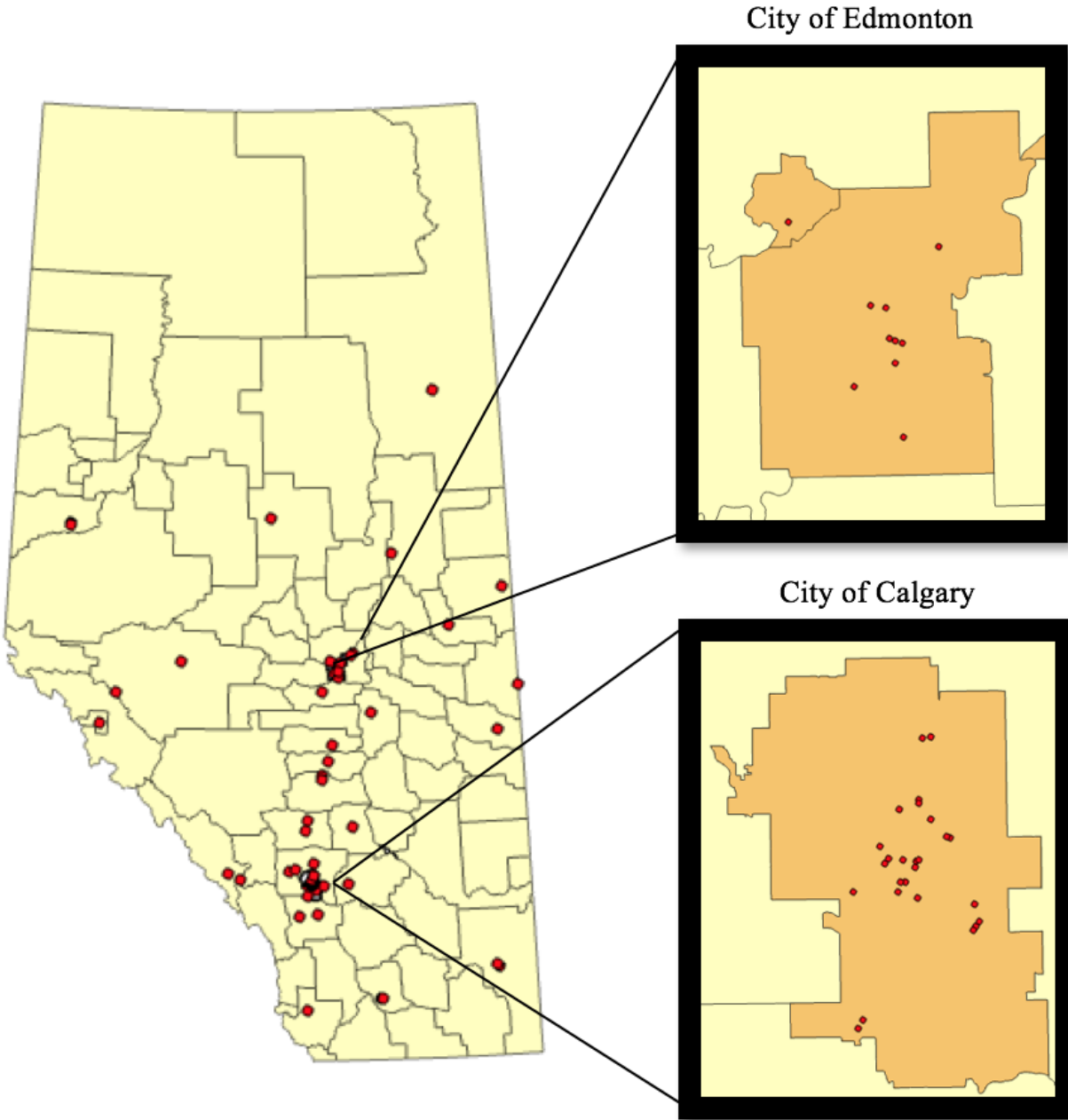
This research may have been subjected to the presence of a strategic bias. A strategic bias may be the result of respondents intentionally trying to manipulate the outcome of the study to advance their own interests (Brown, 2018). Interview respondents may have been inclined to share only positive experiences with other microbreweries in order to shed a positive light on the microbrewing industry within the City of Calgary and the City of Edmonton. The respondents may have felt that a more positive public image would perhaps increase the likelihood that they would receive external support (e.g., government, local food initiatives, Alberta Small Brewers Associations, etc.). Therefore, the presence of a strategic bias may have influence the interview results.

Table 4.1: List of Breweries Interviewed and Location

<b>Brewery Coded Name</b>	<b>Location</b>
<i>Brewery A</i>	Calgary Region – ‘Beermuda Triangle’
<i>Brewery B</i>	Calgary Region – ‘Barley Belt’
<i>Brewery C</i>	Calgary Region – ‘Barley Belt’
<i>Brewery D</i>	Edmonton Region – close to Brewery G
<i>Brewery E</i>	Edmonton Region
<i>Brewery F</i>	Calgary – ‘Barley Belt’
<i>Brewery G</i>	Edmonton – close to Brewery D
<i>Brewery H</i>	Calgary Region
<i>Brewery I</i>	Calgary Region
<i>Brewery J</i>	Calgary Region

Breweries in City of Calgary and City of Edmonton are the focus of this research due to my interest in the geographic clustering of microbreweries occurring in these locations. A large number of microbreweries are located in the Calgary region, particularly in the southeast ‘Barley Belt’ and in the northeast ‘Beermuda Triangle’. In addition, there is a number of microbreweries in the Edmonton region, although substantially fewer than those established in the City of Calgary. Figure 4.1 displays a map of microbreweries within the Province of Alberta with the microbreweries within the City of Edmonton and the City of Calgary displayed to the right of the province-wide map.

Figure 4.1: Map of Microbreweries in the Province of Alberta, City of Edmonton, and City of Calgary (up to the end of 2017)



Source: Author's analysis of AGLC (2018b) and Altalis (2018) data

## **4.2 Qualitative Results – Porter’s ‘Determinants of National Competitive Advantage’ – Diamond Model**

As discussed in Chapter Two, Porter’s ‘Determinants of National Competitive Advantage’ Diamond model incorporates four primary factor attributes which include firm strategy, structure, and rivalry, factor conditions, demand conditions, and related and supporting industries. This model also includes two externally influencing factors – government and chance. In this section, I will use Porter’s Diamond model to analyze the microbrewery industry in the City of Calgary and the City of Edmonton. In the next section, I will use Kamath et al.’s (2012) GEMS model as an extension from Porter’s Diamond model and will be used to further analyze the microbrewery industry within the City of Calgary and the City of Edmonton.

### ***4.2.1 Firm Strategy, Structure, and Rivalry***

In the Alberta microbrewing industry, the nature of competition appears to be remarkably different than the structure that may be witnessed in other industries. As mentioned in Chapter Two, Porter (1998a) defines firm strategy, structure, and rivalry as “the nature and intensity of local competition”. In terms of a national-level definition, Porter (1990) defines this factor as the “conditions in the nation governing how companies are created, organized, and managed, as well as the nature of domestic rivalry”.

A theme that was expressed throughout many of the interviews was the role of collaboration over competition. Brewery C stated:

“that we are not necessarily competing against each other per se. I mean you always are but we are competing against other districts. What we have to gain against other breweries in districts is that you have more of a team. So you are not alone it is more

beneficial to the area. To promote the area opposed to promoting individual location and you create things, like [...] the Barley Belt”.

The interview process revealed various factors that caused microbreweries to collaborate rather than compete. For example, Brewery D stated that “[t] idea [behind collaborating] is to grow the microbrew market and the rising tide will carry all ships basically”. Throughout many of the interviews, interviewees often referenced the need for cooperation in order to successfully compete against macrobrewers. Brewery G stated the following about the microbrewing industry:

“[It is a] very, very collaborative industry. We're all in it together. We kind of look at, at least the way I see it, is that microbreweries, we all look at ourselves as kind of like an army of David's against the Goliath of Molson and Anheuser Busch” and that their ultimate goal was not the convince consumers to not drink other microbrews but to instead “to get [consumers] to [start] drinking anything other than Molson, Coors, Labatt's”.

#### ***4.2.2 Factor Conditions***

Factor conditions play an important role in the success of a cluster development. According to Porter (1990), the presence of high quality, specialized inputs has the ability to impact cluster development. Factor conditions may include the presence of human and capital resources, physical infrastructure, administrative infrastructure, information infrastructure, and natural resources (Porter and Ketels, 2003; Porter, 1990).

In terms of material inputs, breweries need a variety of ingredients in order to conduct their brewing operations. Brewing inputs include pure water, barley, hops, and brewer’s yeast.

According to Olds College (n.d.[c]), the increase in the popularity of microbrews has led to a demand for locally sourced ingredients. Malt barley is very important to the brewing industry as brewers convert high quality malting barley into malt during their brewing processes. Canada is the world's second largest exporter of malt, with export volumes averaging 500,000 tonnes annually (Government of Canada, 2015). According to Alberta Barley (n.d.), the Province of Alberta is the number one producer of malt barley in Canada. In addition, Alberta is also home to two international malteries – Canada Malting in Ogden, Albert and Rahr Malting in Alix, Alberta – and three craft malteries – Hobo Malt near Irricana, Alberta, Red Shed Malting north of Olds, Alberta, and Hogarth Malt northwest of Olds, Alberta. Therefore, microbreweries in Alberta are able to easily source a primary brewing ingredient – malt barley – from within the Province of Alberta.

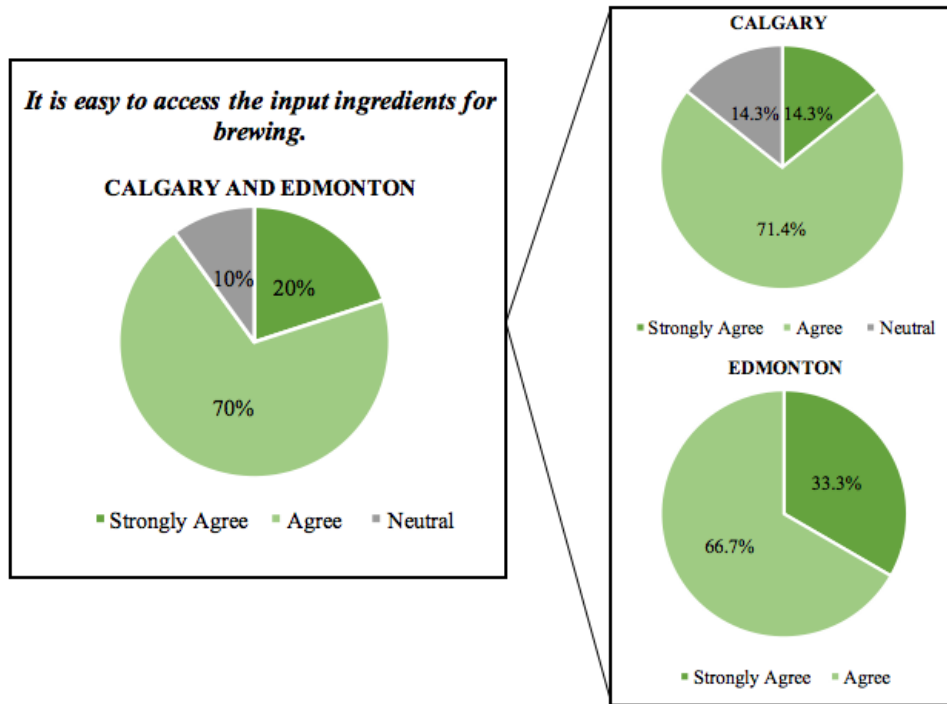
Furthermore, Canada has an abundance of pure, fresh water, with its rivers and lakes holding 20% of the world's freshwater resources (Alberta WaterPortal Society, n.d.). Breweries in the Province of Alberta have acknowledged the importance of fresh water for their brewing operations, with some breweries even taking part in conservation efforts. Edmonton's Bent Stick Brewing and Alley Kat Brewing Company have joined with Alberta conservation groups in order to protect the Bighorn Backcountry (Yellowstone to Yukon, 2017). The Bighorn Backcountry provided 88 percent of the Edmonton Region's drinking water and therefore this area also provides the water needed for brewing operations (Yellowstone to Yukon, 2017). As of yet, breweries in Edmonton and Calgary have faced no significant issues in sourcing fresh water needed for their brewing processes.

Another ingredient that is required for brewing is hops. Due to increasing demand for local brewing ingredients, Alberta farmers have recently begun to grow hops (Olds College, n.d.[c]). Olds College (n.d.[c]) conducted a survey that asked small-scale Alberta brewers about their hop preference and hop use. This survey revealed that 93 percent of small-scale brewers in Alberta felt that they do not currently have access to enough high-quality locally-grown hops (Olds College, n.d.[c]). Similarly, those that were interviewed for this research also stated that although most brewing inputs are easy to source in Alberta, good-quality locally-grown hops are difficult to source within the Province of Alberta. For example, Brewery B, located in the City of Calgary, stated that hops are difficult to source locally – “[s]ome stuff doesn’t grow, right? Hops aren’t growing in Alberta, they are starting to but it is like wine and grapes, you need a couple years to get used to it”. However, Brewery B also stated that he was hopeful for the future of a local hop industry. In addition, Brewery D, located in the City of Edmonton, also stated the brewing ingredient that is difficult to source locally is hops.

Furthermore, I discussed the inputs microbreweries require for brewing beer products with interview respondents. I read the following statement to interviewee respondents: [i]t is easy to access the inputs ingredients for brewing. Overall, two interviewees strongly agreed (20%), seven interviewees agreed (70%), and one interviewee felt neutrally (10%) about this statement. Little differentiation in response was recorded between the City of Calgary and the City of Edmonton. Figure 4.2 displays the results for the aforementioned statement.

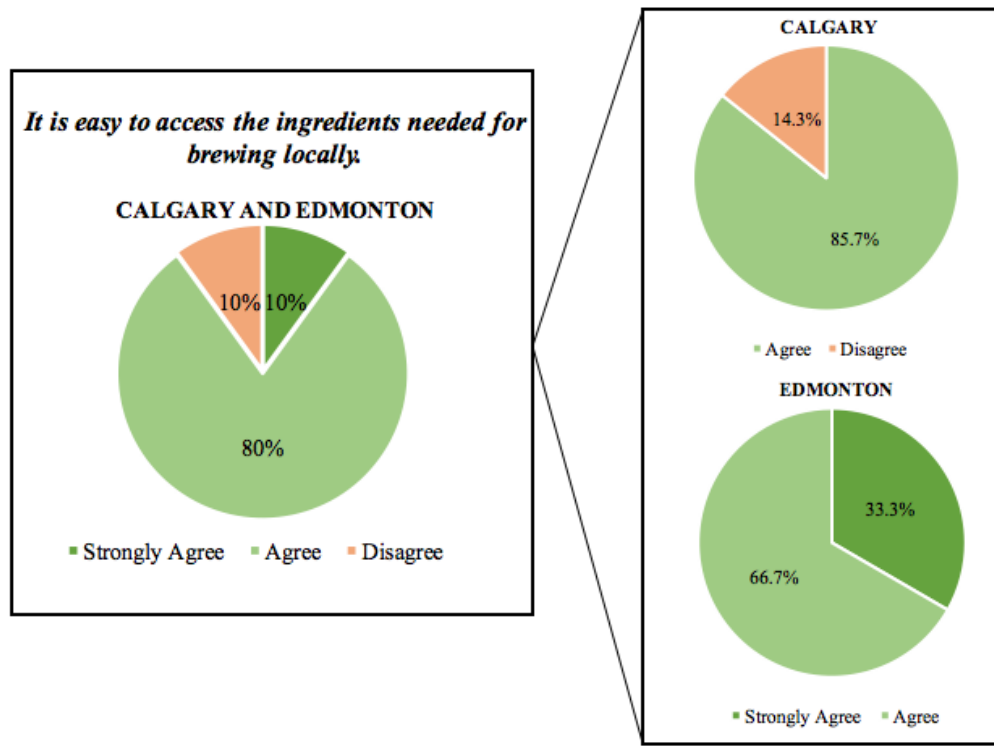


Figure 4.2: Results – Access to Input Ingredients for Brewing, Calgary and Edmonton



In addition, I read the same statement to interview respondents, but instead asked about the local accessibility of brewing inputs. I read the following statement to interviewees: [i]t is easy to access the inputs ingredients for brewing locally. Overall, one interviewee strongly agreed (10%), eight interviewees agreed (80%), and one interviewee disagreed (10%) with this statement. Therefore, brewing inputs, even locally sourced inputs, are shown as not posing a differential barrier to those microbreweries in the City of Edmonton versus those microbreweries in the City of Calgary. Figure 4.3 displays the results for the aforementioned statement.

Figure 4.3: Results – Access to Locally Sourced Input Ingredients for Brewing, Calgary and Edmonton



As well as having easy access to brewing inputs, Alberta, especially Calgary and Edmonton, also have access to a pool of labour that specializes in the practice of brewing. Specialized human capital can provide strengths to clusters; for example, the co-owner of Brewery C stated that they were trained how to brew beer by another brewer in the industry. Additionally, Olds College recently launched their Brewmaster and Brewery Operations Management Program. This program aims to equip students with technical, analytical, and business skills for use within the brewing industry. Therefore, the Brewmaster and Brewery Operations Management Program at Olds College plays an integral role in providing the Province of Alberta with specialized human capital within the microbrewing industry. Olds College is located between the City of Edmonton and the City of Calgary; therefore, the program has the potential to directly impact the brewing industries in both of these cities.

### ***4.2.3 Demand Conditions***

Interviews with those involved in the Alberta brewing industry revealed that demand conditions have played, and may continue to play, a vital role in the success of the province's brewing industry. One brewery owner in Calgary stated that there are three distinctly different types of beer consumers in Calgary. He stated that there is one subset of consumer who will drink whatever is on special, another subset drink 'Molson' or whatever they are accustomed to, and finally there is a subset of consumers who want to consume something local and special. Furthermore, he felt the entire microbrewery industry benefits when a consumer is brought from the 'Molson' subset of consumers to the local subset of consumers. These findings are related to those of Carpenter et al. (2013). Carpenter et al. characterized four distinctly different and identifiable craft beer drinkers within the city of Denver, Colorado – the Explorer, the Loyalist, the Enthusiasts, and the Novice (See Chapter Two).

### ***4.2.4 Related and Supporting Industries***

Following with Porter's (1990) Diamond Model, related and supporting industries are defined here as access to local suppliers and firms in related fields (e.g., other microbreweries, beer tourism industries).

#### ***4.2.4a Related Industries***

Previous literature suggests that there are factors that act as incentives for breweries to locate near one another. For example, Brewery C and another brewery in Calgary had a unique collaboration in July 2017. These two breweries utilized collaborative and competitive forces by

infiltrating one another's breweries and developing a mystery beer. The breweries then marketed their brews through a 'shop swap' night and consumers had a chance to vote for their favorite brew. Innovation and entrepreneurship within industry clusters may present distinctive advantages for the firms involved.

Interviews with those involved in the Edmonton and Calgary brewing industry revealed the importance of collaboration and knowledge sharing within the industry. For example, Brewery E stated that Brewery G is located "just down the road, we are going to do collaborations with them" and that Brewery E was "[t]rying to get [Brewery G] up and running." Brewery E also stated that they are good friends with other local brewers, stating that they often are "bouncing ideas off one another, supporting each other that way." By educating other brewers that are opening within a cluster, the notion of knowledge spillovers are presented and this becomes advantageous to those who are involved in that particular cluster.

Moreover, interviewees talked about the uniqueness of the microbrewing industry in Calgary and in Edmonton, and compared the microbrewing industry to other industries they have been involved in. For example, Brewery C stated that:

"[the microbrewing industry] is a good group of people. [The] community is oddly awesome. Every other industry I have worked in is not like this. It is much more cut throat, people won't share anything, they don't want to help you out, everyone is very forthcoming with information [in the microbrewing industry] which you almost find it to be disingenuous sometimes, but it is not, it is not at all".

The uniqueness of the microbrewing industry was reiterated during an interview with Brewery G. An interviewee stated that:

“prior to opening this brewery, I was in the automobile industry for 14 years. Commission and sales, everything is very, very competitive, very, very cutthroat. Coming into this industry and trying to open up a brewery, I reached out to other brewers in the city, looking for advice, not thinking anybody would give me the time of day [...] and people emailed the same day, they gave me calls, people offered to give me tours of their brewery, and like, ‘Come on in. Bring a pad of paper and I’ll answer any questions you got’”.

These findings regarding collaboration among microbreweries in the City of Calgary and the City of Edmonton re-enforce the finding in Nilsson et al. (2018). In Chapter Two, I noted that Nilsson et al. concluded that collaboration and knowledge sharing is crucial to the microbrewing industry, especially as they compete for market space with macrobrewers. The interview findings are also consistent with Nilsson et al. in terms of how microbreweries choose to collaborate. Nilsson et al. states that the most common form of collaboration is collaborative brewing. This was consistent with the findings within my thesis as nearly all those interviewed discussed their role in collaborative brews with other microbreweries. Furthermore, the interview findings also relate back to the study by Beckie et al. (2012). In Chapter Two it was stated that active clustering may be characterized by factors such as collaborative and competitive forces, interaction and functional relationships, and knowledge sharing (Beckie et al., 2012, p.336). Therefore, the presence of collaboration within the industry, in addition to industry knowledge sharing, is consistent with the findings of Beckie et al. and their definition of active clustering.

As previously mentioned, some geographical areas across Alberta exhibit a large number of microbreweries within the same geographical area. For example, this would include the northeast ‘Barley Belt’ and southeast ‘Beermuda Triangle’ areas of Calgary. In Chapter Two, the concept of vertical and horizontal clustering was explored. Porter (1990) states that vertical clustering refers to buyer-seller relationships and horizontal clusters refer to industries which share commonalities in areas such as technology and labor force. Within these clusters, informal horizontal collaboration between breweries is exhibited. For example, one could see the collaborative nature of the brewing industry by simply walking through the doors of Brewery C, which is located within the City of Calgary. Lined across the back walls of the taproom of Brewery C was the glass beer containers, known as howlers and growlers, of not only neighbouring breweries, but from breweries across Alberta. When asked about the cooperation within the industry, the interviewee from Brewery C did not hesitate in agreeing. Furthermore, this participant further described a circumstance that displayed the cooperation that exists within the microbrewery industry. He described a situation where a particular malt was needed for a specialty brew, but unfortunately the only bag they had went bad due to the presence of condensation. He described how “a brewer, a friend of ours from [another Calgary brewery], [brought] down the malt for us at like 7:00 in the morning so we could brew”. He claimed that this was “a testament of how you know when it is the best kind of people in this industry. [They] do anything they can for you”. This particular example shows how a related industry, in this case another brewery, has played an integral role in the success of another brewery within the same geographic space.

#### ***4.2.4b Supporting Industries***

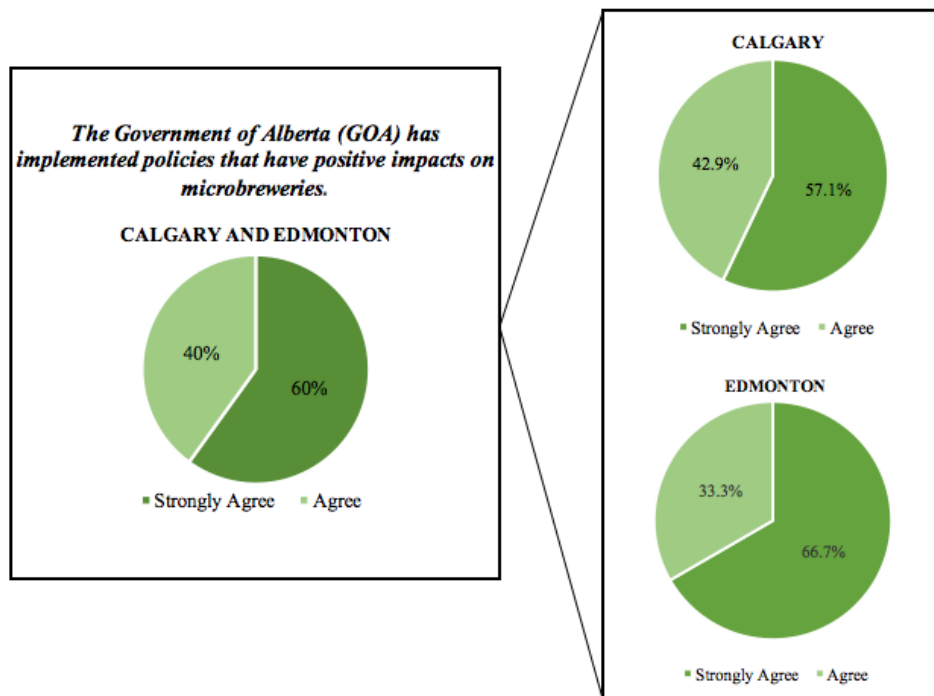
Other industries, such as tourism, have strongly supported the microbrewing industry in Edmonton and Calgary. Most interviewees commented that microbreweries locating near one another can create a ‘tourist destination’, as evidenced by existing biking tours (e.g., Calgary Brewery Tours, Canadian Craft Tours (Calgary), Bust Loose Brewery Tour (Calgary and Canmore), Nomad Bike Tours YYC, YYC History Bicycle Tour, Urban Pedal Tours in Edmonton and Calgary) driving tours (e.g. Edmonton Brewery Tours, Calgary Brewery Tours), and self-guided brewery tours (e.g., YYC Beer Map, 2018 Alberta Tasting Trail). Through the support of Tourism Calgary, YYC Beer Map has been developed to make it easier for Calgarians and visitors to the City of Calgary to explore the City’s growing brewery industry. The YYC Beer Map is an interesting example of a self-guided brewery tour as it was made possible through the support of the municipal government. The map divides Calgary into three areas – northeast, southeast, and southwest – in order to make it easier for consumers to explore by foot or bicycle. In addition, the map includes the brewery’s address, social media information, hours of operation, whether the brewery offers light snack or a full menu, and a short brewery biography.

#### ***4.2.5 External Factors – Government and Chance***

My interviews also explored the role of government in the development of Alberta’s brewery industry. Interviewees were read the following statement: we would like to know your views on government policies that have impacted microbrewers in the [insert name of city] Region. This

statement was followed by a series of additional statements where interviewees were asked to rate how much they agreed or disagreed with the statement that was read to them. The interviewees were asked about their opinions on the role of the Province of Alberta. I read the following statement to interviewees: [t]he Government of Alberta (GOA) has implemented policies that have positive impacts on microbreweries. Overall, six interviewees strongly agreed (60%) and four interviewees agreed (40%) with the aforementioned statement. No interviewees disagreed or felt neutrally about the aforementioned statement. There was little difference in the responses that were recorded for the City of Edmonton versus those recorded for the City of Calgary. Figure 4.4 displays the responses to the aforementioned statement.

Figure 4.4: Results – Positive Policy Impact of the Provincial Government, Edmonton and Calgary

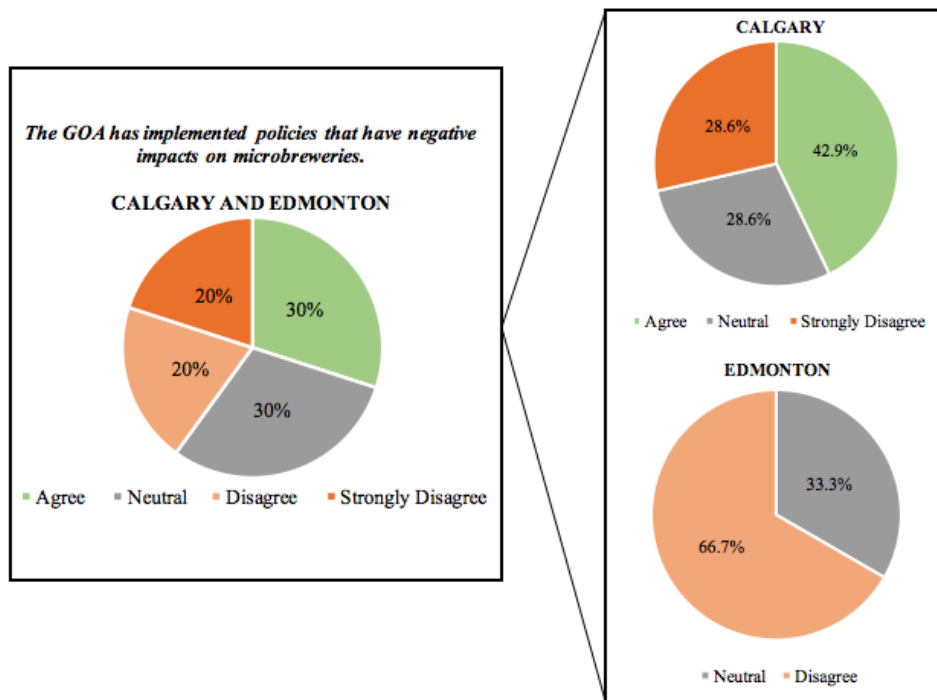


I then asked interviewees to rate how they felt about the following statement: [t]he Government of Alberta (GOA) has implemented policies that have negative impacts on microbreweries.



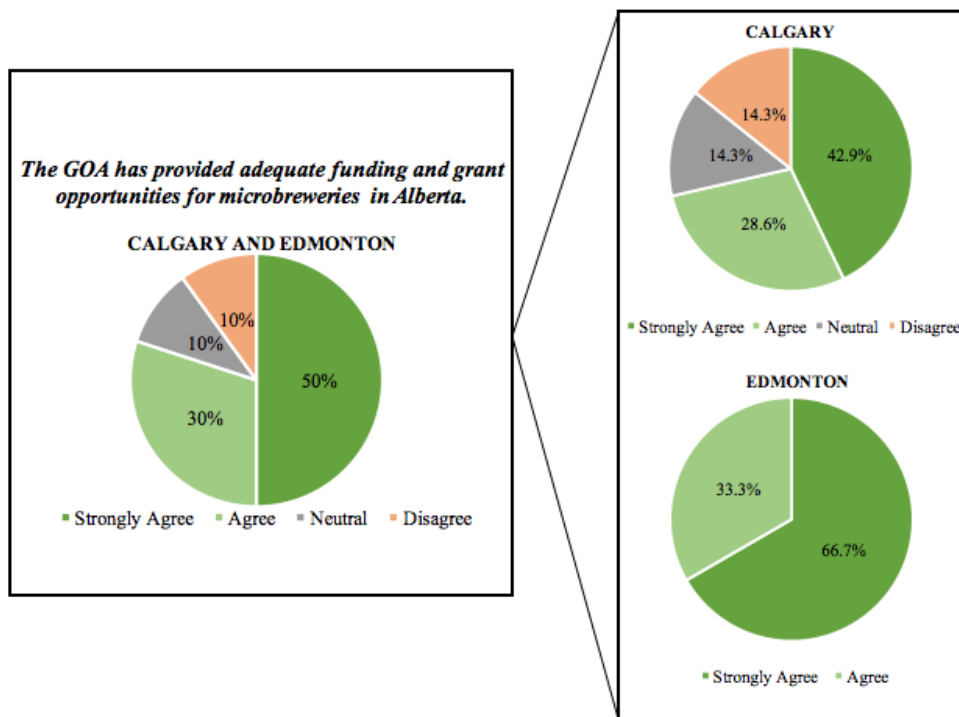
Overall, three interviewees agreed (30%), three interviewees felt neutrally (30%), two interviewees disagreed (20%), and two interviewees strongly disagreed (20%) with the above-mentioned statement. This statement uncovered differences in responses between those interviewed within the City of Calgary versus those interviewed within the City of Edmonton. For those interviewed within the City of Calgary, three respondents agreed (42.9%), two felt neutrally (28.6%) about the statement, and two strongly disagreed (28.6%). On the other hand, for those interviewed within the City of Edmonton, one felt neutrally (33.3%) and two strongly disagreed (66.7%) about the statement. This may suggest that those interviewed in Edmonton may have felt less slighted by provincial-level microbrewery policies than those interviewed in the City of Calgary. Figure 4.5 displays the responses to the aforementioned statement.

Figure 4.5: Results – Negative Policy Impact of the Provincial Government, Edmonton and Calgary



Additionally, interviewees were read statements pertaining to funding and grant opportunities provided by the Government of Alberta. I read the following statement to interview respondents: [t]he GOA has provided adequate funding and grant opportunities for microbreweries in Alberta. Overall, five respondents strongly agreed (50%), three agreed (30%), one felt neutrally (10%), and one respondent disagreed (10%) with this statement. Respondents in Edmonton either agreed (33.3%) or strongly agreed (66.7%) with this statement. On the other hand, more mixed responses were recorded for those within the City of Calgary – three respondents strongly agreed (42.9%) with the above-mentioned statement, two agreed (28.6%), one respondent felt neutrally (14.3%), and one disagreed (14.3%). Figure 4.6 displays the responses to the aforementioned statement.

Figure 4.6: Results – Funding and Grant Opportunities Provided by the Provincial Government, Edmonton and Calgary



Interviewees were asked similar questions regarding their municipal government as they were about the provincial government. For example, interviewees were read the following statement, with either Edmonton or Calgary being used depending on the location of the brewery – [t]he City of [insert name of city] has implemented policies that have positively impacted microbreweries. I also read the following to the interviewees: [t]he City of [insert name of city] has implemented policies that have negatively impacted microbreweries. For the statement about the positive impacts of the City of Calgary’s policies, three Calgary-based interviewees agreed (42.9%), three felt neutrally (42.9%) about the statement, and one disagreed (14.3%) with the statement. On the other hand, for the statement about the positive impacts of the City of Edmonton’s policies, one Edmonton-based (33.3%) interviewee agreed, one disagreed (33.3%), and one strongly disagreed (33.3%) with the statement. This particular statement exposed potential differences between the City of Calgary and the City of Edmonton. Overall, those interview respondents from the City of Edmonton felt as if their municipal government, in this case the City of Edmonton, has failed to implement policies that have positively impacted microbreweries within the City.

Furthermore, for the statement about the negative impacts of the City of Calgary’s policies, four Calgary-based interviewees felt neutrally (57.1%) about the statement, two disagreed (28.6%), and one agreed (14.3%). Likewise, the same statement was read to Edmonton-based participants. One Edmonton-based interviewee strongly agreed (33.3%), one agreed (33.3%), and one disagreed (33.3%) with the statement about negative policy impacts implemented by the City of Edmonton. Figure 4.7 and Figure 4.8 display the responses to the two aforementioned statements. Similar to the statement that asked respondents to rate how they felt about the

positive impacts, this statement exposed potential differences between the City of Calgary and the City of Edmonton.

Figure 4.7: Results – Municipal-Level Positive Policies, Calgary and Edmonton

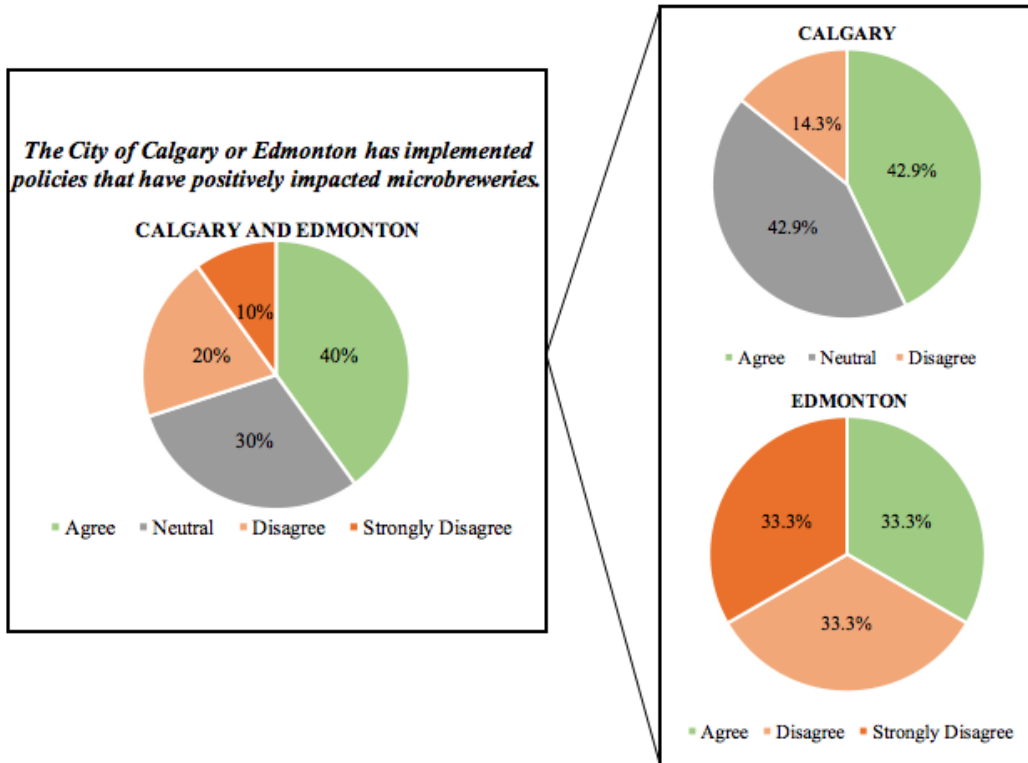
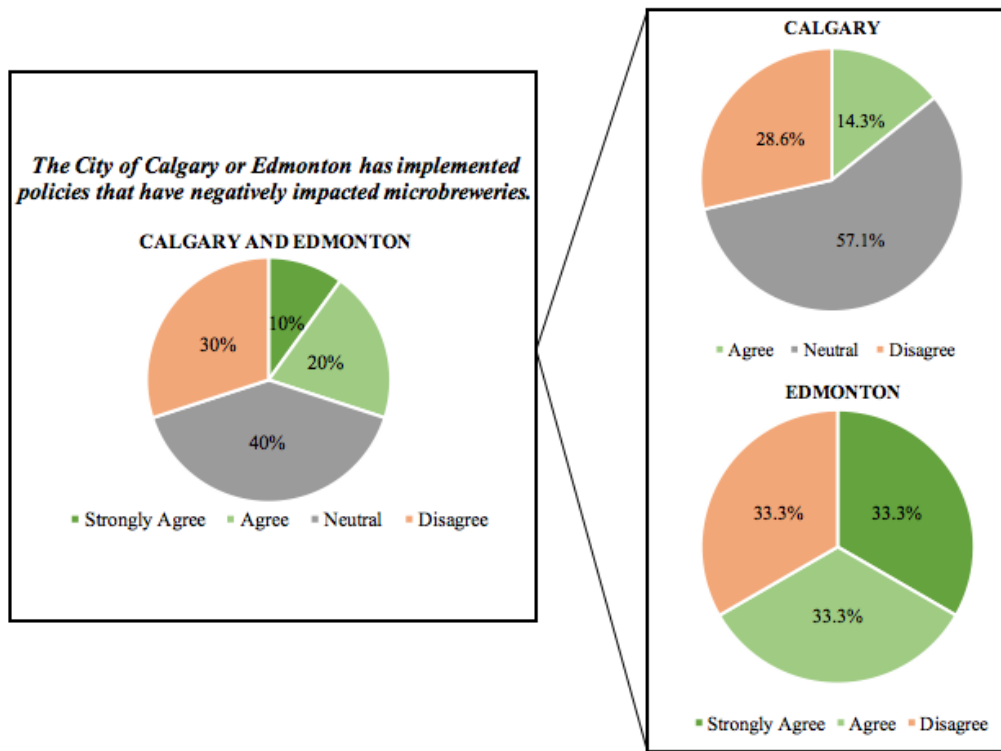


Figure 4.8: Results – Municipal-Level Negative Policies, Calgary and Edmonton



#### ***4.2.5a Legislation, Regulations, and Policies for Breweries in Alberta***

In the Province of Alberta, the Alberta Gaming and Liquor Commission (AGLC) is responsible for overseeing brewing operations and businesses. Furthermore, Alberta is the only province in Canada to have a fully privatized import, retail, and warehousing industry for beer. This was an important move for small-scale and private businesses as they were now able to open retail liquor stores in Alberta. In addition, this allowed new entrants to enter into the liquor production industry as long as provincial laws and regulations were met.

Prior to 2013, small-scale brewers were restricted by provincial legislation that stated that they must be capable of brewing 500,000 liters per year in order to be recognized as a brewery. As a result of Alberta having the lowest beer import tax in Canada, brewers in the province began to brew their beer in the neighbouring province of British Columbia and then imported their beer into Alberta.

On December 5, 2013, the AGLC removed the minimum brewing requirement that once acted as a barrier to small-scale beer production in Alberta. The removal of this requirement came as a result of thirty-nine recommendations that were put forth by the AGLC in order for Alberta to catch up to the rest of the country in terms of brewing capacity (AGLC, 2013, p.2). The AGLC led consultations with stakeholders. As a result, the AGLC removed the 500,000-liter minimum requirement. In addition, the AGLC also eliminated regulations that restricted brew pubs from selling their beer anywhere else besides their restaurant. This allowed many brew pubs to expand their market into Alberta liquor stores.

I also read the following statement to all interviewees: [t]he removal of a minimum brewing requirement has positively impacted microbreweries in Alberta. Nine out of ten (90%) interview respondents stated that they strongly agreed with this statement; whereas, only one (10%) brewery agreed. Figure 4.9 displays the response that were received for the above statement. These results suggest that the policy changes that involved the minimum brewing requirement may be linked to the increase in the number of breweries in Alberta. Furthermore, I read the following to interview respondents: [p]rior to December 2013, the biggest barrier to entry into the industry was the minimum brewing requirement. Seven breweries strongly agreed (70%)

with this statement and three breweries agreed (30%) with this statement. Figure 4.10 shows the response that were received for this statement. Therefore, these results suggest that a particular policy, in this case a minimum brewing requirement, acted as a severe barrier for growth within the Alberta microbrewing industry. The statement about the removal of a minimum brewing requirement and the barrier that the minimum brewing requirement provided failed to expose much difference in responses between the City of Edmonton and the City of Calgary. This may suggest that provincial-level policy changes have not had a differential impact on the success of microbreweries in the two cities.

Figure 4.9: Results –Removal of Minimum Brewing Requirement, Calgary and Edmonton

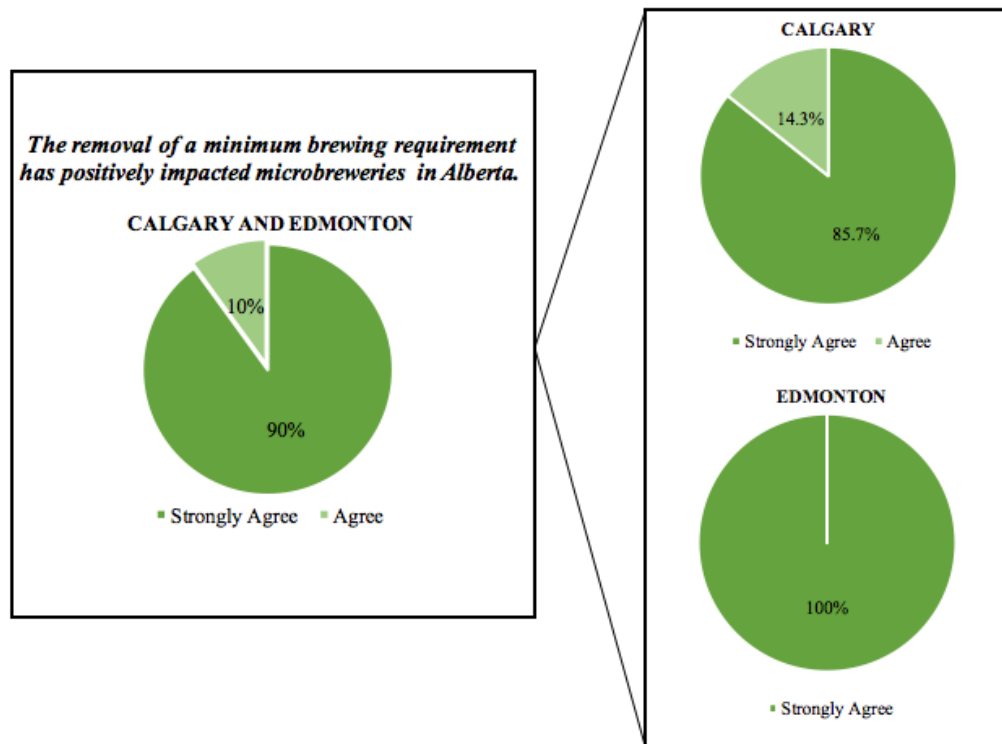
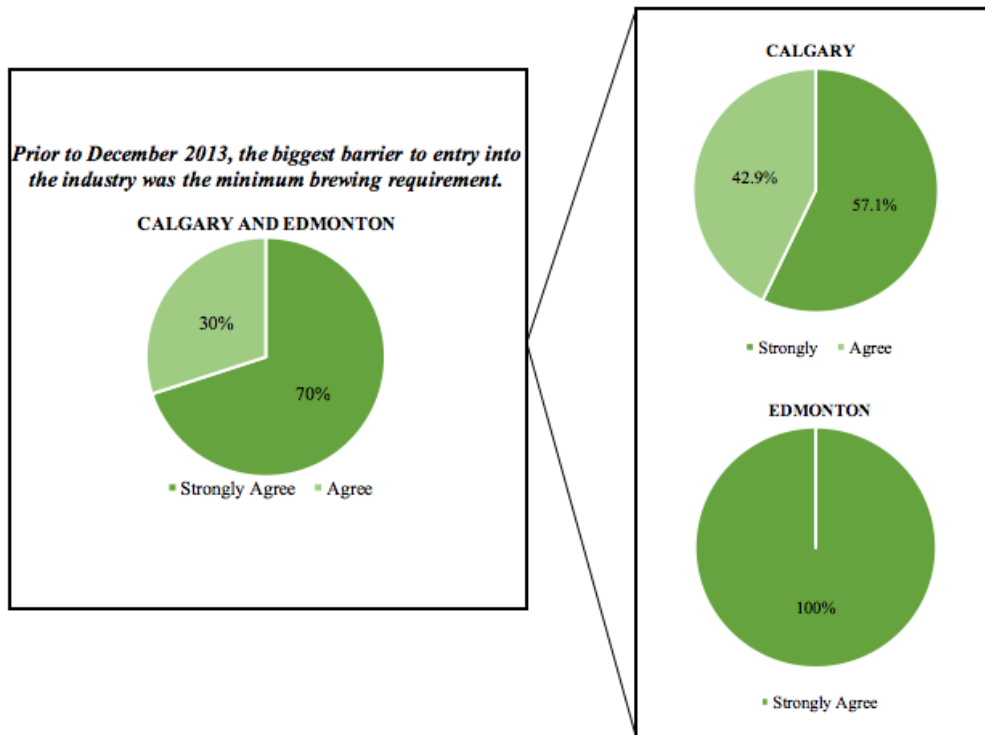


Figure 4.10: Results – Minimum Brewing Requirement as a Barrier to Entry, Calgary and Edmonton



Moreover, Brewery C stated that the Province of Alberta is seeing a large increase in the number of breweries is “100% because of [the removal of the minimum brewing requirement]” and for Brewery C the removal of the minimum brewing requirement “lowered the barrier of entry [into the microbrewing industry]”.

Although regulation changes proved to be promising for small-scale brewers, they were still bound by tax markups. For example, in 2013, the tax for brewers leapt from twenty cents to thirty cents on the entire company after the 20,001<sup>st</sup> hectoliter was produced.



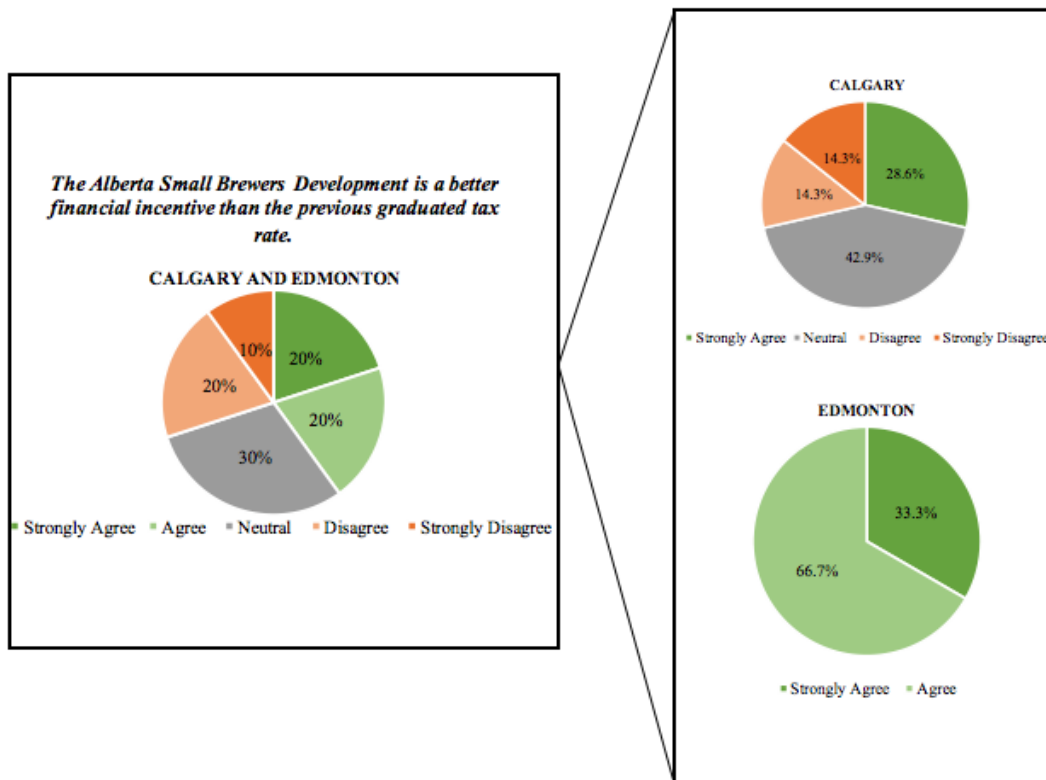
On October 28, 2015, the AGLC announced another regulation change that would impact small-scale brewers. Overall, liquor markups were increased by five percent, however small breweries were given a tax break. Prior to July 2015, large beer companies were required to markup \$1.25 per litre, while on the other hand, small brewers were only required to markup \$0.10 per litre as long as production was under 10,000 litres. In July 2015, the structure of taxation changed for brewers in Alberta and the graduated rate was eliminated. All brewers, regardless of their production capacity, were required to pay a markup of \$1.25 per litre. A grant program for small brewers in Alberta was implemented at the same time.

In August 2016, the Government of Alberta introduced the ASBD Program. This program was introduced with the intent to support small alcohol beverage manufacturers. Under the ASBD Program, those who hold a Class E Manufacturer's License or a Class E Brew Pub License – as per AGLC regulation – are eligible for funding depending on their product sales. Alberta brewers, who sell no more than 300,000 hectolitres annually may apply to participate in the ASBD Program. In 2016, the Government of Alberta also eliminated time limits that previously impacted a brewery's 'happy hour'.

Interviewees were read a statement that addressed the changes in taxation structure. I read the following statement to interviewees: [t]he *Alberta Small Brewers Development [Program]* is a better financial incentive than the previous graduated tax rate. Mixed responses were recorded for this statement as two interviewees strongly agree (20%), two agreed (20%), three felt neutrally (30%), two disagreed (20%), and one strongly disagreed (10%) with the statement. Noticeably different responses for the City of Edmonton and the City of Calgary were recorded from respondents for this particular statement. For the City of Calgary respondents, two

respondents strongly agreed (28.6%), three respondents felt neutrally (42.9%) about the statement, one respondent disagreed (14.3%), and one respondent strongly disagreed (14.3%). For the City of Edmonton respondents, one respondent agreed (33.3%) and two respondents strongly agreed (66.7%) with the aforementioned statement. Figure 4.11 displays the responses that were recorded for this statement. The differences in responses for this statement depending in the city in which the respondent was from suggests that the policy change that saw the removal of a graduated tax rate and the implementation of the ASBD program may have impacted microbreweries within each city differently.

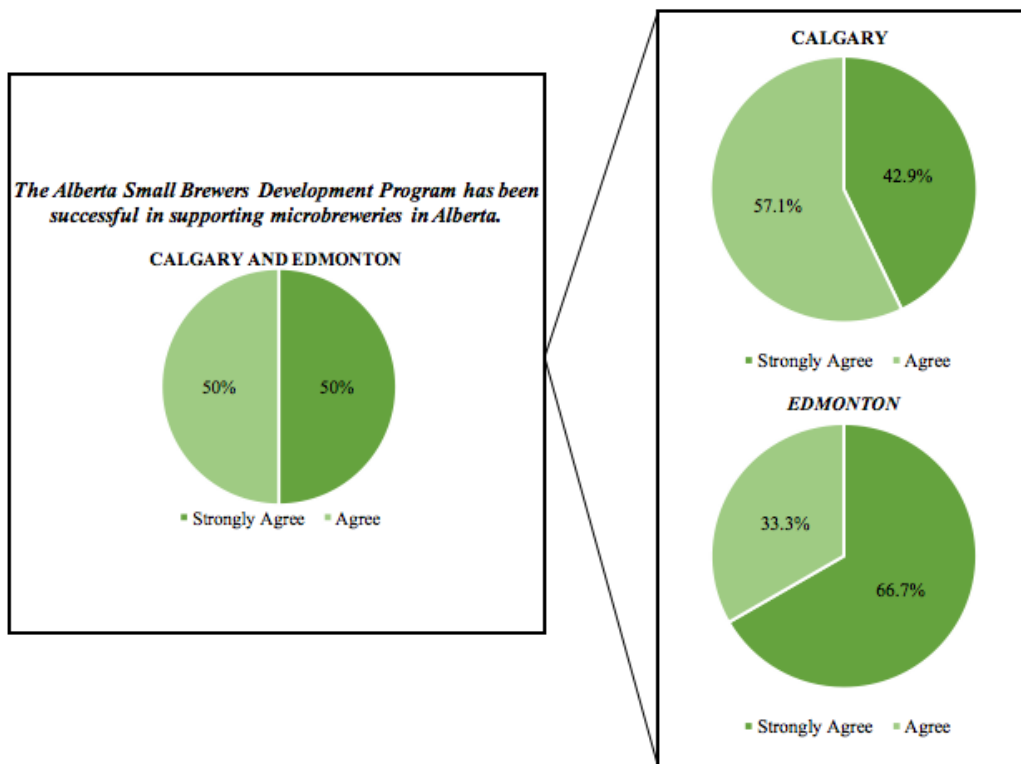
Figure 4.11: Results – ASBD Program versus Graduated Tax, Calgary and Edmonton



The ASBD program, as displayed through interview results, was an important program for small-scale brewers in Alberta. Interviewees were read the following statement: [t]he *Alberta Small*

*Brewers Development Program* has been successful in supporting microbreweries in Alberta. Five of the interviewees strongly agreed (50%) with this statement and five (50%) agreed with it. Figure 4.12 displays the responses to the aforementioned statement regarding the ASBD. This statement revealed minimal differences in responses between the City of Calgary respondents and the City of Edmonton respondents. Therefore, the results may suggest that the ASBD program has been successful in supporting small-scale brewers in both the City of Calgary and the City of Edmonton. Figure 4.12 displays the responses that were recorded for this statement.

Figure 4.12: Results – Evaluating the Success of the ASBD Program, Calgary and Edmonton



In 2017, the Government of Alberta implemented various policies that impacted microbreweries in the province. In June 2017, the Government of Alberta made changes to a policy that would result in licensed restaurants and bars having more control over the size of their patios, hours and

design (Government of Alberta, 2017). Additionally, the Government of Alberta amended the Gaming and Liquor Act, allowing Alberta microbrews to be sold at approved farmers' markets (Government of Alberta, 2017). The Government of Alberta also aimed to streamline the licensing process by creating a taproom license for brewers in Alberta (Government of Alberta, 2017).

It is clear that legislation, regulations, and policies have impacted microbreweries in Alberta. As previously mentioned, the City of Edmonton and the City of Calgary are governed by the same provincial- and federal-level policies and regulations; however, each city has their own municipal-level policies and regulations. The difference in municipal governments may have impacted how the microbrewing industry has emerged in each city. The next section will examine zoning bylaws as they have historically differed between the City of Calgary and the City of Edmonton.

#### ***4.2.5b: Zoning Bylaws in Alberta***

Nilsson et al. (2018) examined the role of zoning bylaws in relation to microbreweries. Nilsson et al. (2018) examined the role of zoning and state that microbreweries “pose a challenge to city planners, as they can represent a hybrid of restaurant, manufacturer, and entertainment” (p117). Typically, breweries are defined as manufacturers of alcohol, therefore, they are often restricted to conducting their business in areas zoned for light or heavy industry. Zoning bylaws may pose a challenge to microbreweries as they may seek to operate in areas where they do not conflict with their neighbours (e.g., residential areas) but also are accessible to potential consumers (Nilsson et al., 2018; Trotter, 2016).

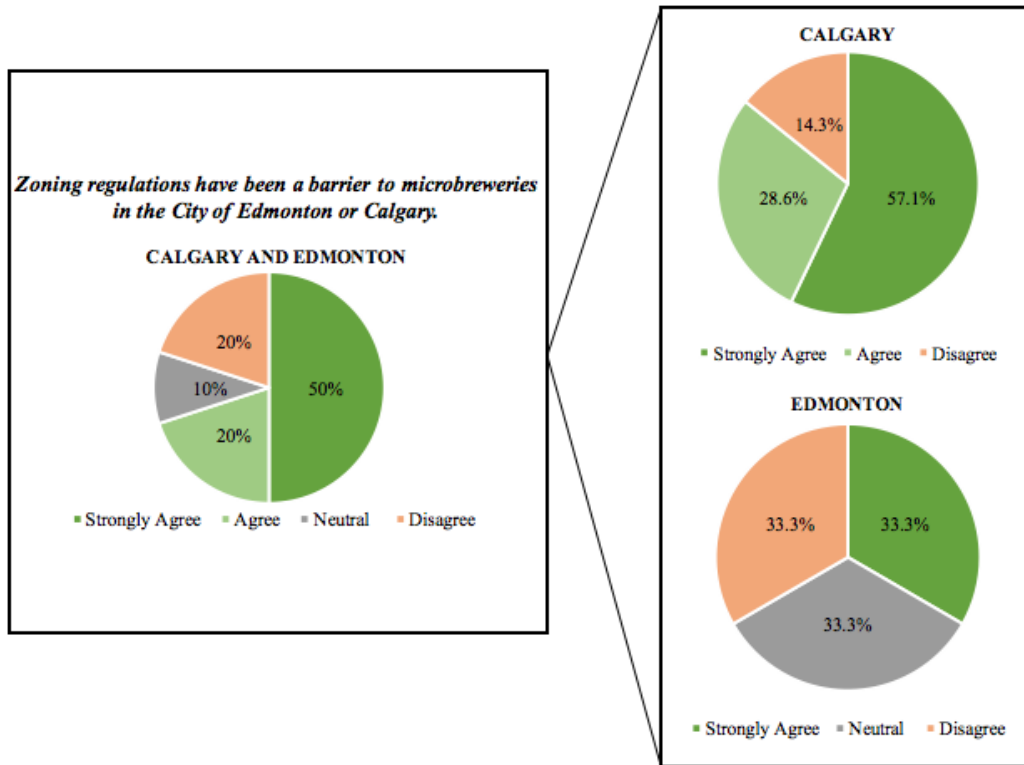
Under the Province of Alberta's *Municipal Government Act*, each municipality in the Province of Alberta is required to have a Land Use bylaw. For example, the City of Calgary is governed by Land Use Bylaw 1P2007 which "outlines the rules and regulations for development of land in Calgary for each district (zone) as well as the process of making decisions for development permit applications" (City of Calgary, 2007). Furthermore, zoning regulations and rules have the potential to impact where breweries may be located within a census subdivision. In May 2016, the City of Calgary introduced a new land use definition, "Brewery, Winery and Distillery", that would lessen the zoning requirements for brewers (Colliers International Canada, 2016, p.3). Previously, breweries in Calgary were restricted to light or medium industrial areas. Now, breweries can apply in a wider range of zoning but still under 'Discretionary Use' (Colliers International Canada, 2016, p.3).

The City of Edmonton, like the City of Calgary, introduced a new land use definition to include breweries, wineries, and distilleries. However, the City of Edmonton did not implement these changes until September 2017, nearly a year and a half after the City of Calgary made their changes. Amendments to Edmonton's Zoning Bylaw 12800 introduced Breweries, Wineries, and Distilleries use which "allow[s] for the manufacture of alcoholic beverages; public space, including private non-sale hospitality areas for tasting and sampling; and the retail sale of alcohol manufactured on site" (City of Edmonton, n.d.). As a result, these establishments would now be permitted in "most industrial zones and discretionary in commercial zones" (City of Edmonton, n.d.). The City of Edmonton (n.d.) stated that these amendments were introduced because "in recent years, there has been a surge of interest in microbrewing and in regulatory changes to

allow smaller brewing operations in the Province of Alberta”. Moreover, the City of Edmonton (n.d.) states that “[w]ith changes in consumer tastes and more liberal provincial regulations for brewers, there has been an increase in interest in opening microbreweries, distilleries and wineries in commercial areas in Edmonton”. Furthermore, the City of Edmonton (n.d.) argues that these changes to zoning bylaws will reduce barriers for microbreweries in Edmonton and as a result will increase the opportunity for local development opportunities.

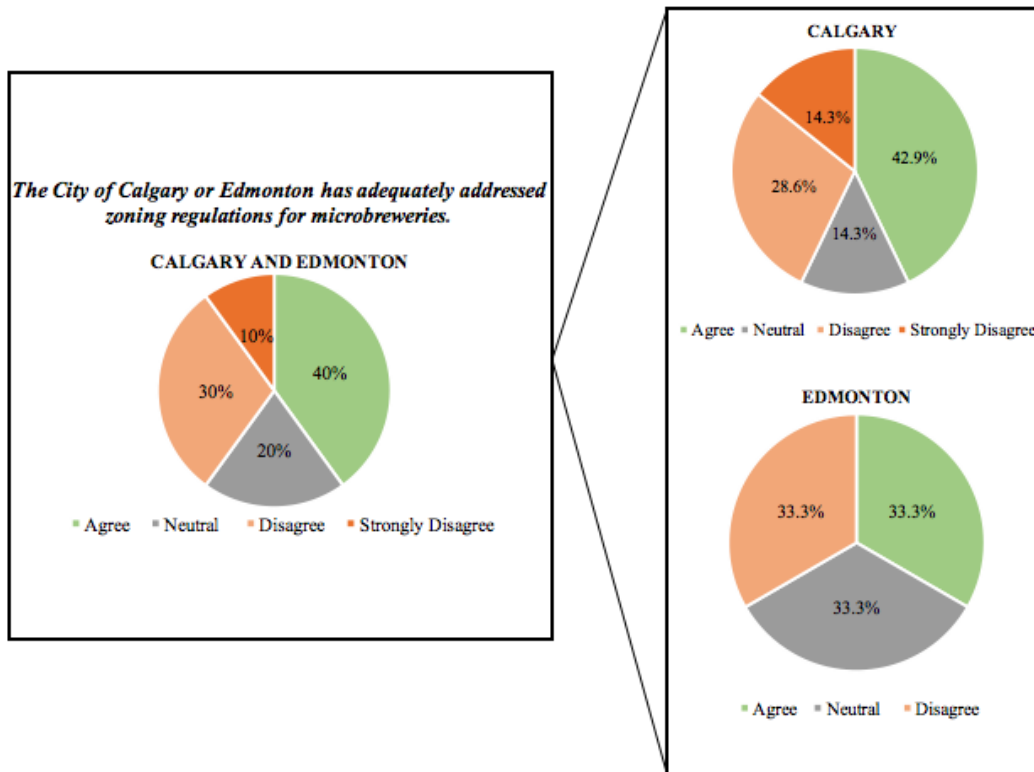
Interviewees were also read statements about zoning bylaws and were asked to rate how they felt about each statement based on a Likert scale. Due to zoning bylaws being determined by municipality, those breweries in Calgary were read statements specific to Calgary and those breweries in Edmonton were read statements specific to Edmonton. The first statement that was read to interviewees stated the following: [z]oning regulations have been a barrier to microbreweries in [insert name of city]. Overall, five interviewees strongly agreed (50%) with statement, while two agreed (20%), one felt neutrally (10%) about the aforementioned statement, and two (20%) disagreed. The responses appear to differ between the City of Calgary and the City of Edmonton. For the City of Calgary, four strongly agreed (57.1%), two agreed (28.6%), and one respondent disagreed (14.3%) with the statement that addressed zoning regulations by the City of Calgary. On the other hand, for the City of Edmonton, one respondent strongly agreed (33.3%), one respondent felt neutrally (33.3%) about the statement, and one disagreed (33.3%). This may suggest that zoning regulations have played a role in the differential success of microbreweries within the City of Calgary and the City of Edmonton. Figure 4.13 displays the responses that were recorded for the aforementioned statement.

Figure 4.13: Results – Zoning Regulations as a Barrier to Microbreweries, Calgary and Edmonton



In addition, interviewees were read the following statement regarding zoning bylaws: [t]he City of [insert name of city] has adequately addressed zoning regulations for microbreweries. For those who were interviewed in Calgary, three agreed (42.9%) with the statement, one felt neutrally (14.3%), two disagreed (28.6%), and one strongly disagreed (14.3%). For those interviewed in Edmonton, one interviewee agreed (33.3%), one felt neutrally (33.3%) about the statement, and one interviewee disagreed (33.3%). These results are displayed in Figure 4.14.

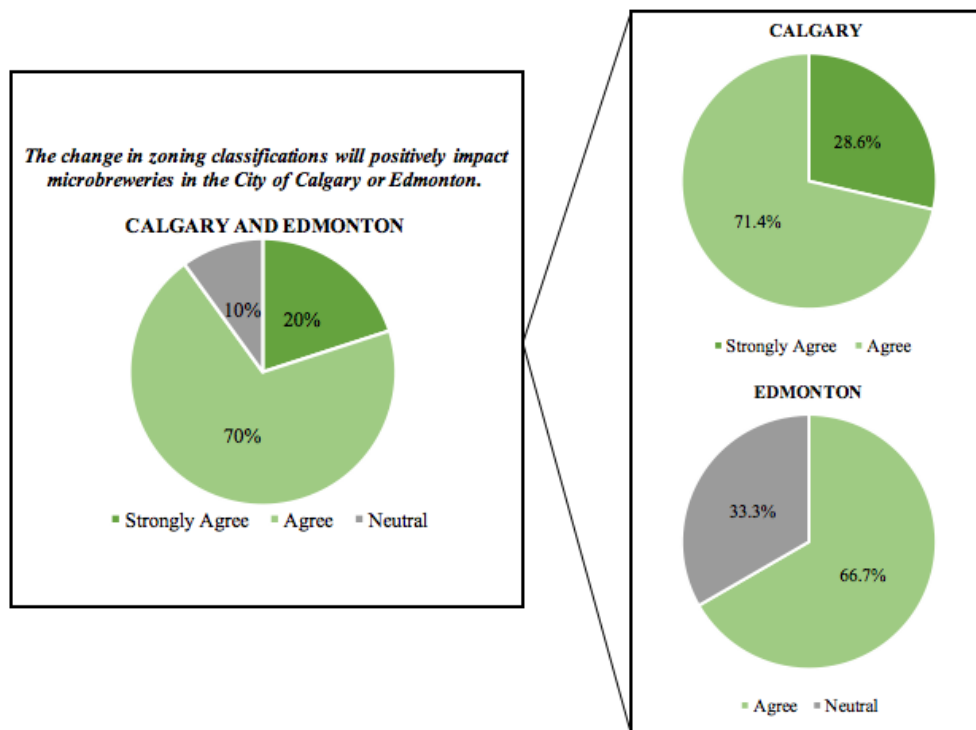
Figure 4.14: Results – Addressing Zoning Regulations for Microbreweries, Calgary and Edmonton



Finally, the interviewees were also asked to share how they felt about the following statement: [t]he change in zoning classifications will positively impact microbreweries in [insert name of city]. Overall, seven interviewees agreed (70%) with statement, two strong agreed (20%), and one interviewee felt neutrally (10%) about the aforementioned statement. The responses lacked distinct variation regardless of what city the respondent was from. These results are displayed in Figure 4.15



Figure 4.15: Results – Impact of a Change in Zoning Regulations for Microbreweries, Calgary and Edmonton



#### 4.2.6 Conclusions: Porter’s Diamond Model

Porter’s Diamond Model, using the four diamond attributes – firm strategy, structure, and rivalry; demand conditions; factors conditions; and, related and supporting industries – and the two external factors of chance and government, was used to analyze the clustering of the microbrewing industry in the City of Calgary and the City Edmonton. The results of the Likert-scale statements and the open-ended questions led to an interesting analysis of the microbrewing industry in these cities using Porter’s model as the framework. The goal of Chapter Four was to address the following gaps in existing literature by providing evidence to *ii) determine if government policy has impacted the development of Alberta’s microbrewery industry and iii)*

*determine what other factors have contributed to the success of the microbrewing industry in Alberta, specifically focusing on the City of Calgary and the City of Edmonton.* Therefore, this conclusion will discuss the factors that may have contributed to the success of microbreweries in Alberta as well as specific factors may have contributed to the differential growth in microbreweries within the City of Edmonton and the City of Calgary.

#### ***4.2.6a Firm Structure, Strategy, and Rivalry***

The primary finding under the attribute of firm structure, strategy, and rivalry was that microbreweries in the City of Edmonton and the City of Calgary have exhibited collaboration rather than competition with other microbreweries. The City of Calgary and the City of Edmonton exhibited differences in regards to firm structure, strategy, and rivalry. Therefore, the factor of firm structure, strategy, and rivalry may provide insight into the differential growth in microbreweries that has occurred between the two cities.

Through the interview process, I determined that microbreweries that were close in proximity (e.g., Barley Belt, Beermuda Triangle) exhibited especially high levels of collaboration in the form of collaborative brew products, knowledge sharing, and marketing strategies.

Microbreweries in the City of Calgary appeared to exhibit a higher degree of collaboration and cooperation than those microbreweries within the City of Edmonton. This may be attributed to the relative geographic location of microbreweries within the two cities. Microbreweries in the City of Calgary are located in much closer proximity, sometimes within only meters of one another. However, in the City of Edmonton microbreweries are much more widely dispersed throughout the City. Therefore, the microbreweries within the City of Calgary may collaborate

more naturally as they must operate within the same geographic space. Microbreweries may view it as an incentive to collaborate in order to draw consumers into an area where all participating microbreweries may benefit. Interview respondents spoke to the benefits of collaboration and often mentioned that they are a stronger industry when they work together, especially as they compete for market space with macrobrewers. Furthermore, collaboration within microbrewery districts in Calgary (e.g., Barley Belt, Beermuda Triangle) was shown to be of particular importance as the microbreweries in this area felt that by promoting multiple brewing businesses within the same geographic location has directly led to the success of these microbrewery districts.

#### ***4.2.6b Factor Conditions***

Overall, the material input factor conditions proved to be similar for the City of Edmonton and the City of Calgary. The main input requirements for brewing are hops, brewer's yeast, malt, and water. Through the interview process it was determined that microbreweries within the City of Edmonton and the City of Calgary have easy access to brewer's yeast, water, and malt. The only input that interview respondents stated difficulty in sourcing was hops as they are not known to be grown successfully within the Province of Alberta. However, the Alberta microbrewery industry is no exception to the source local movement and this has led to a demand for locally sourced hops. As such, farmers in Alberta have begun to attempt to grow hops. In the future, with advances in technology and agricultural products, hops may become a product that is easy to source for local microbrewers.

Furthermore, interviewees claimed that with the exception of hops, all ingredients were easy to source locally. The geographic location of microbreweries in the City of Edmonton and the City of Calgary has proved to allow for easy access to most input ingredients that are required for brewing. Therefore, it may be concluded that attributes other than material input factor conditions may contribute to the difference in microbrewery growth between the two cities.

#### ***4.2.6c Demand Conditions***

Interviews revealed that there is strong interest from consumers in both cities. Interviewees talked about the type of consumers that choose to consume their products. For example, those who are loyal to the macrobreweries versus those who want to explore more local, unique options of beer products. The interview process did not reveal any substantial differences in demand conditions between the City of Calgary and the City of Edmonton.

As previously mentioned, one respondent in Calgary stated that he believes that there are three distinct types of beer consumers – those who drink what is on special, those who drink what they are accustomed to (e.g., Molson), and those who drink what is local or considered special to them. Moreover, this directly related back to findings by Carpenter et al. (2013) in which the authors determined there are four identifiable craft beer consumers – the Explorer, the Enthusiast, the Loyalist, and the Novice. This may suggest that consumers of microbrewery products fall under relative categories, regardless of location.

#### ***4.2.6d Related and Supporting Industries***

Related industries in the City of Calgary and City of Edmonton microbrew industry include other microbreweries and the beer tourism industry. These provide opportunities for microbreweries to expand their market and also provides the opportunity to educate consumers on what microbreweries have to offer. This is similar to the benefits that supporting industries provide. Local beer and brewery tours can educate consumers about microbreweries and may provide the opportunity to increase the number of consumers who choose to drink microbrews versus macrobrews. The microbreweries in the City of Calgary exhibited much stronger collaboration than those in the City of Edmonton. The interview respondents in the City of Edmonton stated that they were interested in working collaboratively with other microbreweries, however there were much fewer concrete examples of collaboration. On the other hand, collaboration between microbreweries in Calgary, particularly those within the same brewery districts, were extremely evident. As previously mentioned, one brewery had beer howlers and growlers from many other microbreweries lining the walls of the taproom at the front of their brewery and spoke proudly about the collaborations they were able to take part in. Furthermore, co-marketing strategies were more strongly exhibited by microbreweries in the City of Calgary (e.g., “shop swap” night). These marketing techniques provide multiple benefits to the involved breweries as it provides exposure for not only their business, but the brewery district they are a part of. Although the interview process revealed that both the City of Calgary and the City of Edmonton’s microbreweries are involved in collaboration, it may be that the degree of collaboration has influenced the unequal growth in microbreweries between the two cities.

Through comparing the City of Edmonton and the City of Calgary, there are differences in the magnitude in which related and supporting industries may have contributed to the success of microbreweries within each city. The City of Calgary has a strong microbrewery tourism industry. For example, the City of Calgary is home to many more microbrewery tour groups (e.g., Calgary Brewery Tours, Canadian Craft Tours (Calgary), Bust Loose Brewery Tour (Calgary and Canmore), Urban Pedal Tours (Calgary), Nomad Bike Tours YYC, YYC History Bicycle Tour); whereas, the City of Edmonton is home to substantially fewer microbrewery tour groups (e.g., Urban Pedal Tours (Edmonton), Edmonton Brewery Tours). The difference in the number of microbrewery touring options between the two cities could have contributed to the difference in growth of microbreweries between the two cities.

#### ***4.2.6e Chance and Government***

Lastly, Porter's externally influencing factors – chance and government – were used to analyze the qualitative results of this thesis. Government policy proved to be an influential factor in the City of Calgary and the City of Edmonton. Provincially, legislation that has impacted brewing capacity, taxation, and subsidy programs has been influential on the industry. Whereas at a municipal level, zoning bylaws has impacted where breweries are situated within the City of Calgary and the City of Edmonton.

The City of Calgary amended their microbrewery zoning bylaws prior to the City of Edmonton's amendments. Therefore, microbreweries in the City of Calgary have been able to establish their breweries in amended zones longer than microbreweries within the City of Edmonton. Therefore, it may have been easier to establish a microbrewery within the City of Calgary than in the City of

Edmonton for a period of time and this may have contributed to a higher growth in microbreweries in Calgary versus in Edmonton during that particular period of time.

In conclusion, Porter's Diamond Model has proven useful in explaining the success of the microbrewery industry in the City of Calgary and the City of Edmonton, and has shown where factors have differed between the two cities. However, there are aspects of the microbrewing industry within the City of Edmonton and the City of Calgary that were not adequately analyzed by using Porter's Diamond Model as an analytical framework. Therefore, in the next section I will use the GEMS model, developed by Kamath et al., to further analyze the qualitative data.

#### **4.3 Qualitative Results – Kamath et al.'s (2012) GEMS Model**

As discussed in Chapter Two, Kamath et al.'s GEM model (2012) is an extension of Porter's (1990) original Diamond Model. Porter's (1990) attributes the development of clusters and economics growth as a result of competition; whereas Kamath's GEMS model aims at taking a more integrated approach where other factors such as human capital, social interaction and capital, technology, and knowledge transfer play a role in the cluster development and economic growth (Kamath et al., 2012, p. 190). The GEMS model includes eight additional factors that interact with Porter's original Diamond Model: historical factors; element of chance; anchor effect; business climate; industry networks; public policy; concentration of firms; and, innovation and entrepreneurship. This section will focus on analyzing the qualitative results through these additional factors.

### ***4.3.1 Historical Factors***

Historical factors may provide insight into factors that have attributed to the current structure of the Alberta microbrewery industry, especially in those areas where there is evidence of industry clusters. Alberta has a long history of beer production, with the first brewery opening in 1883 in what is now Medicine Hat (STORYHIVE, 2016a). In 1892, Calgary Brewing and Malting opened in Calgary, Alberta. In Edmonton there were two brewers, Edmonton Brewing and Strathcona Brewing, who both opened for production in 1894. However, breweries took a significant economic hit when Alberta implemented prohibition on July 1, 1916 and liquor manufacturers, including breweries, had to close their doors. In the Province of Alberta, sixteen breweries were operating prior to prohibition – six in Calgary, three in Edmonton, four in Lethbridge, two in Medicine Hat, and one in Fort Macleod. However, many of the sixteen breweries did not survive until 1923, when prohibition was repealed in the Province of Alberta (Guilbert, 2016). The effects of the prohibition were long felt and only ten breweries produced beer between 1925 and 1954. More often than not, those smaller breweries that survived the prohibition were then acquired by two major breweries – Calgary Brewing and Malting Company and Lethbridge Brewing and Malting Company (Guilbert, 2016). For nearly four decades, up until the 1960s, Calgary Brewing and Malting Company and Lethbridge Brewing and Malting Company became the beer duopoly of Alberta (Guilbert, 2016).

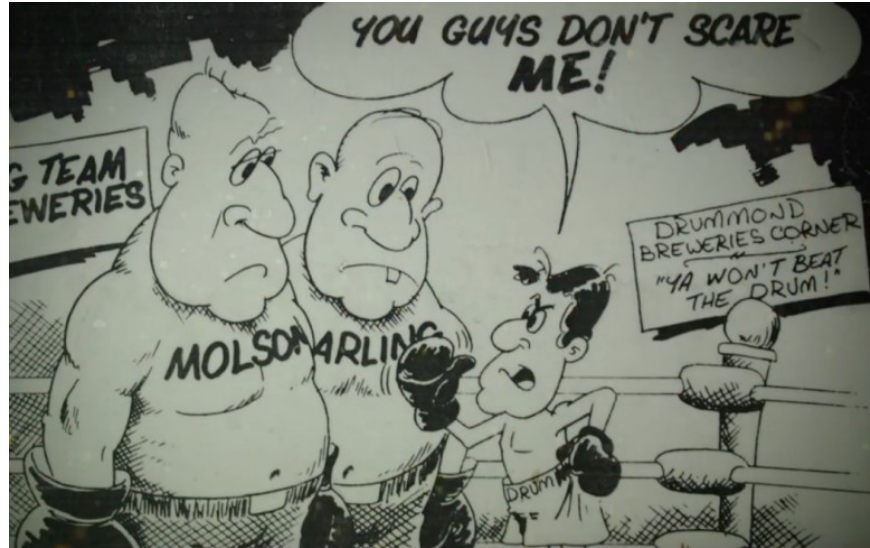
Big Rock Brewery, located in Calgary, started the first wave of microbrew production in Alberta in 1985. The Canadian beer market, similar to the industry in the United States, lacked diversity and this made way for the rise of microbreweries. Early success of microbrewers in the United States was attributed to the homogenization of beer products which resulted in an abundance of



light lager production (Elzinga et al., 2015, p.255). Tremblay and Tremblay (2005) determined that in 1984 light beer comprised 0.4% share of the market (SOM) (p. 138-139). The market-share of light beer in the United States continued to grow with 22% SOM in 1985 and 43% SOM the 2000 (Tremblay and Tremblay, 2005, p. 138-139). Consolidation within the Canadian brewing industry, much like the market situation witnessed in the United States, resulted in few brewers and these brewers only brewed a pale lager (STORYHIVE, 2016b). Big Rock Brewery wanted to develop an English ale that celebrated Alberta malt barley and the hard water of the Rockies (STORYHIVE, 2016b). Initially, Big Rock had a difficult time finding a market for their dark English ales as the consumers in Alberta were accustomed to the light lager that the large-scale breweries were producing. Nonetheless, the 1988 Winter Olympic Games came to Calgary and European visitors began drinking the dark ales of small-scale brewers, such as Big Rock Brewery, instead of the light lagers (STORYHIVE, 2016b). (See below).

Amalgamation, acquisitions, mergers, and closures of breweries posed a barrier to microbreweries in the late 1980s and 1990s. (STORYHIVE, 2016b). In 1989, Carling O'Keefe was acquired by Molson (STORYHIVE, 2016b). As a result, Molson became the largest brewery in Canada, with 53% of the market share (STORYHIVE, 2016b). In 1995, Labatt was purchased by Belgian-based multinational, InBev, and Drummond Brewing closed as it was unable to compete with marketing budgets held by macrobreweries (STORYHIVE, 2016b). Figure 4.16 depicts the relationship that existed between macrobrewers (e.g., Molson, Carling) and microbrewers (e.g., Drummond Breweries) in the 1980s and 1990s.

Figure 4.16: Macrobreweries versus Microbreweries in Alberta



Source: STORYHIVE (2016b)

Furthermore, many were forced to close their doors. Molson Sicks Lethbridge Brewery closed in 1989, Calgary Brewing and Malting closed on its 100<sup>th</sup> year anniversary in 1994, and Molson Sicks Edmonton Brewery closed in 2004.

In the early 1990s, Alberta 'brewpubs' emerged with the opening of Brewster's in 1991 in Calgary, Alberta (STORYHIVE, 2016b). The second wave of microbreweries began over two decades ago in the late 1990s. This wave of microbreweries included the opening of Alley Kat Brewing Company in Edmonton and Wild Rose Brewery in Calgary. (STORYHIVE, 2016b). During this time, microbrewers were plagued by legislation and taxation constraint. In addition, microbreweries faced obstacles associated with their lack of economies of scale and it became difficult for microbrewers to compete with large macrobrewers.

As previously stated, the role of historical factors has the potential to contribute to clustering of breweries in Alberta. Calgary and Edmonton have the largest number of breweries in a particular region. Furthermore, both these regions are home to microbreweries that opened prior to 2000 (e.g., Alley Kat Brewing Company, Big Rock Brewery, and Wild Rose Brewery).

#### ***4.3.2 Element of Chance***

As defined in Chapter Two, the variable element of chance is defined in terms of sub-variables which includes the “reputation of the cluster as a leading location; its geographical location; the origins of the founders in the region; and the element of pure chance not attributable to the other sub-factor” (Kamath et al., 2012, p.195). In the description provided below, I will examine how the occurrence of the Winter Olympics in Calgary impacted a microbrewery in the City.

Big Rock Brewery, under owner Ed McNally, began brewing in 1984 in response to disappointment with the selection of beer that was available in Calgary (Bailey, 2014). During the 1988 Winter Olympics, hosted by the City of Calgary, this microbrewery had the opportunity to open a beer tent on Calgary’s Stephen Avenue (Bailey, 2014). It was well known that Ontario and Quebec drank ales but Western Canada was known to favor lagers (STORYHIVE, 2016b). Under Bernd Pieper, Big Rock’s first brewmaster, the brewery began to brew English ales as Pieper felt that this variety of beer was best suited for Alberta’s malted barley and the hard water that came from the Rocky Mountains (STORYHIVE, 2016b). However, Big Rock faced challenges in selling their first three brews –Traditional, Bitter, and Porter – as they were much a darker brew than their customers were accustomed to and they were selling to a market that was known as the “land of the light lagers” (STORYHIVE, 2016b). However, the Winter Olympics

of 1988 brought a large number of visitors from all around the world to Calgary, especially Europeans (STORYHIVE, 2016b), who were accustomed to the dark brews that Big Rock was brewing rather than the blonde, flat lagers that macrobrewers were brewing (STORYHIVE, 2016b). Europeans began to talk about how much they enjoyed the brews produced by Big Rock Brewery and many Calgarians began to try the dark brews they once rejected in favor of light lagers (STORYHIVE, 2016b).

Beginning in 2017, microbrew was available for purchase at the Calgary Stampede, which was not previously permitted due to an exclusivity agreement with Labatt and other related brands (e.g., Budweiser, Corona, Alexander Keith's). However, at the 2017 Calgary Stampede, 23 Alberta microbreweries were able to sell their products alongside macrobreweries at The Big Four Station (CBC News, 2017). In 2018, microbrewers were again allowed to sell their products at the Calgary Stampede and 32 microbrewers, up from 23 in 2017, were able to showcase their products (Government of Alberta, 2018).

In Edmonton, K-Days, an annual ten-day exhibition, made moves to support local microbreweries and a distillery in 2018. Northlands Agricultural Society, the organizing group behind K-Days, partnered with the Alberta Small Brewers Association and Alberta Craft Distillers in order to exclusively sell beer and spirit products that were locally produced (K-Days, 2018). K-Days served products from 26 different breweries, with a selection of 62 different beers and ciders available for purchase (K-Days, 2018). Furthermore, the interim CEO of Northlands stated that “[a]s an Agricultural Society, Northlands is an enthusiastic advocate of all things local and we couldn’t be more excited and proud to share the very best of what Alberta

craft brewing has to offer, K-Days is Edmonton's largest annual summer festival, and this partnership is the perfect stage to showcase and celebrate local craft brewers and distillers" (K-Days, 2018).

### ***4.3.3 Anchor Effect***

Kamath et al. (2012) states that anchor firms are "included as crucial to the formation of clusters and for their sustainability through the development and maintenance of an eco-system of firms that are suppliers to and/or have dealings with such anchor firms" (p.198). In this section, I will examine Alley Kat Brewing Company, Wild Rose Brewery, and Big Rock Brewery as anchor firms.

The microbrewery industry, as mentioned under historical factors, began in the 1990s with the opening of Alley Kat Brewing Company in Edmonton and Wild Rose Brewery and Big Rock Brewery in Calgary. These three breweries may be described as "large firms that are first-movers to a particular cluster" (Kamath et al., 2012, p.198). These breweries, with over twenty years in the industry, could act as anchoring firms for others in the industry; therefore, encouraging other breweries to open in the same geographic proximity.

Through interviewing breweries in the Calgary region it became evident that some breweries chose to open near other breweries because of the advantages that geographic proximity would present. For example, Brewery I was previously a contract brewer. This means that they represented their own brewery, but brewed their products at other breweries as they did not have their own facilities yet. However, the brewery where they originally brewed their beer at had real estate that became available right next door. Brewery I purchased the building next to another

brewery and began to develop their own facility. In this case, the nearby brewery may have created an anchor effect for Brewery I.

#### ***4.3.4 Business Climate***

As discussed in Chapter Two, business climate is an operational variable in terms of Kamath et al.'s (2012) following sub-variables: “local support of entrepreneurship and enterprise; a historical record of being business-friendly; existence of a climate for risk taking; existence of a climate for business innovation; a local “results-oriented” business culture; business and government collaboration; enforcement of private property laws; and a low risk of nationalization” (p.196). The role of collaboration, in juxtaposition to competition, will be examined as a characteristic that has spurred success within the microbrewing industries of Calgary and Edmonton.

Previous clustering literature has mentioned the role of collaboration over competition. Previous research suggests that cluster development may be influenced by factors such as knowledge mobilization and competitive and collaborative forces (Beckie et al., 2012, p.336). Porter's early work (e.g., Porter (1990, 1998a, 1998b)) primarily focused upon the competitive advantage of clustering which acted as a driver of a firm's innovation and success. However, more recent work suggests that collaborative forces also play an important role in clustering framework (Beckie et al., 2012, p.342). The dual nature of collaboration and competition in the development of clusters has become more widely accepted.

Davies et al. (2002) states that “organizations are both in competition and cooperating with one

another simultaneously in different areas of their activities, but overall continuing to develop and reinforce the benefits of co-existence” (p.23). In addition, Porter (2000) states that those involved in clusters exhibit common need, opportunities, obstacles to productivity, and constraints (p.17). Furthermore, Porter (2000) claims that clusters offer a competitive advantage to firms as they provide flexibility, space for the sharing of market information and resources, links to other networks, and access to additional market opportunities. Wolfe and Gertler (2006) also state the role that collaboration and competition play in the development of clusters, and that maintaining competition between firms while expressing common goals is important to the success of a cluster.

For small businesses, like microbreweries, participating in clusters may provide unique advantages. For example, Lawson et al. (2008) examined small businesses in the form of farmers’ market vendors. The authors concluded that small businesses, especially those with limited resources, can compete with large scale companies by becoming part of a cluster. For microbreweries in Alberta this may hold true, as they are often viewed as competing directly with larger scale macrobreweries.

The role of collaboration over cooperation within the Alberta microbrewery industry became evident through the interviews that were conducted with those in the industry. For example, the owner of Brewery B was a former employee of Brewery C before he began his own brewery. Therefore, these two breweries have a very close relationship and Brewery C’s co-owner described the industry as “very community-orientated” and stated that the collaborative nature is “one of the main things that distinguish us against big breweries. He also stated that the

microbrewing industry in Calgary “is local, it is community pushing, [that is] driving that kind of team mentality”.

#### ***4.3.5 Industry Networks***

The Province of Alberta is home to the Alberta Small Brewers Association (ASBA). The ASBA is a non-profit organization that works towards promoting microbrew in the Province of Alberta. The ASBA (n.d.) states that they work to “celebrate local entrepreneurs, educate the public on the benefits of local beer, and work with the Alberta Government to create the best brewing environment”. The ASBA has worked to educate Albertans about what microbreweries have to offer. For example, the ASBA in collaboration with Tourism Calgary has developed a map of breweries in the City of Calgary. This map represents an industry network that has been successful in supporting the microbrewery industry in Calgary. Consumer education may play an important role in the microbrewery industry. For example, Carroll and Swaminathan (1992) state that “[m]icrobrewers and brewpub operators talk frequently of the need 'to educate the consumer' regarding the nature of their products and firms” (p.81).

Furthermore, microbreweries exhibited inter-linkages through the sharing of labor and other resources. As previously mentioned, those that were interviewed often shared stories of helping other microbreweries get off the ground. At times, microbreweries were shown to share labor (e.g., training other breweries how to properly brew) and share other resources (e.g., malt when one brewery needed a specific kind and brewer’s yeast for a new brewery).



#### **4.3.6 Public Policy**

Porter (2007) discusses the relationship between public policy and clusters. Government bodies should collect information – such as cluster membership, composition employment and performance – as this will enable government bodies to better align public policy and investments with the particular needs of the cluster. Furthermore, Porter argues that it is important for governments to be “active participants in dialogs with cluster participants to understand local constraints to productivity and identify gaps and weaknesses in public policy” (p.5). Tax laws and tax incentives have been at the forefront of the microbrewing industry in Alberta. The Government of Alberta has implemented a variety of tax laws and tax incentives that have directly impacted the microbrewing industry. In addition, the removal of a minimum brewing requirement by the provincial government and changes to zoning bylaws by the municipal government has had the opportunity to impact the microbrewing industry in the City of Calgary and the City of Edmonton.

During the interview process, interview respondents frequently brought up policies surrounding the brewing industry in Alberta. For example, Brewery C stated that:

“negative impacts by the government are more financial strains on the companies [...], but the policies that they put in place, the positive ones, are very positive. They really have opened up the markets for us. They have opened up regulations for what we can do in the taprooms, our licensing, things like that”.

However, on the municipal level, Brewery C stated that the City of Calgary has “red tape” that may hinder the success of microbreweries.

#### ***4.3.7 Concentration of Firms***

According to Kamath et al. (2012), concentration of firms may be defined as “agglomeration economies or the high concentration of firms” variable (p.197). Although access to appropriate facilities for brewery operations is important, it may not be the only factor that has influenced the geographical clustering of microbreweries in Calgary. Many of those that were interviewed stated the importance of creating a destination for their brewery operations.

High concentrations of microbreweries may be found in the southeast and northeast regions of Calgary. I interviewed three breweries from the ‘Barley Belt’ area of Calgary – Brewery B, Brewery C, and Brewery F. Through the interview process it became clear that being located near one another presented unique advantages to these three breweries. For example, the co-owner of Brewery C stated that:

“[there is an] enjoyment factor in finding your favorite brewery, in finding your favorite new best beer, and so that, the clustering, and the proximity of everything, of the breweries being so close, makes it a lot easier for people to do that and have access to that activity and I mean, I don’t think that you have a lot of customers that are solely our customers but I think there is a lot of customers that are primarily ‘Barley Belt’”.

Brewery F, also located in the Barley Belt region of Calgary, stated that being located in close proximity to other breweries has been beneficial to his brewery. He stated that being located near other microbreweries creates the opportunity “for a group of people to congregate and you know go more to one spot in close proximity to one another. We typically have guys come in and they will stop and one or two or three stops at the same time”. Through the interview process it became clear that a large concentration of microbreweries operating in close proximity to one

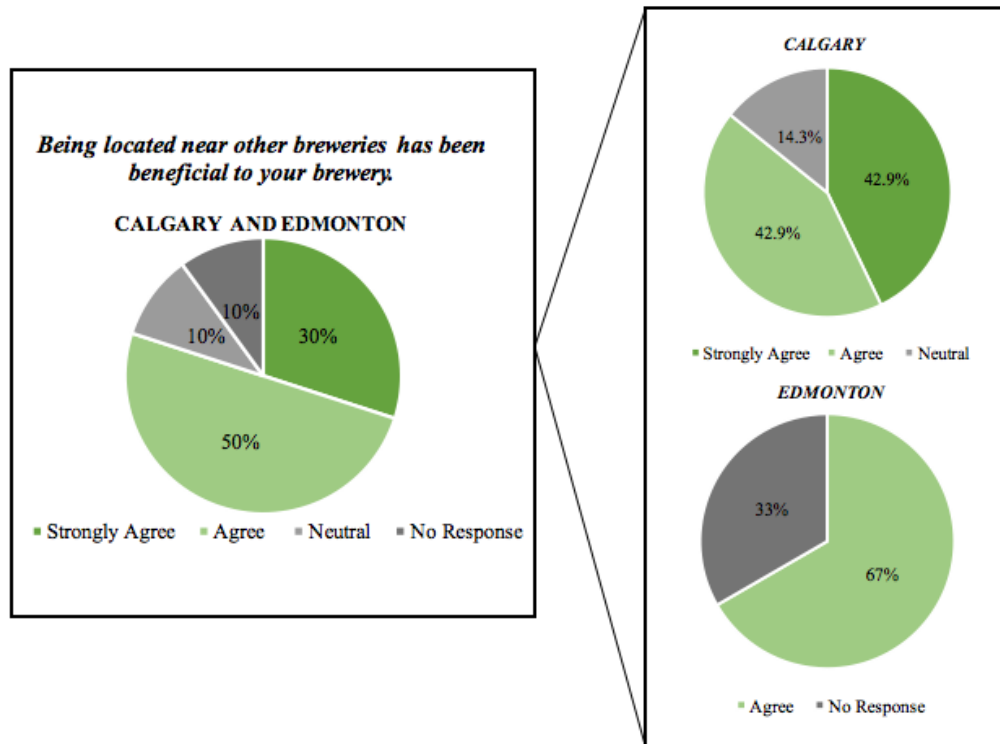
another was beneficial. Locating near one another, especially in an industrial zoned area, was beneficial as it made it easier for consumers to access multiple breweries in close proximity.

Brewery I also stated that there is an emerging concentration of breweries within the Inglewood neighborhood of Calgary. This neighborhood in Calgary has a strong brewing history and Canada malting – a well-known malting plant – was once located in the area. Brewery I, along with all the surrounding breweries, have coined themselves the ‘Brewery Flats Fellowship’ and they have a goal of reviving the brewery industry within the Inglewood neighborhood.

Furthermore, Brewery I argued that the brewing industry in the City of Calgary has undergone changes. Brewery I stated that “[a] lot of times now [breweries] are focusing on the location and the taproom, whereas before a brewery, [...] like Big Rock, when they first started were just a big production facility pumping beer out”.

I read the following statement to interviewees: [b]eing located near other breweries has been beneficial to your brewery.” Overall, three interviewees strongly agreed (30%), five agreed (50%), one felt neutrally (10%) and one interviewee did not respond to this statement (10%). The interviews revealed no substantial difference between the City of Edmonton versus the City of Calgary. Figure 4.17 displays the results of the aforementioned statement.

Figure 4.17: Results – Locating Near Other Microbreweries, Calgary and Edmonton



Many interviewees spoke about the potential of co-located microbreweries to create a ‘tourist destination’. Brewery C stated that “[y]ou are basically creating a tourist area, right? So, you are creating a destination for people to do similar activities and the range of different breweries”.

Furthermore, zoning bylaws within the City of Edmonton and the City of Calgary may have played a role in where breweries have chosen to open their operations. In the Calgary region specifically, the geographical clustering has been influenced by the City of Calgary’s zoning bylaws. However, the Calgary interviews revealed that other factors may have come to influence where breweries operate. As suggested by a Colliers International (2016) report, I-G (Industrial General) is the typical zoning for breweries in Calgary and is the most common zoning for industrial properties. Therefore, due to zoning restrictions, a large number of breweries within

the City of Calgary are located in the northeast and the southeast of the region where I-G zoned real estate is more common.

Likewise, zoning bylaws have potentially impacted where breweries have chosen to locate in Edmonton. On September 11, 2017, Edmonton City Council made amendments to Zoning Bylaw 12800 and introduced Breweries, Wineries and Distilleries use (City of Edmonton, n.d.). This use allows for the manufacture of alcoholic beverages, private non-sale hospitality areas for sampling or tasting of products, and the retail sale of alcohol that is manufactured on site (City of Edmonton, n.d.).

#### ***4.3.8 Innovation and Entrepreneurship***

The interviews also revealed the importance of innovation and entrepreneurship for industry success and in forming relationships with other brewers. Entrepreneurship is demonstrated in the microbrewing industry through the wide range of brewery tours that are offered. The interviews indicated that many microbreweries have tours in which consumers could come to the brewery and learn about how the beer is made and often provided the opportunity for consumers to sample products. This is important to the industry as it educates consumers on how beer is produced, allows them to try products they may not traditionally buy, and creates a more personal experience for those involved.

Product differentiation is also important for the creation of a unique identity within the microbrewing industry. For example, Brewery G stated that “breweries end up having such a unique personality, both in their branding and their naming, or their beer. And it's reflective of

the brewers as well as the owners”. Furthermore, Brewery G stated that there is a ‘character’ behind every beer and “each one is approached differently [...] and each one of them has their own passions, and their own way about doing things” and “[p]eople buy brands, not just on the quality of the brand, but how they perceive themselves, how they perceive the brand within their dichotomy of what their reality is”.

#### ***4.3.9 Conclusions: Kamath et al.’s GEMS Model***

I used Kamath et al.’s GEMS Model in conjunction with Porter’s Diamond Model in order to address factors that may have influenced the clustering of microbreweries that Porter’s Diamond Model may have neglected to include. As previously mentioned, my goal in Chapter Four was to address the following gaps in order to: *ii) determine if government policy has impacted the development of Alberta’s microbrewery industry, and iii) determine what other factors have contributed to the success of the microbrewing industry in Alberta, specifically focusing on the City of Calgary and the City of Edmonton.*

The City of Edmonton and the City of Calgary exhibited no substantial differences in the following GEMS model factors: historical factors, business climate; industry networks; public policy; and innovation and entrepreneurship. However, the City of Edmonton and City of Calgary did exhibit differences within the factors which may have led to difference in microbrewery growth between the two cities. Three factors were shown to differentiate between the City of Calgary and the City of Edmonton. These factors include: element of chance; anchor effect; and concentration of firms.

In terms of the element of chance factor, the City of Calgary was shown to have benefited more so than the City of Edmonton. The Calgary Winter Olympics, held in 1988, positively impacted the microbrewing industry in Calgary. The Winter Olympics introduced a new consumer demographic, Europeans, began drinking the dark ales of small-scale brewers, such as Big Rock Brewery, instead of the light lagers that were traditionally brewed by macrobrewers. This may have impacted the development of the microbrewery industry in the City of Calgary as consumers were introduced to microbreweries and the products that they offer. Therefore, a consumer base may have developed in which microbreweries could become successful in.

Furthermore, the City of Calgary is home to world-renowned Calgary Stampede. As such, this event draws in tourists and locals alike. As previously noted, beginning in 2017, microbrew was available for purchase at the Calgary Stampede, which was not previously permitted due to an exclusivity agreement with Labatt and other related brands. In 2018, 32 types of microbrew were available for purchase at the Calgary Stampede. This may have led to an increase in the number of microbreweries specifically within the City of Calgary, as like the 1988 Winter Olympics, this event exposed consumers to microbreweries and the products that are offered.

The anchor effect factor was also shown to differentiate between the City of Calgary and the City of Edmonton. Calgary is home to two anchor firms, Big Rock Brewery and Wild Rose Brewery; whereas, Edmonton is only home to one anchor firm, Alley Kat Brewing Company. As previously noted, Kamath et al. (2012) defines anchor firms as “large firms that are first-movers to a particular cluster” (p.198). These breweries, with over twenty years in the industry, could act as anchoring firms for others in the industry; therefore, encouraging other breweries to open in

the same geographic proximity. The anchoring effect would be greater within the City of Calgary as there are two anchor firms, rather than only one within the City of Edmonton.

There are also clear differences between the City of Calgary and the City of Edmonton in terms of the concentration of firms. Calgary is home to multiple brewery clusters (e.g., Beermuda Triangle, Barley Belt); whereas, the Edmonton's microbreweries are much more geographically dispersed. Therefore, the City of Calgary may attract more microbreweries as microbreweries may seek to reap the perceived benefits (e.g., creation of tourist destination, knowledge spillovers, group marketing strategies, etc.) of locating in close proximity to other microbreweries.

#### **References: Chapter Four**

- AGLC. (2013). Class E Liquor Licensing (Manufacturing) Review. Retrieved from [https://aglc.ca/sites/aglc.ca/files/aglc\\_files/Liquor-Studies\\_2013\\_Report-Recommendations-\\_Class\\_E\\_Liquor\\_Licensing\\_\\_Manufacturing\\_\\_Review.pdf](https://aglc.ca/sites/aglc.ca/files/aglc_files/Liquor-Studies_2013_Report-Recommendations-_Class_E_Liquor_Licensing__Manufacturing__Review.pdf)
- Altalis. (2018). Municipal Boundaries [Data File]. Retrieved from <https://beta.altalis.com/map?id=113>
- AGLC. (2018b). Liquor Licensee List. Retrieved from [https://aglc.ca/sites/aglc.ca/files/LicenseeReports/Licensee\\_Report\\_06\\_04\\_18\\_11\\_42\\_38.pdf](https://aglc.ca/sites/aglc.ca/files/LicenseeReports/Licensee_Report_06_04_18_11_42_38.pdf)
- Alberta Barley. (n.d.). Industry Overview. Retrieved from <http://www.albertabarley.com/about-us/industry-overview/>
- Alberta WaterPortal Society. (n.d.). Alberta Water Facts. Retrieved from <https://albertawater.com/interesting-facts/alberta>
- Alonso, A. D., Alexander, N., & O'Brien, S. (2018). Collaboration and the emerging craft brewing industry: An exploratory study. *Journal of Asia-Pacific Business, 19*(3), 203-224.



- Beckie, M.A., Kennedy, E. H., & Wittman, H. 2012. Scaling Up Alternative Food Networks: Farmers' Markets and the Role of Clustering in Western Canada. *Agriculture and Human Values*, 29(3): 333 – 345.
- Brown, J.L. (2018). Environmental Economics. Encyclopedia Britannica. Retrieved from <https://www.britannica.com/topic/environmental-economics#ref1187834>
- Budynski, S. Map of Microbreweries in the Province of Alberta, City of Edmonton, and City of Calgary (up to the end of 2017) [map]. Scale Not Given. "The Effects of Policy and Clustering in Alberta's Expanding Microbrewery Industry." November 2018. (November 9, 2018). Using: *ArcGIS* [GIS software]. Version 10.0. Edmonton, AB: 2018.
- Budynski, S., J. Kowalski, K. Pierzchajlo, B. Swallow, and M. Beckie. (2018). Cross-Canada Review of the Policy Landscape for Local and Place-Based Foods in Canada. Department of Resource Economics and Environmental Sociology. University of Alberta.
- Carpenter, A. J., W. Darlington, D. Frick, T. Garver, H. C. Kane, R. Mimken, & K. Serwitz. (2013). Craft beer and consumer behavior. Paper submitted to Professor V. R. Lane for Marketing 6060: Buyer/Consumer Behavior, University of Colorado, Denver.
- Carroll, G. R., & Swaminiathan, A. (1992). The organizational ecology of strategic groups in the American brewing industry from 1975 to 1990. *Industrial & Corporate Change*, 1(1), 65-99.
- CBC News. (2017, June 2). Craft beer to be sold at Calgary Stampede in 2017, after years of pressure. *CBC Calgary*. Retrieved from <https://www.cbc.ca/news/canada/calgary/calgary-stampede-craft-beer-allowed-2017-1.4142829>
- City of Calgary. (2007). Land Use Bylaw 1P2007. Retrieved from [http://www.calgary.ca/PDA/pd/Documents/Calgary-Land-Use-bylaw-1P2007/bylaw\\_1p2007.pdf](http://www.calgary.ca/PDA/pd/Documents/Calgary-Land-Use-bylaw-1P2007/bylaw_1p2007.pdf)
- City of Edmonton. (2017). Zoning Bylaw No. 12800. [PDF Document]. Retrieved from [https://www.edmonton.ca/documents/PDF/current\\_Zoning\\_Bylaw.pdf](https://www.edmonton.ca/documents/PDF/current_Zoning_Bylaw.pdf)
- Colliers International Canada. (2016). Spark Report: The Rise of Craft Breweries in the Greater Calgary. [PDF Document].
- Davies, D., Larkin, K., & Wilson, B. (2002). Cluster development: From theory to practice—Implications for the food industry. *Agricultural Economics Society, University of Wales, Aberystwyth*, 10.
- Elzinga, K. G., Tremblay, C. H., & Tremblay, V. J. (2015). Craft beer in the United States: History, numbers, and geography. *Journal of Wine Economics*, 10(3), 242-274.

- Government of Alberta. (2018, July 11). Cowboy culture meets craft beer at Stampede. Retrieved from <https://www.alberta.ca/release.cfm?xID=573006D85F4C7-9CBD-D496-D39A01F23C6E1703>
- Government of Alberta. (2017, October 15). *New support on tap for craft brewing industry*. Retrieved from <https://www.alberta.ca/release.cfm?xID=488434F5BD609-A6B5-3B63-E7C79424C0F429F11>
- Government of Canada. (2015). *Canadian Malt*. Retrieved from <http://www.agr.gc.ca/eng/industry-markets-and-trade/buying-canadian-food-products/canadian-malt/?id=1425926296842>
- Guilbert, A. (2016, April 4). 5 Things You Didn't Know About Alberta's Beer History. Avenue Calgary. Retrieved from <https://www.avenucalgary.com/City-Life/5-Things-You-Didnt-Know-About-Albertas-Beer-History/>
- K-Day. (2018, May 31). K-Day to Exclusively Serve Craft in 2018! Retrieved from <https://k-days.com/k-days-to-exclusively-serve-craft-in-2018/>
- Kamath, S., J. Agrawal, and K. Chase. (2012). Explaining Geographic Cluster Success—The GEMS Model. *American Journal of Economics and Sociology*, 71(1), 184-214.
- Lawson, R., Guthrie, J., Cameron, A., & Fischer, W. C. (2008). Creating value through cooperation: An investigation of farmers' markets in New Zealand. *British Food Journal*, 110(1), 11-25.
- Mouallem, O. (2014, July 4). What Changes to Alberta's Liquor Regulations Mean for Craft Breweries? Avenue Calgary. Retrieved from <http://www.avenucalgary.com/Restaurants-Food/What-Changes-to-Albertas-Liquor-Regulations-Mean-for-Craft-Breweries/>
- Nilsson, I., Reid, N., & Lehnert, M. (2018). Geographic Patterns of Craft Breweries at the Intraurban Scale. *The Professional Geographer*, 70(1), 114-125.
- Porter, M. E. (2007). Clusters and economic policy: Aligning public policy with the new economics of competition. *White Paper (Institute for Strategy and Competitiveness, Harvard Business School, 2007)*.
- Porter, M. E., & Ketels, C. H. (2003). UK competitiveness: moving to the next stage.
- Porter, M. E. (1998a). *Clusters and the new economics of competition* (Vol. 76, No. 6, pp. 77-90). Boston: Harvard Business Review.
- Porter, M. (1998b) *On Competition*. HBS. New York

- Porter, M. E. (1990). The competitive advantage of nations. *Harvard business review*, 68(2), 73-93.
- Olds College. (n.d.[b]). Brewmasters & Brewery Operations Management. Retrieved from <https://www.oldscollege.ca/programs/service-industry/brewmaster/index.html>
- Olds College. (n.d.[c]). Alberta Hops. Retrieved from <https://www.oldscollege.ca/research/areas-of-focus/alberta-hops/index.html>
- STORYHIVE. (2016a, April 15). *Alberta - Part 1 - Beer Pioneers*. [Video File]. Retrieved from <https://www.youtube.com/watch?v=wxKJ33zKtKU>
- STORYHIVE. (2016b, April 15). *Alberta - Episode 2 - The Rise of Craft*. [Video File]. Retrieved from <https://www.youtube.com/watch?v=7wmI39NACUc&t=37s>
- STORYHIVE. (2016c, April 15). *Alberta - Episode 3 - The Micro Explosion*. [Video File]. Retrieved from <https://www.youtube.com/watch?v=V3IZaJgrLUU>
- Tremblay, Victor J., and Carol Horton Tremblay. (2005). *The U.S. Brewing Industry: Data and Economic Analysis*. Cambridge, MA: MIT Press.
- Yellowstone to Yukon. (2017, October 19). Beer partnership highlights conservation opportunity in Alberta. Retrieved from <https://y2y.net/news/media-releases/beer-partnership-highlights-conservation-opportunity-in-alberta>
- Weersink, A., Probyn-Smith, K., & Von Massow, M. (2018). The Canadian craft beer sector. In *Economic Perspectives on Craft Beer*. Palgrave Macmillan, Cham. 89-113.
- Wolfe, D. A. (2009). Introduction: Embedded clusters in the global economy. *European Planning Studies*, 17(2), 179-187.
- Wolfe, D. A., & Gertler, M. S. (2006). Local antecedents and trigger events: Policy implications of path dependence for cluster formation. *Cluster genesis: Technology-based industrial development*, 243-263.

## Chapter 5: Limitations and Conclusions

### 5.0 Conclusions

In this thesis, I examined the microbrewery industry in the Province of Alberta. The overall goal was to identify factors that may have impacted the development of Alberta's microbrewery industry. As such, I aimed to fill current gaps in Alberta microbrewing literature through the following objectives: *i) determine if the microbrewing industry in Alberta has exhibited geographic clustering, ii) determine if government policy has impacted the development of Alberta's microbrewery industry, and iii) determine what other factors have contributed to the success of the microbrewing industry in Alberta, specifically focusing on the City of Calgary and the City of Edmonton.*

As mentioned, this thesis utilized the clustering framework of Porter's Diamond Model and Kamath et al.'s GEMS model. Furthermore, Boschma and Frenken's theory of Evolutionary Economic Geography (EEG) also helped to inform this research. Kamath et al.'s GEMS model serves as extension of Porter's original Diamond Model and aims to address factors that are not recognized under Porter's Model. As such the original Diamond Model consists of four primary factors – related and supporting industries, demand conditions, factor conditions, and firm structure, strategy and rivalry. In addition, there are two external influencing factors under the Diamond Model– government and chance. The GEMS model utilizes Porter's four primary factors, but also included eight additional factors – element of chance, historical factors, innovation and entrepreneurship, concentration of firms, public policy, industry networks, business climate, and anchor effect. Furthermore, Boschma and Frenken's theory of Evolutionary Economic Geography (EEG) represents a time-series analysis of a cluster; whereas

Porter's and Kamath et al.'s model offer a cross-sectional analysis of the microbrewery industry. However, these three models offer insight into Alberta's microbrewery industry when used concurrently. Particular GEMS model factors may also be understood as a cross-sectional factor, but also as a time series factor. For example, an anchor effect may be both cross-sectional – differing within the City of Edmonton and the City of Calgary, but also time series – differing between time as another anchor firm enters the cluster. Furthermore, the factor concentration of firms may also be understood in a cross-sectional and time series context. Concentration of firms may differ between the City of Edmonton and the City of Calgary, but the concentration of firms within a particular area may also increase or decrease over time. As such, Porter's, Kamath et al.'s, and Boschma and Frenken's models concurrently provide insight into the clustering within Alberta's microbrewing industry.

First, I used variables specific to Census Subdivisions in the Province of Alberta to determine what factors, especially demographic factors, may have influenced the change in microbreweries within a Census Subdivision between 2011 and 2016. Second, I used spatial analytics to determine if the number of breweries in a particular Census Subdivision has influenced the number of breweries in operation in surrounding Census Subdivisions. Third, I conducted interviews with those directly involved in microbrewery operations within the City of Edmonton and the City of Calgary. These interviews were then analyzed using the clustering frameworks of Porter's Diamond Model and Kamath et al.'s GEMS Model. Through a combination of qualitative and quantitative methods, this thesis aimed to fill existing gaps in microbrewery research in the Province of Alberta.

### ***5.0.1 Quantitative Conclusions***

The objective of Chapter Three, a quantitative analysis, was to *i) determine if the microbrewing industry in Alberta has exhibited geographic clustering*. Through quantitative spatial analysis, I determined that Alberta is home to two microbrewery clusters. These clusters exist within the City of Edmonton and the City of Calgary. Outside of these two large cities, however, I determined that the existence of a microbrewery does not necessarily attract other microbreweries to situate themselves nearby.

Furthermore, I performed a regression analysis in order to determine if particular variables may affect the change in the number of microbreweries within a Census Subdivision between 2011 and 2016. I determined that the following variables are related to the change in the number of microbreweries within a Census Subdivision between 2011 and 2016. These variables included: population of a Census Subdivision in 2011; percent change in population within a Census Subdivision between 2011 and 2016; number of microbreweries in a Census Subdivision in 2011; and percentage of the population in 2016 of a Census Subdivision that was between the ages of 20 to 34. Three of these variables would be considered demand-side variables – size of a Census Subdivision’s population in 2011, change in the population of a Census Subdivision between 2011 and 2016, and the percentage of the population within a Census Subdivision that would have been considered a millennial in 2016. These demand-side variables were shown to have a positive effect on the establishment of microbreweries within a Census Subdivision. Therefore, it may be concluded that microbreweries may choose to establish themselves where there is a larger population and a larger percentage of millennials. On the other hand, one of

these variables would be considered a supply-side variable – the number of microbreweries within a Census Subdivision in 2011.

In terms of supply-side factors, the main finding was that the number of microbreweries in a Census Subdivision in 2011 has a negative effect on the establishment of other microbreweries. This may suggest that any negative effects of competition associated with locating near another microbrewery appears to outweigh the positive effects that may be associated (e.g., cooperation and/or collaboration) with locating near another microbrewery.

### ***5.0.2 Qualitative Conclusions***

The objectives of Chapter Four, a qualitative analysis, was to: *ii) determine if government policy has impacted the development of Alberta's microbrewery industry and iii) determine what other factors have contributed to the success of the microbrewing industry in Alberta, specifically focusing on the City of Calgary and the City of Edmonton.*

My research determined that there has been a variety of factors that have contributed to the success of the microbrewery industry in Alberta. Policies enacted by the Government of Alberta were shown to have an overall positive impact on the microbrewing industry. All interview respondents spoke to the success of the Alberta Small Brewers Development program in supporting microbrewing initiatives. Similarly, interview respondents all agreed to some extent that the removal of the minimum brewing requirement has positively impacted the microbrewing industry in the Province of Alberta.

My thesis also utilized the clustering framework of Porter's Diamond model and Kamath et al.'s GEMS model to determine what other factors have contributed to the formation of clusters and the success of microbreweries within the City of Calgary and the City of Edmonton. It was determined that provincial-level policies (e.g., the removal of a minimum brewing requirement, ASBD program) have had similar impacts on the microbrewing industry in Edmonton and Calgary. However, municipal-level policies, particularly zoning by-laws, may have impacted these two cities differently. Within Porter's Diamond model, the City of Edmonton and the City of Calgary exhibited similar demand conditions and factor conditions. However, the factors of firm structure, strategy, and rivalry displayed differences. Overall, microbreweries in Calgary exhibited a stronger collaborative relationship than those in Edmonton, especially if those breweries were located in the same brewery district (e.g., Beermuda Triangle, Barley Belt). Often times they had collaborative brewing projects and developed marketing strategies with neighbouring microbreweries. Another factor that differed between Edmonton and Calgary microbreweries was the factor of related and supporting industries. In particular, the City of Calgary had many more tourism groups that focused on the microbrewery industry. Within Kamath et al.'s GEMS model, the factors that displayed differences included: element of chance; anchor effect; and concentration of firms. The City of Calgary may have experienced greater growth in microbreweries due to consumer exposure through events such as the 1988 Winter Olympics and the Calgary Stampede. In addition, Calgary is home to two anchoring firms – Big Rock Brewery and Wild Rose Brewery –and the City of Edmonton is home to only one anchoring firm – Alley Kat Brewing Company. There is also evidence that the concentration of firms is greater within the City of Calgary than in the City of Edmonton. This finding supports



the path dependency model of Evolutionary Economic Geography as explained by Boschma and Frenken (2011).

Furthermore, the location of microbreweries within the City of Edmonton and the City of Calgary may have also contributed to the differential in growth of microbreweries between the two cities. The City of Calgary is home to distinct microbrewery districts (e.g., Beermuda Triangle, Barley Belt); whereas, the microbreweries in Edmonton are more dispersed throughout the city with no distinct microbrewery districts. Interview respondents stated that they felt there were inherit benefits from locating near other microbreweries. These benefits included: collaborative marketing strategies; knowledge sharing and spillovers; power in numbers strategy; and the development of a tourist destination.

### **5.1 Limitations and Future Research**

Due to financial and time constraints, I was unable to collect interview data from every microbrewery in the Province of Alberta. Although my thesis addresses gaps in the research of microbreweries in Alberta, future research may expand the qualitative analysis to Census Subdivisions other than the City of Edmonton or the City of Calgary.

Ongoing research on the development of the microbrewing industry in Alberta is important, given the anticipated growth of the industry and the potential economic impact in the province. Related industries, such as microdistilleries, have also recently begun to emerge and grow, as part of an overall consumer trend in the province to local food and drink products. The

Government of Alberta has already shown interest in supporting research that examines the rapidly growing local food sector (e.g., Lee 2017)

My research on Alberta microbreweries provides novel and timely insights into an expanding segment of the provincial economy and agri-food sector. The data gathered and analyzed in my thesis will be of interest to Alberta's microbrewing industry, related industries, as well as government bodies (e.g. federal, provincial, municipal) as they introduce or amend policies and programs that directly impact microbreweries within the Province of Alberta.

As this thesis is completed, the policy environment is again changing. On December 18, 2018, the Alberta Small Brewers Development Program was repealed. At the same time as the province introduced a new graduated markup scheme to favour all small brewers and launched a challenge against the differential fees that Ontario levies on out-of-province beers, wines and spirits. As the province continues to consider its policy options for supporting the province's micro-breweries, government officials should take care to learn what has been successful and what has not. In addition, other organizations such as Edmonton Economic Development (EEDC) may also utilize this information. There is potential to implement programs and/or policies within the City of Edmonton in order to reach the growth in microbreweries witnessed within the City of Calgary.

## **References: Chapter Five**

Lee, M. (2017) Demand for local food growing in Alberta. *Explore Local Field Notes*, 7(2). Retrieved from [https://www1.agric.gov.ab.ca/\\$department/newslett.nsf/pdf/fn27201/\\$file/FieldNotes\\_De c2017-APPROVED.pdf?OpenElement](https://www1.agric.gov.ab.ca/$department/newslett.nsf/pdf/fn27201/$file/FieldNotes_De c2017-APPROVED.pdf?OpenElement)

## References

- AGLC. (2013). Class E Liquor Licensing (Manufacturing) Review. Retrieved from [https://aglc.ca/sites/aglc.ca/files/aglc\\_files/Liquor-Studies\\_2013\\_Report-Recommendations-\\_Class\\_E\\_Liquor\\_Licensing\\_\\_Manufacturing\\_\\_Review.pdf](https://aglc.ca/sites/aglc.ca/files/aglc_files/Liquor-Studies_2013_Report-Recommendations-_Class_E_Liquor_Licensing__Manufacturing__Review.pdf)
- AGLC. (2017). Class E Licences. Retrieved from [https://aglc.ca/sites/aglc.ca/files/aglc\\_files/Class\\_E\\_Licences\\_\\_5233\\_.pdf](https://aglc.ca/sites/aglc.ca/files/aglc_files/Class_E_Licences__5233_.pdf)
- AGLC. (2018). Liquor Licensee List. Retrieved from [https://aglc.ca/sites/aglc.ca/files/LicenseeReports/Licensee\\_Report\\_06\\_04\\_18\\_11\\_42\\_38.pdf](https://aglc.ca/sites/aglc.ca/files/LicenseeReports/Licensee_Report_06_04_18_11_42_38.pdf)
- AGLC. (2018b). Liquor Licensee List. Retrieved from [https://aglc.ca/sites/aglc.ca/files/LicenseeReports/Licensee\\_Report\\_06\\_04\\_18\\_11\\_42\\_38.pdf](https://aglc.ca/sites/aglc.ca/files/LicenseeReports/Licensee_Report_06_04_18_11_42_38.pdf)
- AGLC. (n.d.). Class E. Retrieved from <https://aglc.ca/liquor/liquor-licences/class-e>
- Agreement on Internal Trade. (2018). Appeal of the Report Of The Panel in the Dispute Between Artisan Ales Consulting Inc. and The Government Of Alberta Regarding Mark-Ups On Beer. Retrieved from <https://www.cfta-alec.ca/wp-content/uploads/2018/06/GOA-vs.-Artisan-Ale-appeal-report-Final.pdf>
- Alberta Barley. (n.d.). Industry Overview. Retrieved from <http://www.albertabarley.com/about-us/industry-overview/>
- Alberta WaterPortal Society. (n.d.). Alberta Water Facts. Retrieved from <https://albertawater.com/interesting-facts/alberta>
- Alonso, A. D., Alexander, N., & O'Brien, S. (2018). Collaboration and the emerging craft brewing industry: An exploratory study. *Journal of Asia-Pacific Business*, 19(3), 203-224.
- Altalis. (2018). Municipal Boundaries [Data File]. Retrieved from <https://beta.altalis.com/map?id=113>
- Baginski James, and Bell Thomas L. (2011). Under-Tapped?: An Analysis of Craft Brewing in the Southern United States. *Southeastern Geographer*, (1), 165.
- Beckie, M.A., Kennedy, E. H., & Wittman, H. (2012). Scaling Up Alternative Food Networks: Farmers' Markets and the Role of Clustering in Western Canada. *Agriculture and Human Values*, 29(3): 333 – 345.

- Beer Canada. (n.d.). Economic Impact of Beer. Retrieved from <https://industry.beercanada.com/economic-impact-beer>
- Berning, J., & McCullough, M. P. (2017). The US Brewing Industry from Farm to Pint. *Choices*, 32(3), 1-7.
- Boschma, R., & Frenken, K. (2011). The emerging empirics of evolutionary economic geography. *Journal of economic geography*, 11(2), 295-307.
- Brewer Beer Marketer's Insights. (Semi-weekly newsletter, various issues) Nanuet, NY: Beer
- Brewers Association. (2016a). Craft brewer defined. <https://www.brewersassociation.org/statistics/craft-brewer-defined/>
- Brewers Association. (2016b). Today's craft beer lovers: Millennials, women and Hispanics. 15 August 2016. <https://www.brewersassociation.org/communicating-craft/understanding-todays-craft-beer-lovers-millennials-women-hispanics/>
- Brewers Association. (2018). Number of Breweries. Retrieved from <https://www.brewersassociation.org/statistics/number-of-breweries/>
- Brouthers, K. D., & Brouthers, L. E. (1997). Explaining national competitive advantage for a small European country: A test of three competing models. *International Business Review*, 6(1), 53-70.
- Brown, J.L. (2018). Environmental Economics. Encyclopedia Britannica. Retrieved from <https://www.britannica.com/topic/environmental-economics#ref1187834>
- Budynski, S. Map of Alberta Microbreweries (up to the end of 2017) [map]. Scale Not Given. "The Effects of Policy and Clustering in Alberta's Expanding Microbrewery Industry." November 2018. (November 9, 2018). Using: *ArcGIS* [GIS software]. Version 10.0. Edmonton, AB: 2018.
- Budynski, S., J. Kowalski, K. Pierzchajlo, B. Swallow, and M. Beckie. (2018). Cross-Canada Review of the Policy Landscape for Local and Place-Based Foods in Canada. Department of Resource Economics and Environmental Sociology. University of Alberta.
- Carpenter, A. J., W. Darlington, D. Frick, T. Garver, H. C. Kane, R. Mimken, & K. Serwitz. (2013). Craft beer and consumer behavior. Paper submitted to Professor V. R. Lane for Marketing 6060: Buyer/Consumer Behavior, University of Colorado, Denver.
- Carroll, G. R., & Swaminiathan, A. (1992). The organizational ecology of strategic groups in the American brewing industry from 1975 to 1990. *Industrial & Corporate Change*, 1(1), 65-99.

- Carroll, G. R., & Wheaton, D. R. (2009). The organizational construction of authenticity: An examination of contemporary food and dining in the US. *Research in Organizational Behavior*, 29, 255-282.
- CBC. (2019). The year in beer: strong growth and a heady future for Alberta's craft scene. CBC News (<https://www.cbc.ca/news/canada/edmonton/edmonton-alberta-craft-beer-1.4968128>, accessed 16 January 2019).
- CBC News. (2017, June 2). Craft beer to be sold at Calgary Stampede in 2017, after years of pressure. *CBC Calgary*. Retrieved from <https://www.cbc.ca/news/canada/calgary/calgary-stampede-craft-beer-allowed-2017-1.4142829>
- City of Calgary. (2007). Land Use Bylaw 1P2007. Retrieved from [http://www.calgary.ca/PDA/pd/Documents/Calgary-Land-Use-bylaw-1P2007/bylaw\\_1p2007.pdf](http://www.calgary.ca/PDA/pd/Documents/Calgary-Land-Use-bylaw-1P2007/bylaw_1p2007.pdf)
- City of Edmonton. (2017). Zoning Bylaw No. 12800. [PDF Document]. Retrieved from [https://www.edmonton.ca/documents/PDF/current\\_Zoning\\_Bylaw.pdf](https://www.edmonton.ca/documents/PDF/current_Zoning_Bylaw.pdf)
- Colliers International Canada. (2016). Spark Report: The Rise of Craft Breweries in the Greater Calgary. [PDF Document].
- Daly, M. and B. Roberts. (1998). The Application of Porter's Diamond Model to Evaluate the Competitiveness of Tradable Services in a Regional Economy: A Case Study of Tropical North Queensland.
- d'Aspremont, C., Gabszewicz, J. J., & Thisse, J. F. (1979). On Hotelling's "Stability in competition". *Econometrica: Journal of the Econometric Society*, 1145-1150.
- Davies, D., Larkin, K., & Wilson, B. (2002). Cluster development: From theory to practice—Implications for the food industry. *Agricultural Economics Society, University of Wales, Aberystwyth*, 10.
- De Palma, A., Ginsburgh, V., Papageorgiou, Y. Y., & Thisse, J. F. (1985). The principle of minimum differentiation holds under sufficient heterogeneity. *Econometrica: Journal of the Econometric Society*, 767-781.
- Donald, B. (2009). Contested notions of quality in a buyer-driven commodity cluster: The case of food and wine in Canada. *European Planning Studies*, 17(2), 263-280.
- Dunning, J. H. (1993). Internationalizing Porter's diamond. *MIR: Management International Review*, 7-15.
- Duranton, G. (2011). California dreamin': The feeble case for cluster policies. *Review of Economic Analysis*, 3, 3.

- Ellison, G., Glaser, E., Kerr, W. (2010). What causes industry agglomeration?: Evidence from coagglomeration patterns. *American Economic Review*, 100(3), 195-1213.
- Elzinga, K. G., Tremblay, C. H., & Tremblay, V. J. (2015). Craft beer in the United States: History, numbers, and geography. *Journal of Wine Economics*, 10(3), 242-274.
- Esparza, T. R. (2016). Crafting clusters: an analysis of the craft beer industry in northern Colorado.
- Florida, R. (2012). The geography of craft beer. *The Atlantic Cities*.
- Foster, J. (2017, November 22). Politics of Brew. VUE Weekly. Retrieved from <http://www.vueweekly.com/politics-of-brew/>
- Glaser, E. (2010). Agglomeration Economics. University of Chicago Press and National Bureau of Economic Research, Chicago IL. Retrieved from <http://www.nber.org/chapters/c7977.pdf>
- Government of Alberta (2017, March 29). *More support brewing for Alberta's liquor industry*. Retrieved from <https://www.alberta.ca/release.cfm?xID=465640EF51E8D-F1AC-F22F-AE52F6096A39A242>
- Government of Alberta. (2018, July 11). Cowboy culture meets craft beer at Stampede. Retrieved from <https://www.alberta.ca/release.cfm?xID=573006D85F4C7-9CBD-D496-D39A01F23C6E1703>
- Government of Alberta. (2017, October 15). *New support on tap for craft brewing industry*. Retrieved from <https://www.alberta.ca/release.cfm?xID=488434F5BD609-A6B5-3B63-E7C79424C0F429F11>
- Government of Canada. (2015). *Canadian Malt*. Retrieved from <http://www.agr.gc.ca/eng/industry-markets-and-trade/buying-canadian-food-products/canadian-malt/?id=1425926296842>
- Guilbert, A. (2016, April 4). 5 Things You Didn't Know About Alberta's Beer History. Avenue Calgary. Retrieved from <https://www.avenuecalgary.com/City-Life/5-Things-You-Didnt-Know-About-Albertas-Beer-History/>
- Healing, D. (2018, November 26). Alberta declares beer-trade fight with Ontario over access to liquor stores. The Globe and Mail. Retrieved from <https://www.theglobeandmail.com/business/article-alberta-declares-beer-trade-fight-with-ontario-over-access-to-liquor/>

- Ilbery, B., Watts, D., Simpson, S., Gilg, A., & Little, J. (2006). Mapping local foods: evidence from two English regions. *British Food Journal*, 108(3), 213-225.
- Industries in Particular Localities.” In *Principles of Economics*. Ed. A. Marshall, Book IV, Chapter 10, 8th Ed. McMillan
- Johansson, B., & Forslund, U. (2008). The analysis of location, co-location and urbanisation economies. *Handbook of Research on Cluster Theory*, 1, 39-66.
- Kamath, S., J. Agrawal, & K. Chase. (2012). Explaining Geographic Cluster Success—The GEMS Model. *American Journal of Economics and Sociology*, 71(1), 184-214.
- K-Day. (2018, May 31). K-Day to Exclusively Serve Craft in 2018! Retrieved from <https://k-days.com/k-days-to-exclusively-serve-craft-in-2018/>
- Lawson, R., Guthrie, J., Cameron, A., & Fischer, W. C. (2008). Creating value through cooperation: An investigation of farmers' markets in New Zealand. *British Food Journal*, 110(1), 11-25.
- Lee, M. (2017) Demand for local food growing in Alberta. *Explore Local Field Notes*, 7(2). Retrieved from [https://www1.agric.gov.ab.ca/\\$department/newslett.nsf/pdf/fn27201/\\$file/FieldNotes\\_Dec2017-APPROVED.pdf?OpenElement](https://www1.agric.gov.ab.ca/$department/newslett.nsf/pdf/fn27201/$file/FieldNotes_Dec2017-APPROVED.pdf?OpenElement)
- Lewis, G. (1993). Australia’s Competitiveness: A Strategic – Management Approach. *Australian strategic management*. Prentice Hall Australia, Sydney, 345-359
- Maier, T. (2013). Selected aspect of the microbreweries boom. *Agris on-line Papers in Economics and Informatics*, 5(4), 135. Marketer’s Insights.
- Marsden, T. (2010). Mobilizing the regional eco-economy: evolving webs of agri-food and rural development in the UK. *Cambridge Journal of Regions, Economy and Society*, 3(2), 225-244.
- Marshall, A. (1890). *Principles of economics*. London: Macmillan.
- Marshall, A. (1920). “Industrial Organization: The Concentration of Specialized
- Martin R., and Sunley P. (2003), ‘Deconstructing Clusters: Chaotic Concept or Policy Panacea?’, *Journal of Economic Geography*, 3(1), 5–35.
- McGrath, H., & O’Toole, T. (2013). Enablers and inhibitors of the development of network capability in entrepreneurial firms: A study of the Irish micro-brewing network. *Industrial Marketing Management*, 42(7), 1141-1153.

- McLaughlin, R. B., Reid, N., & Moore, M. S. (2016). Inter-Metropolitan Location Patterns of Craft Breweries in the United States. *地域学研究*, 46(1), 115-129.
- Menzel, M. P., & Fornahl, D. (2009). Cluster life cycles—dimensions and rationales of cluster evolution. *Industrial and corporate change*, 19(1), 205-238.
- Moore, M. S., Reid, N., & McLaughlin, R. B. (2016). The locational determinants of micro-breweries and brewpubs in the United States. In *Brewing, Beer and Pubs*. Palgrave Macmillan, London. 182-204.
- Mouallem, O. (2014, July 4). What Changes to Alberta's Liquor Regulations Mean for Craft Breweries? Avenue Calgary. Retrieved from <http://www.avenuecalgary.com/Restaurants-Food/What-Changes-to-Albertas-Liquor-Regulations-Mean-for-Craft-Breweries/>
- Nathan, M. and H. Overman. (2013). Agglomeration, clusters, and industrial policy, *Oxford Review of Economic Policy*, 29(2), 383–404.
- Nilsson, I., Reid, N., & Lehnert, M. (2018). Geographic Patterns of Craft Breweries at the Intraurban Scale. *The Professional Geographer*, 70(1), 114-125.
- Njøs, R., & Jakobsen, S. E. (2016). Cluster policy and regional development: Scale, scope and renewal. *Regional Studies, Regional Science*, 3(1), 146-169.
- OECD. (2010). OECD Innovation Policy Platform: Cluster Policies. [PDF]. Retrieved from <http://www.oecd.org/innovation/policyplatform/48137710.pdf>
- Olds College. (n.d.[a]). Olds College Brewery. Retrieved from <https://www.oldscollege.ca/shopoc/brewery/index.html>
- Olds College. (n.d.[b]). Brewmasters & Brewery Operations Management. Retrieved from <https://www.oldscollege.ca/programs/service-industry/brewmaster/index.html>
- Olds College. (n.d.[c]). Alberta Hops. Retrieved from <https://www.oldscollege.ca/research/areas-of-focus/alberta-hops/index.html>
- On Beer (2019). Prairie Beer.( <http://www.onbeer.org/prairie-beer/>, accessed Jan 16, 2019)
- Porter, M. E. (2007). Clusters and economic policy: Aligning public policy with the new economics of competition. *White Paper (Institute for Strategy and Competitiveness, Harvard Business School, 2007)*
- Porter, M. E., & Ketels, C. H. (2003). UK competitiveness: moving to the next stage.
- Porter, M. E. (2000). Location, competition, and economic development: Local clusters in a global economy. *Economic development quarterly*, 14(1), 15-34.



- Porter, M. E. (1998a). *Clusters and the new economics of competition* (Vol. 76, No. 6, pp. 77-90). Boston: Harvard Business Review
- Porter, M. (1998b) *On Competition*. HBS. New York
- Porter, M. E. (1997). New strategies for inner-city economic development. *Economic Development Quarterly*, 11(1), 11-27
- Porter, M. E. (1996). Competitive advantage, agglomeration economies, and regional policy. *International regional science review*, 19(1-2), 85-90.
- Porter, M. E. (1990). The competitive advantage of nations. *Harvard business review*, 68(2), 73-93.
- Raines, P. (2001). *Local or national competitive advantage?: the tensions in cluster development policy*. University of Strathclyde, European Policies Research Centre.
- Reid, N., I. Nilsson, and M. Lehnert. (2016). Geographic Clustering of Craft Breweries in Select American Cities. [PDF]. Presented at the Regional Science Academy Conference on Urban Empires—Cities as Global Rulers on the Urban New World. Retrieved from <https://www.slideshare.net/regionalscienceacademy/geographic-clustering-of-craft-breweries-in-select-american-cities>
- Ricketts, H.J., B. Illbery, and M. Kneafsey. (2005). The distribution of local food activity in England and Wales: An index of food relocalization. *Regional Studies* 40(3): 289–301
- Ridley, D. B. (2012). Hotelling's Law. Retrieved from <https://faculty.fuqua.duke.edu/~dbr1/research/Hotellings-Law.pdf>
- Rugman, A. M. (1991). Diamond in the rough. *Business quarterly*, 56(3), 61-64.
- Schnell, S. M., & Reese, J. F. (2014). Microbreweries, place, and identity in the United States. In *The geography of beer* (pp. 167-187). Springer, Dordrecht.
- Shaffer, R., Deller, S., Marcouiller, D. (2004). *Community economics: Linking Theory and Practice*. Second Edition. Blackwell Publishing.
- Statistics Canada. (2016). Census subdivision (CSD). Retrieved from <https://www12.statcan.gc.ca/census-recensement/2011/ref/dict/geo012-eng.cfm>
- Steiner, B. E., & Ali, J. (2011). Government support for the development of regional food clusters: Evidence from Alberta, Canada. *International Journal of Innovation and Regional Development*, 3(2), 186-216.
- Stimson, R. J., Stough, R. R., & Roberts, B. H. (2006). *Regional economic development: analysis and planning strategy*. Springer Science & Business Media.

- STORYHIVE. (2016a, April 15). *Alberta - Part 1 - Beer Pioneers*. [Video File]. Retrieved from <https://www.youtube.com/watch?v=wxKJ33zKtKU>
- STORYHIVE. (2016b, April 15). *Alberta - Episode 2 - The Rise of Craft*. [Video File]. Retrieved from <https://www.youtube.com/watch?v=7wmI39NACUc&t=37s>
- STORYHIVE. (2016c, April 15). *Alberta - Episode 3 - The Micro Explosion*. [Video File]. Retrieved from <https://www.youtube.com/watch?v=V3IZaJgrLUU>
- The Conference Board of Canada. (2018). *Brewing Up Benefits: The Economic Footprint of Canada's Beer Economy*. Retrieved from [https://www.conferenceboard.ca/temp/34f15666-867a-446d-be36-5803fc8b2230/9329\\_Brewing\\_BR](https://www.conferenceboard.ca/temp/34f15666-867a-446d-be36-5803fc8b2230/9329_Brewing_BR)
- Thisse, J. F. (2011). Geographical economics: A historical perspective. *Recherches Économiques de Louvain/Louvain Economic Review*, 77(2-3), 141-168.
- Tremblay, Victor J., and Carol Horton Tremblay. (2005). *The U.S. Brewing Industry: Data and Economic Analysis*. Cambridge, MA: MIT Press.
- UCLA: Statistical Consulting Group. (n.d.). Introduction to SAS. Retrieved from <https://stats.idre.ucla.edu/stata/output/negative-binomial-regression/>
- Weersink, A., Probyn-Smith, K., & Von Massow, M. (2018). The Canadian craft beer sector. In *Economic Perspectives on Craft Beer*. Palgrave Macmillan, Cham. 89- 11.
- Wolfe, D. A. (2009). Introduction: Embedded clusters in the global economy. *European Planning Studies*, 17(2), 179-187.
- Wolfe, D. A., & Gertler, M. S. (2006). Local antecedents and trigger events: Policy implications of path dependence for cluster formation. *Cluster genesis: Technology-based industrial development*, 243-263.
- Yellowstone to Yukon. (2017, October 19). Beer partnership highlights conservation opportunity in Alberta. Retrieved from <https://y2y.net/news/media-releases/beer-partnership-highlights-conservation-opportunity-in-alberta>

**Appendix A: List of Microbreweries in Alberta as of June 14, 2018**

<b>Microbrewery Name</b>	<b>Address</b>	<b>Year Established</b>
Big Rock Brewery	5555 76 Ave SE, Calgary, AB T2C 4L8	1985
Brewsters Brewing Company & Restaurant (Cal;Foothills)	5519 53 Street Southeast, Calgary, AB T2C 4V1	1991
Alley Kat Brewing Company	9929 60 Ave NW, Edmonton, AB T6E 3N9	1994
Brewsters Brewing Company & Restaurant (Edm;Oliver Square)	11620 104 Avenue Northwest, Edmonton, AB, T5K 2T7	1995
Wild Rose Brewery 1	#15 , 5505 72nd Ave SE Calgary, Alberta, Canada T2C 3C4	1996
The Grizzly Paw Pub & Brewing Co.	622 8 St, Canmore, AB T1W 2B5	1996
Brew Brothers	605 11 Ave SW, Calgary, AB T2R 0E	2002 <i>CLOSED</i> 2014
Jasper Brewing Co.	624 Connaught Dr, Jasper, AB T0E 1E0	2005
Maverick Brewing Co.	10229 105 Street, Edmonton, Alberta, Canada T5J 1E3	2005 <i>CLOSED</i> 2007
Amber's Brewing Company	9926 78 Ave NW, Edmonton, AB T6E 1N5	2007 <i>CLOSED</i> 2012
Something Brewing Company/ Drummond	6610 71 St #5, Red Deer, AB T4P 3Y7	2008
Roughneck Brewing Co. Ltd.	PO Box 732, Calmar, AB T0C 0V0	2008 <i>CLOSED</i> 2012
Yellowhead Brewery	10229 105 St NW, Edmonton, AB T5J 1E3	2009
Banff Ave Brewing Co	110 Banff Ave, Banff, AB T1L 1A9	2010
Village Brewery	5000 12a St SE, Calgary, AB T2G 5K9	2011
Norseman Brewing Co (at Norseman Inn)	6505 48 Ave, Camrose, AB T4V 3K3	2011
Minhas Micro Brewery	1314 44 Ave NE, Calgary, AB T2E 6L6	2012
Ribstone Creek Brewery	4924 51 St, Edgerton, AB T0B 1K0	2012
Hog's Head Brewing	16 Rayborn Crescent, St. Albert, AB T8N 4B	2012 <i>CLOSED</i> 2015
Wild Rose Brewery 2	4580 Quesnay Wood Dr SW, Calgary, AB T3E 7J3	2013
Grizzly Paw Production	310 Old Canmore Road, Canmore, AB T1W	2013

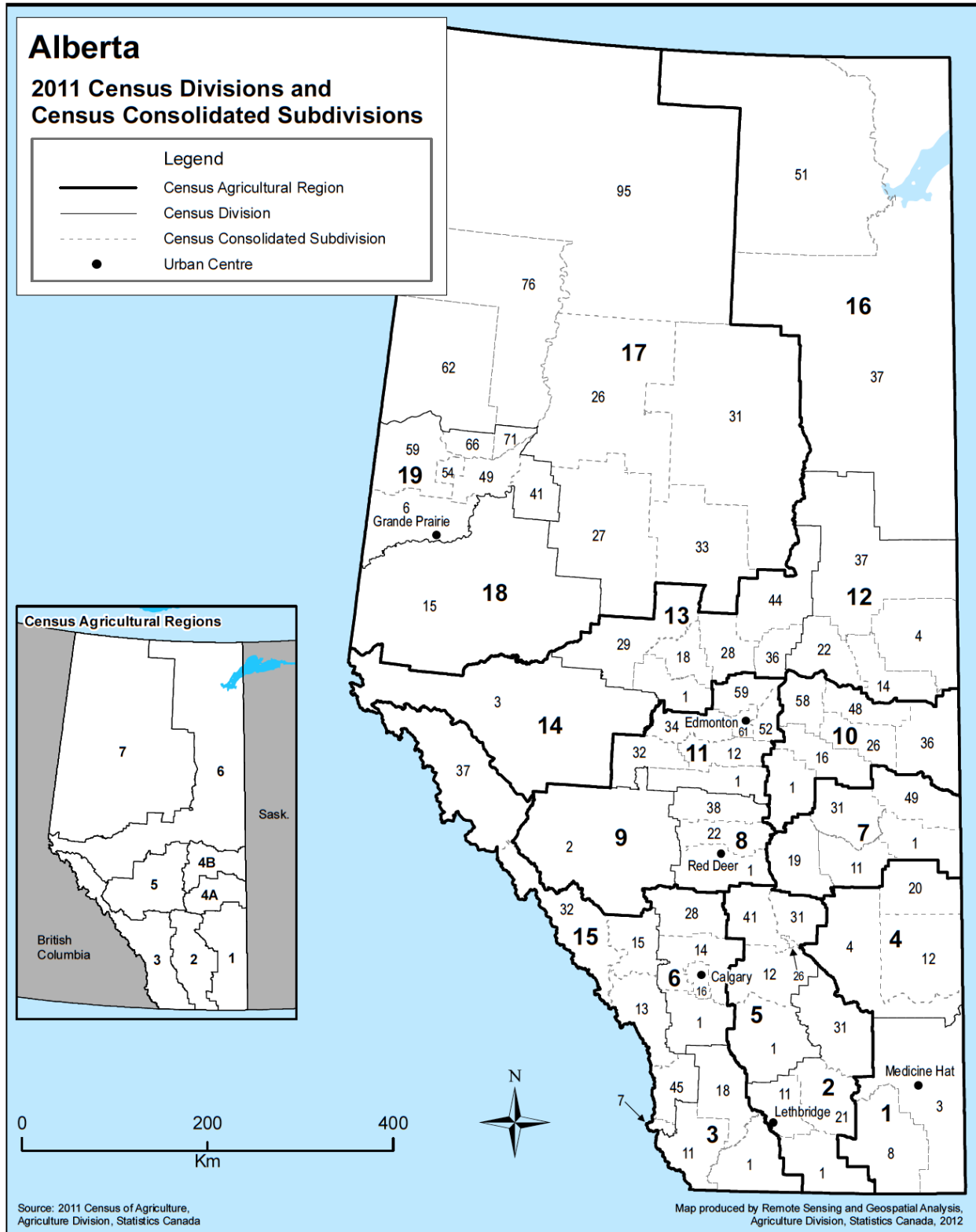
Facility	0J7	
Olds College Brewery	4601 46 St, Olds, AB T4H 1X6	2013
Wood Buffalo Brewing Company	9914 Morrison St, Fort McMurray, AB T9H 1V2	2013
The Dandy Brewing Company and Tasting Room	2003 11 Street SE, Calgary, AB, T2G 3G6	2014
Last Best Brewing and Distillery	607 11 Ave SW, Calgary, AB T2R 0E1	2014
Tool Shed Brewing Company	801 30 St NE, Calgary, AB T2A 5L7	2014
The Dandy Brewing Company	1826 25 Ave NE, Unit 11, Calgary, AB T2E 7K1	2014
Troubled Monk Brewery	5551 45 St, Red Deer, AB T4N 1L2	2014
Fat Unicorn Brewery	Box 276, Plamondon, AB, T0A 2T0	2014
Theoretically Brewing Company	1263 2 Ave S, Lethbridge, AB T1J 0E7	2015
Six Corners Brewing (Brewed at Paddock Wood)	109 Southbank Blvd, Okotoks, AB T1S 0G1	2015
Boiling Oar Brewing Company	7930 51 St SE, Calgary, AB T2C 4R2	2015
Half Hitch Brewing Company	10 Griffin Industrial Point #1, Cochrane, AB T4C 0A2	2015
King of Springs Brewery Ltd.	1806-20 Street, Didsbury, Alberta, Canada T0M0W0	2015
Blindman Brewing	Bay F - 3413 53 Ave, Lacombe, AB T4L 0C6	2015
Bench Creek Brewing	53527 Range Rd 181A, Yellowhead County, AB T7E 3T7	2015
Two Sergeants Brewing	10470 98 Ave #501, Fort Saskatchewan, AB T8L 0V6	2015
GP Brewing Co.	8812 111 A Street, T8V 5L3	2015
GP Brewing Co.	10512 100 Ave, Grande Prairie, AB T8V 0V9	2015
Coulee Brew Co.	4085 2 Ave S, Lethbridge, AB T1J 1Z2	2016
Hell's Basement Brewery	552 18 St SW #102, Medicine Hat, AB T1A 8A7	2016
Medicine Hat Brewing Co	1366 Brier Park Dr NW, Medicine Hat, AB T1C 1Z7	2016
Outcast Brewing (Brewed at Cold Garden)	5114-16969 24 St SW Calgary, Alberta, T2Y 0J8	2016
Summit Brewing Company (Brewed at Half Hitch Brewing)	SUITE 1326 327-2335 162 AVENUE SW, Calgary, Alberta, Canada, T2Y 4S6	2016
Banded Peak Brewing	119, 519 34 Avenue Southeast, Calgary, AB T2G 1V1	2016
Trolley Five Restaurant & Brewery	728 17 Ave SW, Calgary, AB T2T 4M2	2016

Cold Garden	1100 11 St SE, Calgary, AB T2G 4T3	2016
High Line Brewing	1318 9 Ave SE #113, Calgary, AB T2G 0T3	2016
Goat Locker Brewing Company (Brewed at Dead Frog in BC)	207 9A Street NW, Calgary, AB AB T2N 1T5	2016
Common Crown Brewing Company	943 28 St NE, Calgary, AB T2A 7X1	2016
Canmore Brewing Company Ltd.	1460 Railway Ave, Canmore, AB T1W 1P6	2016
Rocky View Brewing Company	4 Willow Lane, Cochrane, Alberta, Canada	2016
Prairie Brewing Company	PO BOX 879 THREE HILLS, AB T0M 2A0	2016
4th Meridian Brewing Company	Unit 1, 2616 50 Ave Unit 1, Lloydminster, AB T9V 2S3	2016
Provincial Brand Ltd. (Brewed at Grizzly Paw)	12519 39A Ave NW, Edmonton, AB T6J 0P4	2016
Situation Brewing Company	10308 81 Ave NW, Edmonton, AB T6E 1X2	2016
Bent Stick Brewing Co.	5416 136 Ave NW, Edmonton, AB T5A 0E4	2016
Lakeland Brewing Company	4227 50 Ave, St. Paul, AB T0A 3A3	2016
Cold Lake Brewing & Distilling Co.	5109 51 Ave, Cold Lake, AB T9M 1P1	2016
Grain Bin Brewing Company	8504 112 St Unit R104, Grande Prairie, AB T8V 5X4	2016
Dog Island Brewing Inc.	250 Caribou Trail SW, Slave Lake, AB T0G 2A0	2016
Oldman River Brewing Ltd.	101 Breckenridge Ave, Lundbreck, AB T0K 1H0	2017
Brauerei Fahr	105 Kennedy Dr SE, Turner Valley, AB T0L 2A0	2017
Annex Ale Project	4323 1 St SE, Calgary, AB T2G 2L2	2017
Paddy's Barbeque & Brewery	3610 Burnsland Rd SE, Calgary, AB T2G 3Z2	2017
Township 24 Brewing	100 Rainbow Rd, Chestermere, AB T1X 0V3	2017
Origin Brewing	60 Spruce Park Dr, Strathmore, AB T1P 1J2	2017
Ol' Beautiful Brewing Company (Brewed at Cold Garden)	2305 433 11th Avenue SE, Calgary, Alberta, Canada,	2017
Citizen Brewing Company	227 35 Ave NE, Calgary, AB T2E 2K5	2017
Zero Issue Brewing	4210 12 St NE, Calgary, AB T2E 6K9	2017
Caravel Craft Brewery	Bay #12 10221 15 Street Northeast, Calgary, AB T3J 0T1	2017
Railyard Brewing	10301 19 St NE Unit 121, Calgary, AB T3J 0R1	2017
Fitzsimmons Brewing Company Ltd.	4 - 220 East Lake Blvd, Airdrie, AB T4A 2G2	2017

Siding 14 Brewing Company Ltd.	3520 67 St, Ponoka, AB T4J 1J8	2017
Folding Mountain Brewing	49321 Hwy 16, AB-16, Hinton, AB T7V 1X3	2017
Town Square Brewing Co.	2919 Ellwood Dr SW, Edmonton, AB T6X 0B1	2017
Blind Enthusiasm Brewing Company*	9570 76 Ave NW, Edmonton, AB T6C 0K2	2017
Elbeck Brews (Brewed at Two Sergeants)	#501 104170 98th Ave Fort Saskatchewan, Alberta	2017

Source: Author's own table using AGLC (2018) data

## Appendix B: Map of Alberta Census Subdivisions



Source: Statistics Canada, 2011

## 2011 Census Divisions and Census Consolidated Subdivisions

<p><b>1 Division No. 1</b>            3 Cypress County            8 Forty Mile County No. 8</p> <p><b>2 Division No. 2</b>            1 Warner County No. 5            11 Lethbridge County            21 Taber            31 Newell County No. 4</p> <p><b>3 Division No. 3</b>            1 Cardston County            11 Pincher Creek No. 9            18 Willow Creek No. 26</p> <p><b>4 Division No. 4</b>            4 Special Area No. 2            12 Special Area No. 3            20 Special Area No. 4</p> <p><b>5 Division No. 5*</b>            1 Vulcan County            12 Wheatland County            26 Drumheller            31 Starland County            41 Kneehill County</p> <p><b>6 Division No. 6</b>            1 Foothills No. 31            14 Rocky View County            16 Calgary            28 Mountain View County</p> <p><b>7 Division No. 7</b>            1 Provost No. 52            11 Paintearth County No. 18            19 Stettler County No. 6            31 Flagstaff County            49 Wainwright No. 61</p>	<p><b>8 Division No. 8</b>            1 Red Deer County            22 Lacombe County            38 Ponoka County</p> <p><b>9 Division No. 9</b>            2 Clearwater County</p> <p><b>10 Division No. 10</b>            1 Camrose County            16 Beaver County            26 Minburn County No. 27            36 Vermilion River County            48 Two Hills County No. 21            58 Lamont County</p> <p><b>11 Division No. 11</b>            1 Wetaskiwin County No. 10            12 Leduc County            32 Brazeau County            34 Parkland County            52 Strathcona County            59 Sturgeon County            61 Edmonton</p> <p><b>12 Division No. 12*</b>            4 Bonnyville No. 87            14 St. Paul County No. 19            22 Smoky Lake County            37 Lac La Biche County</p> <p><b>13 Division No. 13</b>            1 Lac Ste. Anne County            18 Barrhead County No. 11            28 Westlock County            29 Woodlands County            36 Thorhild County No. 7            44 Athabasca County</p>	<p><b>14 Division No. 14</b>            3 Yellowhead County</p> <p><b>15 Division No. 15*</b>            7 Crowsnest Pass            13 Kananaskis            15 Bighorn No. 8            32 Improvement District No. 9 Banff            37 <i>Improvement District No. 12 Jasper Park</i>            45 Ranchland No. 66</p> <p><b>16 Division No. 16*</b>            37 Wood Buffalo            51 <i>Improvement District No. 24 Wood Buffalo</i></p> <p><b>17 Division No. 17*</b>            26 Northern Sunrise County            27 Big Lakes            31 Opportunity No. 17            33 Lesser Slave River No. 124            62 Clear Hills            76 Northern Lights County            95 Mackenzie County</p> <p><b>18 Division No. 18</b>            15 Greenview No. 16</p> <p><b>19 Division No. 19</b>            6 Grande Prairie County No. 1            41 Smoky River No. 130            49 Birch Hills County            54 Spirit River No. 133            59 Saddle Hills County            66 Fairview No. 136            71 Peace No. 135</p>
--	--	---

Source: Statistics Canada, 2011



**Appendix C: Microbrewery Survey**

*Date of survey:*

*Name of brewery or organization:*

*Name of Person(s) being interviewed:*

*Street address of the brewery or organization:*

*Name of jurisdiction where the brewery is located:*

*How long has this brewery or organization been a member of the micro-brewing industry:*

**PART I.** To begin, we would like to know your views on government policies that have impacted craft brewers in the (insert name of city) Region. *Please tick one box for each statement below to show how much you agree or disagree with it.*

	<b>Strongly Agree 1</b>	<b>Agree 2</b>	<b>Neutral 3</b>	<b>Disagree 4</b>	<b>Strongly Disagree 5</b>
1. The Government of Alberta (GOA) has implemented policies that have <i>positive</i> impacts on microbreweries.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. The GOA has implemented policies that have <i>negative</i> impacts on microbreweries.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. The City of (insert name of city) has implemented policies that have <i>positively</i> impacted microbreweries.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. The City of (insert name of city) has implemented policies that have <i>negatively</i> impacted microbreweries.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Please read the following information. After you have read the provided information, please tick one box for each statement below to show how much you agree or disagree with it.*

In December 2013, the Alberta Gaming and Liquor Commission (AGLC) removed the minimum brewing requirement that had required breweries to produce 500,000 litres per year to be recognized as a brewery.

	<b>Strongly Agree 1</b>	<b>Agree 2</b>	<b>Neutral 3</b>	<b>Disagree 4</b>	<b>Strongly Disagree 5</b>
5. The removal of a minimum brewing requirement has <i>positively</i> impacted microbreweries in Alberta	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Prior to December 2013, the biggest barrier to entry into the industry was the minimum brewing requirement.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Please read the following information. After you have read the provided information, please tick one box for each statement below to show how much you agree or disagree with it.*

In August 2016, the Government of Alberta announced the *Alberta Small Brewers Development Program*, which provides craft funding for eligible small-scale brewers.

	<b>Strongly Agree 1</b>	<b>Agree 2</b>	<b>Neutral 3</b>	<b>Disagree 4</b>	<b>Strongly Disagree 5</b>
7. The GOA has provided adequate funding and grant opportunities for microbreweries in Alberta.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. The <i>Alberta Small Brewers Development Program</i> has been successful in supporting microbreweries in Alberta.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. The <i>Alberta Small Brewers Development</i> is a better financial incentive than the previous graduated tax rate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Please read the following information. After you have read the provided information, please tick one box for each statement below to show how much you agree or disagree with it.*

**USED FOR CALGARY BREWERIES:**

In Calgary, many craft breweries are located in the southeast and northeast regions of the city. Studies conclude that that this is due to the availability of appropriate facilities.

A report by Colliers International Canada indicates that I-G (Industrial General) is the typical zoning for breweries in Calgary and is the most common zoning for industrial properties. A new land-use definition gives brewers more options on where they can locate and offer site tours and “on premise consumption”.

**USED FOR EDMONTON BREWERIES:**

“Traditionally, breweries and distilleries were considered General Industrial activities due to their size. As a result, these businesses were largely limited to industrial areas. Amendments to Zoning Bylaw 12800 were approved by City Council and came into effect on September 11, 2017” (City of Edmonton, n.d.)

Changes to the bylaw include; “Introduction of the Breweries, Wineries and Distilleries use allowing for the manufacture of alcoholic beverages; public space, including private non-sale hospitality areas for tasting and sampling; and the retail sale of alcohol manufactured on site. Making the use permitted in most industrial zones and discretionary in commercial zones. Special land use provisions to manage off-site impacts and to ensure compatibility with surrounding uses” (City of Edmonton, n.d.)

	<b>Strongly Agree 1</b>	<b>Agree 2</b>	<b>Neutral 3</b>	<b>Disagree 4</b>	<b>Strongly Disagree 5</b>
10. Zoning regulations have been a <i>barrier</i> to microbreweries in (insert name of city).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. The City of (insert name of city) has adequately addressed zoning regulations for microbreweries.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. The change in zoning classifications will <i>positively</i> impact microbreweries in the (insert name of city).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Being located near other breweries has been beneficial to your brewery.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Please read the following information. After you have read the provided information, please tick one box for each statement below to show how much you agree or disagree with it.*

In Alberta, beer must be manufactured onsite and the production must follow Canadian food safety and processing regulations. This includes alcohol content, bottling, and product labelling. In addition, the Government of Canada has implemented guidelines in regards to what constitutes each beer type and how producers list their ingredients.

	<b>Strongly Agree 1</b>	<b>Agree 2</b>	<b>Neutral 3</b>	<b>Disagree 4</b>	<b>Strongly Disagree 5</b>
14. Food safety and processing regulations have acted as a <i>barrier</i> to microbreweries in Alberta.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Food safety and processing regulations are clear and consistent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Food safety and processing regulations are easy for breweries adhere to.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Adhering to food safety and processing regulations is a financial burden for small-scale breweries.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. The GOA has provided adequate resources to aid breweries to adhere to food safety and processing regulations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. The Government of Canada has provided adequate resources to aid breweries to adhere to food safety and processing regulations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
--	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

*Please read the following information. After you have read the provided information, please tick one box for each statement below to show how much you agree or disagree with it.*

Breweries require a variety of inputs for operation. These barley, pure water, hops, and brewer's yeast.

	<b>Strongly Agree 1</b>	<b>Agree 2</b>	<b>Neutral 3</b>	<b>Disagree 4</b>	<b>Strongly Disagree 5</b>
20. It is easy to access the input ingredients for brewing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. It is easy to access the ingredients needed for brewing <i>locally</i> .	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Finding a consistent and reliable source for locally sourced inputs is difficult.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**PART II.** Please answer the following section in a short sentence format.

1. Do you have any other comment about specific policies or programs -- federal, provincial or municipal – that have enabled breweries to become *successful* in (insert name of city)?

2. Do you have any other comment about specific policies or programs -- federal, provincial or municipal – that have acted as barriers for breweries in (insert name of city)?

3. Is there anything specific that governments, either federal, provincial, or municipal, can do to better support micro-breweries in Alberta and in (insert name of city)?

4. What benefits do breweries gain from locating near to each other?

5. What problems are associated with breweries locating near to each other?

## **References: Appendix**

AGLC. (2018). Liquor Licensee List. Retrieved from [https://aglc.ca/sites/aglc.ca/files/LicenseeReports/Licensee\\_Report\\_06\\_04\\_18\\_11\\_42\\_38.pdf](https://aglc.ca/sites/aglc.ca/files/LicenseeReports/Licensee_Report_06_04_18_11_42_38.pdf)

Statistics Canada. (2011). Alberta: 2011 Census Divisions and Census Consolidated Subdivisions. Retrieved from <https://www.statcan.gc.ca/eng/ca2011/110006/map2al-eng.pdf>