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# Effects of ancestral populations on entrepreneurial founding and failure: private liquor stores in Alberta, 1994–2003

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Until 1993, all liquor stores in the Canadian province of Alberta were government owned and run. In the fall of 1993, the provincial government exited liquor retailing, all government stores were shut down, and entrepreneurs were allowed to open private liquor stores. In this article, we take advantage of this abrupt regulatory change in the Alberta liquor-retailing industry to address two related issues that have received little empirical attention. First, we investigate how an ancestral population affects processes of legitimation and competition. While density-dependence theory predicts that legitimation effects outweigh competitive effects at low levels of density, will this be the case when a new population replaces a similar, ancestral one? Second, beyond density dependence, we investigate how ancestral populations affect the locations of new entrepreneurial ventures. Will entrepreneurs follow ancestral location patterns, and will these ancestral locations confer survival advantages? To answer these questions, we map all private liquor stores on the street map of Calgary, Alberta's largest city, from 1994 to 2003 and analyze store founding and failure. We use our results to draw implications for theories of density dependence, entrepreneurial behavior, and industry spatial structure.

**JEL classification:** M13.

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## 1. Introduction

Until 1993, all liquor retailing in the province of Alberta was done through government stores. With little warning, these stores were shut down, the province exited liquor retailing, and private liquor stores were allowed to open. This “natural experiment” provides an excellent context to study two questions that have received little attention in prior work. First, would the familiar density-dependence pattern of legitimation hold, whereby early increases in the number of private stores increase founding and decrease failure rates? Alternatively, would legitimacy be inherited from the ancestral population of government stores such that only competitive effects would be seen in the population of private liquor stores? Most prior theorizing and empirical investigation in organizational ecology has been based upon forms that are novel and gain legitimacy through their own growth (Dobrev, 2001). New populations, however, are often built upon the ashes of prior populations, such as when entire economic sectors were privatized in Eastern Europe (Stark, 1996) or when technological innovations emerge that allow new populations to emerge from existing ones, for example, when automobiles emerged from bicycle and carriage industries (Carroll *et al.*, 1996). Second, going beyond the effects of ancestral populations on density dependence, we investigate how the spatial template of the ancestral population of government stores affects the location choices of entrepreneurs. Even under relatively stable conditions, founders of new enterprises face significant ambiguity and must make “educated guesses” when making location decisions (Aldrich and Ruef, 2006: 83). Given this uncertainty, would founders of private liquor stores follow the ancestral location pattern or diverge from it?

Firm location choice has received considerable academic attention. Most empirical research has been either national or regional in scope. For example, Sorenson and Audia (2000) examined the geographic distribution of shoe manufacturing plants across the United States; Chung and Kalnins (2001) identified agglomeration benefits in the Texas lodging industry; Jaffee (2003) studied the relationship between location and failure rates of law firms in Silicon Valley; and Sine and Lee (2009) analyzed how regional differences affected the spatial distribution of new foundings in the wind-power industry across the United States. Much of this research has focused on agglomeration, the tendency for firms to locate near one another. Common labor markets, knowledge spillovers, institutional support, and access to suppliers, buyers, and capital have been frequently proffered as drivers of agglomeration [for reviews, see Baum and Haveman (1997); Sorenson and Audia (2000); Feldman (2001)].

Our research engages with this prior work, but differs in important respects. In contrast to studies at the national or regional level, we examine location decisions *within a city*. Specifically, we study the founding and failure of private liquor stores in Alberta’s largest city, Calgary. At the end of the government-run era in 1993, there were 24 government liquor stores in Calgary; by 2003, there were 187 privately

owned stores. We investigate whether founders of private liquor stores mimic the spatial template of the ancestral population, and whether or not locating near former government stores will confer a survival advantage. Responding to Cattani *et al.*'s (2003: 681) call for a finer grain of geographic analysis, we conduct our analyses at the neighborhood level using small postal districts. While prior work has emphasized agglomeration benefits (knowledge spillovers, access to suppliers), we argue that the "location legitimacy" arising from the ancestral population may be more salient in this context. Ancestral store locations may be taken for granted as appropriate locations for selling liquor, and private stores located in the same areas may benefit from habitual shopping patterns. These factors may lead to more foundings, and fewer failures, in local areas that had government-run stores.

Below, we begin by formulating specific hypotheses about the founding and failure of private liquor stores. We then provide details about our empirical context, data, and methods. After presenting our results, we discuss the implications of our research for both theories of density dependence, the geography of new venture founding, and the evolution of industry spatial structure.

## 2. Theory and hypotheses

In this section, we develop hypotheses about organizational founding and failure in a new population that replaces a similar, ancestral population. What will be the effect of the collective memory of the prior population on the new one? We are particularly interested in two issues. First, we consider the effects of the ancestral population on density-dependent processes of legitimation and competition. Will the familiar curvilinear patterns of founding and failure as a function of population density hold? Second, we consider how the spatial structure of the prior population affects founding and failure patterns in the new population that emerges in its wake. Will entrepreneurs follow prior location patterns, and will doing so be advantageous?

### 2.1 *Ancestral populations and density dependence*

Organizational founding and failure are strongly affected by legitimacy, a contention that is at the heart of contemporary organizational theory (e.g. Meyer and Rowan, 1977; Pfeffer and Salancik, 1978; Hannan and Freeman, 1987). Organizational theorists generally distinguish between two kinds of legitimacy, constitutive and sociopolitical (Aldrich and Fiol, 1994; Carroll and Hannan, 2000).<sup>1</sup> Constitutive legitimacy, or taken-for-grantedness (Meyer and Rowan, 1977), accrues to an organizational form as it increases in numbers and thus becomes more accepted as the

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<sup>1</sup>Other dimensions of legitimacy, such as regulative (Scott, 2001) and moral (Suchman, 1995) can generally be subsumed under constitutive and sociopolitical (for discussion, see Aldrich and Ruef 2006: 186).

natural way to effect a social action (Carroll and Hannan, 2000); more specifically, ecologists suggest that the legitimacy of a form increases at a decreasing rate with its density, or number of organizations holding that form (Hannan and Freeman, 1989). Sociopolitical legitimacy refers to acceptance and endorsement of an organizational form by key stakeholders as valued and appropriate (Aldrich and Fiol, 1994). This type of legitimacy should have a direct impact on organizational founding and failure (Baum and Oliver, 1991). Swaminathan (1995), for example, finds that farm winery founding rates were significantly higher in states that provided explicit support, such as reduced taxes and licensing fees, for the organizational form.

Density-dependence theory in organizational ecology combines processes of legitimacy with competition. At the same time, as growth in the number of organizations increases constitutive legitimacy, competition between members of a population increases; unlike legitimacy, however, competition increases at an increasing rate as more organizations compete for scarce resources (Hannan and Freeman, 1977). The relative increases in legitimation and competition give rise to the well-known inverted-U relationship between density and founding rates, and the U-shaped relationship between density and failure rates in a population. Considerable evidence exists that in new populations, increases in density increase the legitimacy of the organizational form and thereby further increase founding rates while lowering failure rates (Hannan and Freeman, 1989; Carroll and Hannan, 2000).

Our context allows us to inform this extensively studied relationship. How does the existence of an ancestral population affect processes of legitimation and competition in the emerging population of private liquor stores? Is legitimacy for private liquor stores inherited from the ancestral population, and how does this affect store founding and failure? Two recent arguments are helpful in addressing this issue. First, Ruef (2000) suggested that legitimacy accrues to an organizational form from other populations to which it is linked in the minds of constituents. Thus, a new form that is sufficiently similar to extant forms may achieve legitimacy earlier than a form that is relatively novel. Similarly, Dobrev (2001) developed a matrix of types of legitimation, in which organizational forms differ according to the source of their legitimacy (e.g. from the growth of the form itself, or conferred from affiliation with another form) and the content of the form (e.g. the form as a completely new endeavor, or as one that had previously existed and is now recurring after a period of extinction). Dobrev (2001) argued that most of the prior theorizing and empirical investigation in organizational ecology has been based upon forms that are novel and gain legitimacy through their own growth. In industrialized economies, this is the norm because interruptions in the existence of organizational forms are rare, and it is thus hard to examine the effect of a previous existence of a related form. An exception, of course, lies in the effect of prohibition on the dynamics of the brewery population, where studies demonstrate that postprohibition breweries inherit legitimacy from the preprohibition operations (e.g. Carroll and Swaminathan, 1991).

In the case of Calgary liquor stores, a population of government-run stores had been in place for many years, but was eradicated and replaced by a new population of private stores. In Dobrev's (2001) framework, this new population could gain legitimacy partly through its own growth, and partly through cognitive association with the prior population. In Ruef's (2000) classification, the current population and the ancestral one share similar identities, being separated principally by ownership type. Carroll and Hannan (2000) suggest that constitutive legitimacy grows with the perception by relevant actors that a given form is the natural way to accomplish a task. In the case of a new population that is similar in many respects with another population, most relevant actors are likely to see the new form as being the natural means of accomplishing the given action (Ruef, 2000). As Dobrev *et al.*, (2006) argue, legitimacy can transfer from an established population to an emergent one if the two populations have overlapping identities. The basic action of private liquor stores—selling of alcohol—is essentially the same as that of the previous population and was already understood and accepted. In other words, constitutive legitimacy will largely be “inherited” from the ancestral population. Because the ancestral form (the government liquor store) no longer exists, no “battle” between these alternative forms (Rao, 1998) can ensue that might cause constituents to call into question the legitimacy of private liquor stores, and the emergent population cannot be subject to sanctions due to overlapping with or infringing on the existing population (Dobrev *et al.*, 2006).

Based on this rationale, we argue that increases in density in the new population of private liquor stores will have a competitive, rather than legitimating effect, even at the inception of the population. This suggests a scope condition to the traditional density dependence model that predicts a curvilinear relationship between density and founding and failure in new populations. We predict:

*Hypothesis 1: As the density of a new population that replaces a similar ancestral population increases from zero, the founding rate decreases.*

*Hypothesis 2: As the density of a new population that replaces a similar ancestral population increases from zero, the failure rate increases.*

## 2.2 Ancestral populations and founding locations

While the arguments above are concerned with how an ancestral population affects the relationship between population density and rates of organizational founding and failure, we expect the ancestral population to also affect the location pattern of new foundings (Stark, 1996). In density-dependence theory, founding and failure rates are affected by the legitimacy of the organizational form, or in other words the degree to which that form is perceived as a natural means of accomplishing a particular activity. Here, we consider legitimacy at a different level of analysis: the legitimacy for an organizational form to locate in certain areas. This form of

legitimacy relates to the regional identity construct that Romanelli and Khessina (2005) describe, in which regions become known as being particularly suitable for a given activity. This type of legitimacy has also been recently outlined in studies of location choice in economic geography research. Appold (2005), for example, outlines the role that social influence plays in location decisions, and describes “geographic charisma”, which occurs when mimetic isomorphism plays a central role in location decisions. Similarly, Suire and Vicente (2009) discuss locational norms that can affect managers’ decisions so that, in uncertain situations, entrepreneurs may choose locations in order to gain legitimacy, whether or not the choice increases efficiency.

Even though, as we argued above, private liquor stores as an organizational form are likely to inherit legitimacy from the ancestral population of government stores, some physical locations are likely to be seen as more legitimate than others for instantiations of this organizational form. An analogy can be made to hospitals, schools, or retirement homes: all are legitimate organizational forms, but any given instance of these forms might face opposition to locating in a particular area. In the case of private liquor stores in Alberta, we reason that the ancestral population will not only confer legitimacy to private liquor stores as an organizational form, but will also affect the legitimacy of the locations that new private stores occupy. In other words, “location legitimacy” here will be driven by the spatial template of the ancestral population.

Specifically, we argue that local areas that had former government-run liquor stores would be seen as legitimate locations for new, private stores by (i) the entrepreneurs founding these stores and (ii) local constituents. First, we reason that founders of private liquor stores will use the spatial template of the former government stores in making their location choices. For entrepreneurs, an unpopulated market is akin to a green field, with uncertainty along many organizational dimensions. With respect to location, at least, store founders in the deregulated market that we study have a prior template they can follow—the locations of the former government outlets. Local areas that had been home to previous government stores would be seen as “natural” and therefore “less risky” ones for liquor retailing by entrepreneurs seeking to open private stores. In other words, they may use the legitimated spatial template of the ancestral population to resolve the uncertainty surrounding their location decision. Second, locations that already had government liquor stores may be seen as more legitimate for private stores by local constituents, such as schools, parents, and religious groups. Such locations would entail less opposition to private liquor stores.<sup>2</sup> Lower levels of opposition of this kind can ease the founding process.

This discussion suggests that founders of private liquor stores will follow the spatial template of the prior population not because the locations of government

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<sup>2</sup>We note in this regard the sharp rise of “Nimby” (or not-in-my-back-yard) activism (e.g., Lambert, 2009).

stores are objectively better than other locations, but because the spatial template is legitimate and accepted by constituents. An alternative rationale, of course, is that the private entrepreneurs and the government used the same decision criteria and converged on the “best” store locations. While we cannot completely dismiss this alternative explanation, two arguments mitigate against it. First, the government is subject to strong institutional pressures to avoid locations that would cause controversy. Private entrepreneurs are significantly less constrained by these considerations. For instance, anecdotal evidence suggests that private liquor stores are more likely to locate in poorer districts of a city (Hinz, 1997; Shack, 2003). The government would find it politically damaging to be accused of such a location strategy. Second, and related to the above, government-run enterprises generally operate with a variety of goals beyond profit maximization. The Auditor General of Canada describes government corporations (known as Crown Corporations in Canada) as having a “mix of public policy and commercial goals” (Office of the Auditor General of Canada, 2007). These mixed goals affect location choice, as the profit-maximizing choice will often not be the one that satisfies political considerations, nor will it necessarily coincide with the location that allows the government to meet public policy goals. In the case of liquor sales, such goals can include restricting the sales of liquor, or as the Alberta Government described it, taking a paternalistic approach to liquor retailing (Alberta Liquor Control Board, 1994).<sup>3</sup>

Our argument is thus that the founders of private liquor stores locate near the former government locations not because they have similar goals and decision heuristics, but rather because the spatial template of the government-run population is taken for granted. In other words, even if they are not objectively the “best” locations from a profit-maximization perspective, the areas where the government located its stores are seen as the most natural for liquor sales. We predict, therefore:

*Hypothesis 3: The founding rate of private liquor stores will be higher in local areas that had higher numbers of government liquor stores.*

In the above hypothesis, we argue that founders in the nascent private liquor-retailing industry will locate in areas that had previously been home to higher numbers of government-owned stores. This of course raises the question of whether locating in these areas confers survival advantages. The crux of the question is whether there will be a net benefit to a private store from locating near the former government locations. If, as we posit in Hypothesis 3, private stores tend to locate near the former government stores, then, controlling for the greater competitive effects that might arise from the higher concentration of stores in these areas, are there benefits to being near the locations of the government stores?

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<sup>3</sup>We return to this alternative explanation in the discussion section, after we have presented our empirical results.

We focus on two possible beneficial effects, related to two important types of constituents. First, as above, we argue that local community constituents are less likely to oppose private liquor stores that locate in areas that had previously been home to government stores. A private store that locates in an area that had not had a liquor store previously may generate negative coverage in the local media, petitions, or other challenges that may persist even after the store is opened. Even if the active opposition subsides, bad sentiment may linger. There is evidence of such local opposition to liquor stores in other jurisdictions, such as in Waterloo-Cedar Falls, Iowa, where a concerned citizen was quoted in a local newspaper as saying “all these liquor stores in general, the problem is . . . the loitering, the littering. It’s the appearance of these liquor stores not being good neighbors” (Anonymous, 2010). We argue that local areas that have had government-run liquor stores, usually for a number of years, are less likely to have such opposition.

Second, customer habits can result in increased customer traffic close to where the government stores were located. If customers cognitively associate certain areas with making liquor purchases, private stores located near the former government stores can benefit from habitual shopping patterns. There is evidence from economics and marketing research that customers rely on habit when making purchase decisions. For example, Reis (2006) models consumption decisions under the assumption that consumers face costs of acquiring, absorbing, and processing information in order to react to new events. The implication of this assumption is that people do not immediately react to such events, and Reis (2006) demonstrates that, in aggregate, consumer behavior is consistent with these limitations. Moreover, if new entrants follow the former spatial template as in Hypothesis 3, customers need not adjust their habits over time, and thus firms will enjoy benefits from entering close to where the former government stores were located. In other words, at the time of deregulation, customers are already accustomed to liquor stores in certain areas, and if new entrants locate there, it reinforces the existing spatial pattern.

For these reasons, we argue that private stores that choose to locate in areas that had been home to a higher number of stores under the previous regime should benefit from this choice and have relatively low failure rates.

*Hypothesis 4: The failure rate of private liquor stores will be lower in local areas that had higher numbers of government liquor stores.*

In summary, the context that we study provides an opportunity to address questions left unanswered by previous research regarding the effects of ancestral populations on the evolution of new populations. Private liquor retailing in Calgary is preceded by a similar, eradicated population of stores, and we predict that the inherited legitimacy that the private liquor stores get from their government-owned predecessors will lead to a purely competitive effect for density



on the founding and failure rates, rather than the curvilinear effects found in many ecological studies (Carroll and Hannan, 2000). We also expect that the location choices and life chances of the private stores are affected by the spatial pattern of the former government stores, with the result that the new industry's geographic structure and competitive dynamics are strongly shaped by that of the ancestral population.

### 3. Empirical context: Calgary liquor stores after deregulation

Liquor retailing in Canada is regulated at the provincial level, and up until 1993 all provinces offered liquor primarily through provincially owned retail outlets. In September, 1993, the Alberta government announced that it was discontinuing its involvement in liquor retailing. The 205 government-run Alberta Liquor Control Board (ALCB) stores were closed over the following months, and the government employees who had staffed the retail locations were fired.

Two issues are noteworthy regarding the process of deregulation that the government followed. First, the stores themselves were not privatized *per se*; rather, the government tendered the property for sale to the highest bidder, whose interest in the property may or may not have been liquor retailing. Across the province, approximately half of the government locations were purchased for the purpose of liquor retailing, while the others were converted to a variety of uses. Within urban locations, including Calgary, nearly all the former government locations were converted to private liquor stores.<sup>4</sup> A property purchased for the purpose of operating a liquor store did not automatically receive a liquor license. Thus, new owners received the physical property, but did not obtain an ongoing operation.<sup>5</sup>

Second, since the stores were sold as property only, purchasers did not obtain the employees or their knowledge along with the property. While a few of the government employees did obtain jobs with private liquor retailers, the government's own estimate is that a very small number of stores were opened by former government employees (Alberta Liquor Control Board, 1994). Discussion with government officials indicates that the majority of the stores run by former government employees are in rural areas, likely because those areas have lower capital expenses required to

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<sup>4</sup>As we explain below, we ran our analysis with these stores either included or excluded, and results are unchanged.

<sup>5</sup>This led to some unusual and interesting uses of the properties, including one small town liquor store being purchased for use as a church youth center.

open the stores, and thus the expense was more likely within the means of the former ALCB employees in these rural areas than in urban settings.<sup>6</sup>

In addition to retailing, the government was previously the sole wholesaler of liquor in the province. With deregulation, wholesaling was undertaken by a small number of private companies. The government retains a presence in the industry through partial price control and other regulation. Price control is accomplished by the government mandating minimum markups over wholesale prices on various liquor products, thus limiting price competition between stores. In addition, the government regulates standards for liquor stores, and over our observation period, liquor may only be sold in stores that are devoted to liquor sales (i.e. a grocery store cannot have a liquor section). Store hours are also controlled and the government has established a variety of other requirements regarding store operations. Overall, this further limits the ability of stores to differentiate.

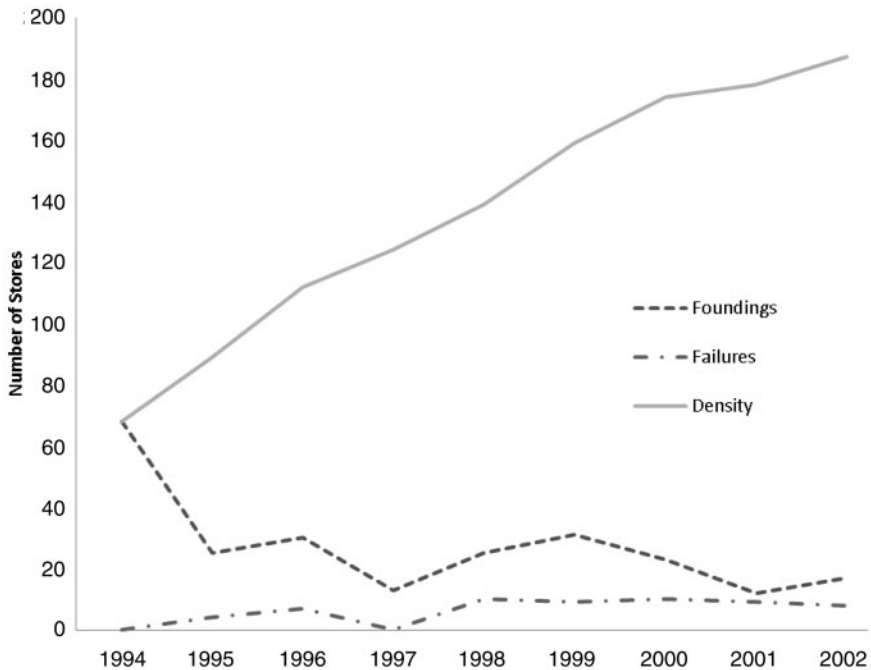
While deregulation affected the entire province of Alberta, we focus on Calgary for four reasons. First, Calgary is an important market within the province, and is one of Canada's largest cities, with a population of over 1 million people. Second, the evolution of Calgary's market appears to reflect the trend in the entire province very closely. Third, the geographic analysis that we perform is best undertaken in a single urban setting, as the distance measures are not comparable between urban and rural markets. Finally, the demographic data that we obtain from Statistics Canada are not available for all rural markets in the province and are expensive to obtain for the urban markets.

#### 4. Data and methods

Our primary data source for liquor stores is the *Alberta Business Directory*, which is an annual publication listing all businesses in the province. The directory lists the liquor retailers and their addresses. Supplemental analysis using phone directories and government records of liquor license holders indicates that the directory is complete. We supplement the business records with demographic data from Statistics Canada. These data are available annually at the Forward Sorting Area (FSA) level. A FSA is a classification that Canada Post uses (it is the first three of the six  $\alpha$ -numeric characters in Canadian postal codes), and is analogous to the five-digit zip code used in the United States, although generally smaller. To gain additional insight into the context and to verify certain assumptions, we also (i) conducted a thorough search of newspapers articles pertaining to the 1993 deregulation and its aftermath and (ii) conducted informal interviews with government officials employed at the ALCB at the time of deregulation.

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<sup>6</sup>Privacy laws in Alberta prevent us from determining precisely which stores were opened by former ALCB employees, but discussions with both government representatives and industry experts indicate that few, if any, urban stores were opened by former ALCB employees.



**Figure 1** Foundings, failures, and density of private liquor stores in Calgary.

Figure 1 shows the total number of liquor stores in Calgary over time, as well as the yearly foundings and failures. In 1994, the first year of deregulation, there were 68 private stores founded, compared to the 24 government-run stores that had been in place. By the end of 2002, there were 187 privately owned retailers. A similar pattern is visible in the province as a whole, as the number of retailers increased from 205 to 752. Significant differences are visible in the growth in retailers at the FSA level in Calgary. By the start of 2003, each FSA had at least two stores, but the FSA density ranges from 2 to 14. Under the ALCB, the FSA density ranged from 0 to 3 stores. Figure 2 illustrates this divergent growth pattern for three sample FSAs.

Using ArcGIS, a geographic information system software, we mapped all liquor stores on the street map of Calgary in each year from 1993 (end of government era) to 2003. We summarize the evolution of the location of liquor stores in Calgary in Figures 3 and 4. Figure 3 shows the locations of the ALCB stores at the end of the government-run era. Figure 4 shows the stores in Calgary at the start of 2003. The triangles indicate private stores, and the circles indicate former government stores. Private stores that are located in former ALCB locations are indicated with a triangle inside a red circle (when a triangle appears inside a black circle, this is because the private store is located very near but not in the former government location). Figure 4 shows that there is significant clustering of private stores around the former government stores, even by 2003.

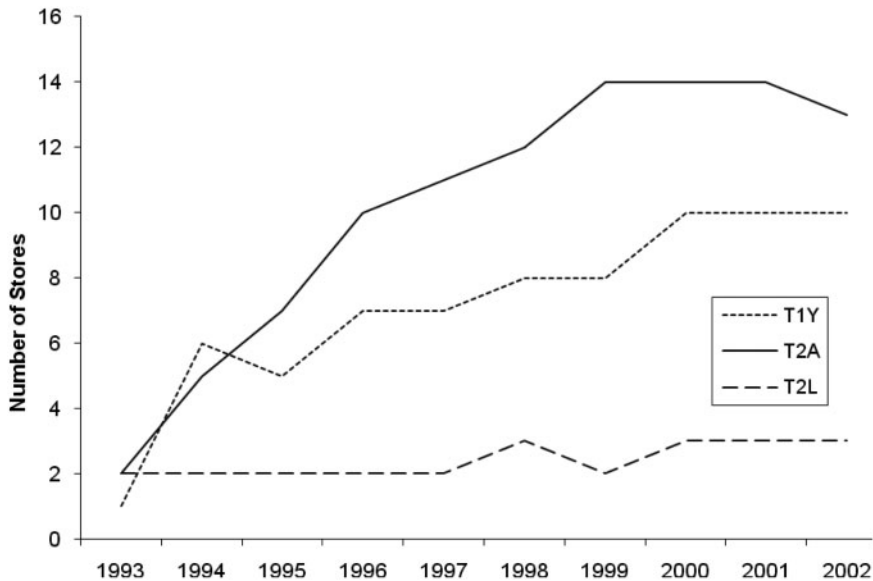


Figure 2 liquor store density in three forward sorting areas.

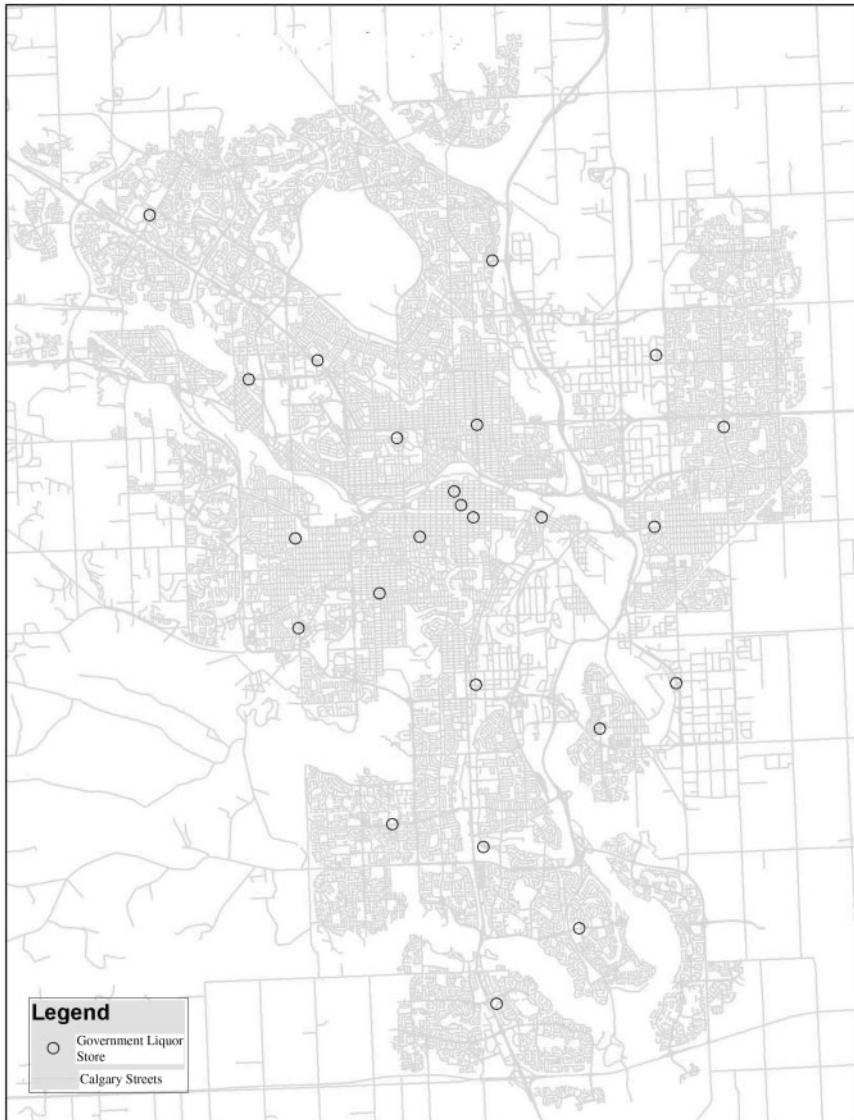
#### 4.1 Variables

Founding and failure have distinct levels of analysis: we analyze founding events at the FSA level, while for the failure models, the individual firm is the appropriate unit of analysis. Our founding variable is a count of the number of new stores in a given year in a given FSA. We count a firm as failing in a given year if it is absent from the directory listing. There are no instances in which a firm exits the directory and subsequently reappears, thus we are confident that exit from the directory listings represents the store's failure.

To test Hypotheses 1 and 2, we first create *City Density* by counting the number of private stores operating in Calgary in a given year. Second, we calculated *FSA Density*, which is the number of other stores operating in a focal FSA. Finally, following Sorenson and Audia (2000), we create a density variable weighted by geographic distance between a store and all its competitors in the city. This variable, which we label *Weighted Density*, weighs a given store's effect on other stores by the driving distance between it and the other stores. Specifically, we use the following equation to measure the weighted density faced by store  $i$  in a given year (Sorenson and Audia, 2000):

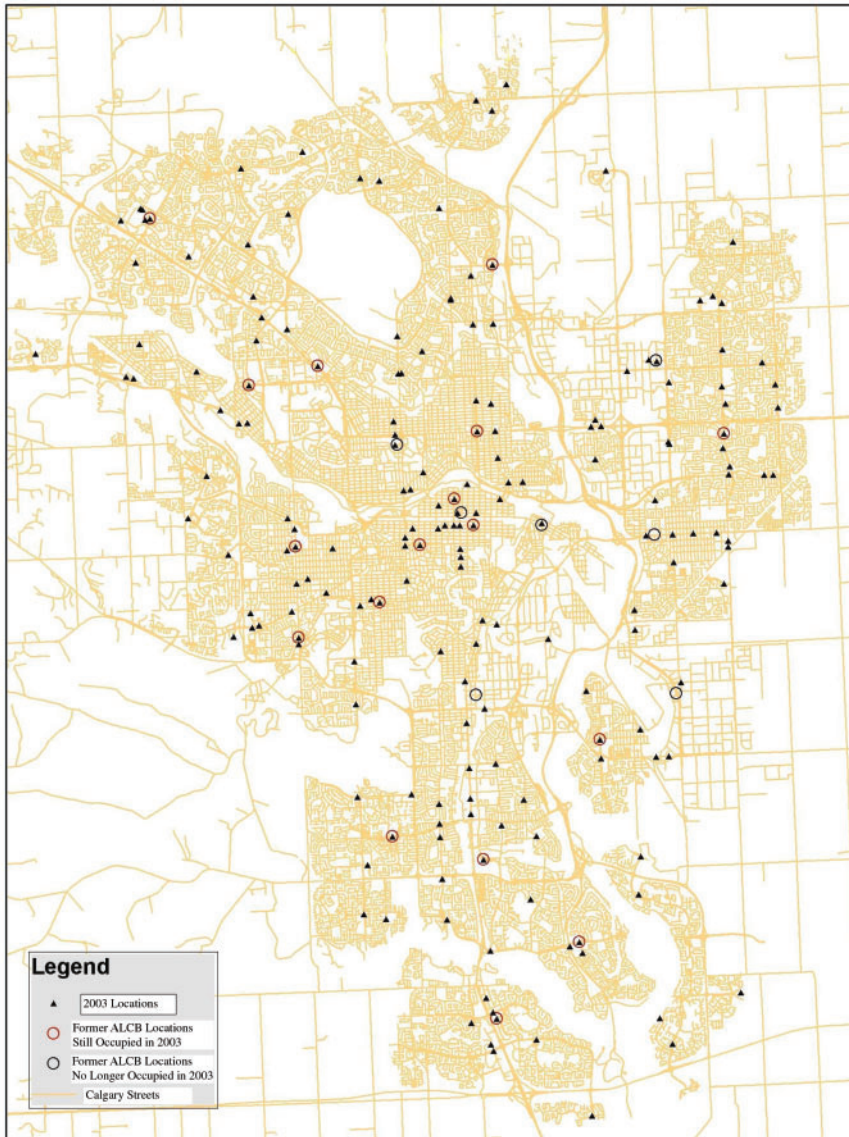
$$WD = \frac{\sum_j x_j}{\{1 + d_j\}}$$

In the above,  $j$  indexes all stores other than store  $i$ ,  $x$  is a vector of ones,  $d_j$  is the driving distance between store  $i$  and store  $j$ , and the overall *Weighted Density* faced by



**Figure 3** Locations of government liquor stores in Calgary prior to deregulation.

store  $i$  is the sum of the inverse of this distance over all  $j$  stores in the city in that year. This measure attributes greater competition to stores that are closely located to each other, and thus is similar to other versions of localized density considered in ecological research (Baum and Haveman, 1997). The driving distances between any two stores in a given year are calculated by taking the street address listed for each store in



**Figure 4** Locations of private liquor stores in Calgary, 2003.

the directory and using ArcGIS to calculate the distance between the stores in meters. The distances are rescaled to kilometers to make the inverse of the distances more tractable. *Weighted Density* can be used to test Hypothesis 2 (about failure) but not Hypothesis 1 (about founding), since it can only be calculated for an existing firm. To test Hypotheses 3 and 4, we count the *Number of Former Government Stores in FSA* for each FSA at the time of deregulation.

From Statistics Canada, we have a variety of demographic variables available at the FSA level that we use to control for local conditions. We focus on a parsimonious set of variables that are likely to affect resources available to the liquor stores, and thus might impact both founding and failure rates. Our expectation is that resources are best represented by the number of possible customers in the area as well as by the income level of those customers. We measure customers by the total *Population* in the FSA. We control for the wealth available in an area by including *Per Capita Income*, which is the total income from all sources divided by the number of people in the FSA. We note that it is not clear whether higher or lower income areas will be more attractive for liquor store entry.

We also control for the attractiveness of a given FSA for liquor stores by including a count of *Food Stores* in the FSA. We have these data from Statistics Canada for the years 1993, 1998, and 2003 and we use linear interpolation to estimate the variable for the intervening years (food stores being a relatively mature population, we do not expect sudden changes in numbers). This count includes all sizes of food retailers, ranging from small corner stores to supermarkets. We use food stores as a control variable for two reasons. First, since food stores themselves were forbidden from carrying liquor, they represent a complementary retailing presence that might attract liquor stores to a given area. Second, the food stores are a proxy for general attractiveness of a given area for retailing, which is an unobservable factor that is likely to be related to the founding and failure of liquor stores. Finally, in our failure analysis, we control for firm *Age*.

#### 4.2 Methods

Hypotheses 1 and 3 are concerned with factors that affect the founding rate. We model the founding rate of liquor stores in an FSA in a given year using a negative binomial model. As we have a panel of FSA observations over time, we account for FSA-specific factors using the clustering procedure in Stata.<sup>7</sup>

Hypotheses 2 and 4 are concerned with factors affecting failure rates. We model the failure of liquor stores using generalized estimating equations (GEE). We chose this approach because our data are clustered by firm and as such our observations are not independent (Haveman and Nonnemaker, 2000). GEE adjusts standard errors to account for this lack of independence. It employs iterative generalized least squares, which allows nonzero off-diagonal elements that are functions of the correlations among observations in the weight matrix  $\mathbf{W}$  used in the computation of maximum likelihood estimates (Allison, 1999: 184). Robust standard errors are computed. We specified an exchangeable correlation matrix structure, but results are substantively

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<sup>7</sup>We cannot employ a fixed-effects specification because one of our key independent variables, the number of government locations that had been in the FSA, is fixed over time for a given FSA. Additionally, Allison and Waterman (2002) conclude that the fixed-effects negative binomial model is not a satisfactory specification.

unchanged with an unstructured specification. We also ran logistic regression models with a complementary log–log specification, and results were unchanged.

## 5. Results

Table 1 contains the descriptive statistics and correlations for the founding variables. The maximum number of foundings in an FSA in a year is 6, and the maximum FSA density is 14; this is in contrast to the maximum density of 3 in any FSA prior to deregulation. Table 2 presents descriptive statistics and correlations for the failure analysis. As the table shows, there is considerable variance in the number of other stores in a focal store's neighborhood: *FSA Density* varies from 1 to 14. There are 57 store failures (about 5% of the sample) in our study period.

Table 3 contains the results of the negative binomial analysis for founding rates.<sup>8</sup> Model 1 is a baseline model containing environment-level control variables. Model 2 adds the lagged linear and quadratic citywide density variables. As predicted in Hypothesis 1, only competitive effects are seen in this population, as the coefficient on the linear term is negative and significant and the quadratic term is insignificant.

In Model 3, we explore the density effects further by replacing the citywide density measures with the density at the FSA level. We find that, consistent with Hypothesis 1, there is no initial legitimization process, as the linear term for local density is negative. We also find that the quadratic effect is positive and significant, indicating that at high levels of local density, founding levels actually increase. The

**Table 1** Descriptive statistics and correlations for founding analysis

Variable	Mean (SD)	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)
(1) Founding events in FSA	0.92 (1.09)	0	6.00	1.00					
(2) FSA population/10,000	2.78 (1.46)	0.55	5.92	0.21	1.00				
(3) Per capita Income in FSA/1000	27.83 (11.46)	12.50	90.00	-0.27	-0.34	1.00			
(4) Number food stores in FSA	19.92 (12.55)	3.20	60.0	0.35	0.41	-0.23	1.00		
(5) Former government stores in FSA	0.95 (0.75)	0	3	0.18	0.02	-0.12	0.38	1.00	
(6) City density	124.5 (52.47)	24	187	-0.38	0.06	0.37	-0.02	0.00	1.00
(7) FSA density	4.43 (2.88)	1	14	-0.04	0.42	0.00	0.58	0.38	0.56

<sup>8</sup>We excluded from this analysis stores founded in the exact same location as former government stores. However, results are substantively unchanged with these stores included.



coefficients indicate, however, that founding rates decrease with increasing local density at all but the highest observed density levels.<sup>9</sup> The increase in founding rates at the high density levels could, however, indicate a local clustering effect, where the most densely populated areas become the most attractive to locate stores.

In Model 4 we retain the local density variables and add the count of former government stores in an FSA, to test Hypothesis 3. The coefficient on the count of former government stores is positive and significant, indicating support for the hypothesis that private entrepreneurs are attracted to areas that had formerly been home to a greater number of government outlets. Even controlling for the density of private retailers, the areas that had contained more government stores attract greater entry.

The control variables also shed light on entrepreneurial behavior in this market. We find that new liquor stores are attracted to FSAs with greater numbers of food retailers. Not surprisingly, entrepreneurs are also attracted to areas with larger populations, as the coefficient on *Population* is positive and significant in most of the models. Finally, the negative coefficient on *Per Capita Income* in most of the models provides some indication that liquor stores are attracted to areas of lower socioeconomic conditions, consistent with anecdotal evidence from other markets (Hinz, 1997; Shack, 2003).

Table 4 presents the results of our event-history analysis of store failure. Model 1 shows that none of the baseline demographic variables at the FSA level are significantly predictive of failure. This is surprising, especially in light of the founding

**Table 2** Descriptive statistics and correlations for failure analysis

Variable	Mean (SD)	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Failure	0.05 (0.23)	0	1.00	1.00							
(2) FSA population/10,000	3.20 (1.60)	0.60	5.90	-0.01	1.00						
(3) Per capita income in FSA/1000	27.36 (10.92)	12.50	90.00	-0.03	-0.41	1.00					
(4) Num. food stores in FSA	23.96 (13.54)	3.20	55.60	0.04	0.49	-0.36	1.00				
(5) Firm age	2.45 (2.08)	0	7	-0.00	0.05	0.22	-0.02	1.00			
(6) Former government stores in FSA	1.08 (0.75)	0	3	0.08	0.12	-0.15	0.41	-0.04	1.00		
(7) City density	141 (34)	68	178	-0.01	0.06	0.30	0.01	0.56	-0.00	1.00	
(8) FSA density	6.17 (3.22)	1	14	0.04	0.55	-0.22	0.73	0.19	0.42	0.43	1.00
(9) Weighted density	14.75 (4.74)	3.62	26.98	0.06	-0.28	0.40	0.14	0.34	0.15	0.67	0.34

<sup>9</sup> $-0.298 \text{ FSA Density} + 0.015 \text{ FSA Density}^2$  has a minimum at FSA Density = 10, while the 95<sup>th</sup> percentile of FSA density is 11.

**Table 3** Maximum likelihood estimates of negative binomial regression of founding rates of liquor stores in Calgary at the FSA level

Variable	Model 1	Model 2	Model 3	Model 4
FSA population/10,000	0.012 (0.041)	0.082*** (0.032)	0.081* (0.042)	0.084* (0.044)
Per capita income in FSA/1000	-0.263*** (0.071)	-0.035 (0.044)	-0.144*** (0.048)	-0.151*** (0.048)
Food stores in FSA	0.022*** (0.004)	0.023*** (0.003)	0.032*** (0.005)	0.027*** (0.005)
City density <sub>t-1</sub> /100		-0.872** (0.443)		
(City density <sub>t-1</sub> /100) <sup>2</sup>		0.046 (0.221)		
FSA density <sub>t-1</sub>			-0.267*** (0.082)	-0.298*** (0.087)
(FSA density <sub>t-1</sub> ) <sup>2</sup>			0.013** (0.005)	0.015** (0.006)
Former government stores in FSA				0.215*** (0.069)
Log likelihood	-277.2	-263.7	-267.1	-265.0
Change in degrees of freedom	-	2	2 (with respect to Model 1)	1
Improvement in model fit $\chi^2$	-	27.0***	20.2***	4.2**
Number of founding events	219	219	219	219

Robust standard errors in parentheses.

\* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ .

results; it appears that though entrepreneurs are attracted to local areas with large populations and those with low incomes, these demographic characteristics are not significantly related to store survival. Similarly, though entrepreneurs were more likely to locate near food stores, these locations conferred no survival advantage. Model 2 adds *City Density* to test for the effects of increasing competition. The coefficient for this variable is not statistically significant, which fails to support Hypothesis 2. We also tested for nonlinear effects for this variable in Model 3, but the quadratic term for *City Density* was also not statistically significant. Models 4 and 5 replace *City Density* with *FSA Density*, but neither the linear nor squared term for this variable is significant. Overall, it appears that competition as represented by these standard measures of density does not affect failure rates in the private liquor retailing industry. Model 6 uses *Weighted Density*, a measure that includes all stores in the city but that attributes greater competition to stores that are closely located to the focal store. This variable is positive and significant.<sup>10</sup> We also tested for nonlinear effects for this variable in Model 7, but the quadratic term was not statistically significant. Thus, our prediction in Hypothesis 2 that density would exert competitive effects even at low numbers enjoys support when density is weighted by distance from the focal store.<sup>11</sup>

Model 8 adds the *Number of Former Government Stores in FSA*, to test Hypothesis 4. The coefficient for this variable is positive and significant, indicating that locating in areas that had large numbers of former government stores increases failure, which contradicts our hypothesis. This result holds in Model 9, our full model which includes both *Weighted Density* and *Number of Former Government Stores in FSA*. In other words, even with local competition controlled, the number of former government stores has a positive and significant effect on failure.<sup>12</sup> We return to this result in Section 6 that follows.

Although we found that private stores are attracted to FSAs by the number of former government stores (Hypothesis 3), our analysis thus far does not preclude the possibility that the private stores are attracted by the same factors that the government considered in its location choices. In other words, rather than locating in areas

<sup>10</sup>To confirm that competition is very localized in this market, we developed two additional measures for each store: *Number of Other Stores Within Two Kilometers* and *Minimum Distance to Other Stores*, both using driving distances on the actual street map. In models not shown, both were statistically-significant predictors of store failure: the greater the number of other stores within two kilometers and the closer the nearest store, the greater the likelihood of failure.

<sup>11</sup>We also tried interacting our measures of density with industry age, but these interactions were not statistically significant.

<sup>12</sup>We performed additional analysis that included a dichotomous variable for “former government store location” but it was not significant and the other variables were not affected. This implies that being in a former government store location was not significantly different than being in the area of such a store in terms of survival. Finally, we tried the variable “minimum distance to former ALCB store” but it was also not significant.

**Table 4** GEE event-history analysis of organizational failure, Calgary liquor stores 1995–2003

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Constant	-2.557*** (0.610)	-2.537*** (0.694)	-2.571 (1.938)	-2.500*** (0.628)	-3.036*** (0.808)	-3.270*** (0.729)	-3.125* (1.386)	-2.885*** (0.627)	-3.542*** (0.729)
FSA population/10,000	-0.106 (0.092)	-0.105 (0.094)	-0.105 (0.094)	-0.147 (0.108)	-0.148 (0.103)	-0.029 (0.101)	-0.028 (0.102)	-0.095 (0.093)	-0.024 (0.101)
Per Capita Income in FSA/1000	-0.013 (0.015)	-0.013 (0.016)	-0.013 (0.015)	-0.015 (0.016)	-0.017 (0.016)	-0.026 (0.016)	-0.026 (0.016)	-0.014 (0.015)	-0.027 (0.017)
Firm age	0.013 (0.068)	0.016 (0.081)	0.016 (0.081)	-0.007 (0.072)	-0.009 (0.072)	-0.037 (0.070)	-0.037 (0.070)	0.017 (0.069)	-0.032 (0.070)
Number of food stores in FSA	0.013 (0.010)	0.013 (0.010)	0.013 (0.010)	0.003 (0.017)	0.004 (0.016)	-0.002 (0.012)	-0.002 (0.012)	0.006 (0.010)	-0.005 (0.012)
City density /100	-0.035 (0.505)		0.039 (3.098)						
(City density/100) <sup>2</sup>			-0.028 (1.159)						
FSA density				0.069 (0.075)	0.260 (0.206)				
(FSA density) <sup>2</sup>					-0.013 (0.013)				
Weighted density						0.079* (0.037)	0.059 (0.174)		0.077* (0.038)
(Weighted density) <sup>2</sup>							0.001 (0.005)		

(continued)

Table 4 Continued

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Former government Stores in FSA	1043	1043	1043	1043	1043	1043	1043	1043	1043
N (firm-years)	-219.62	-219.61	-219.61	-219.08	-218.51	-217.21	-217.20	-217.15	-214.91
Log likelihood	-	1 (versus Model 1)	1 (versus Model 2)	1 (versus Model 1)	1 (versus Model 4)	1 (versus Model 1)	1 (versus Model 6)	1 (versus Model 1)	1 (versus Model 8)
Change in degrees of freedom	-	0.02	0	1.08	1.14	4.82*	0.02	4.94*	4.48*
Improvement in model fit $\chi^2$	-	-	-	-	-	-	-	0.404* (0.164)	0.406* (0.176)

Robust standard errors in parentheses.

\* $P < 0.05$ ; \*\*\* $P < 0.001$ .

**Table 5** Comparison of correlation between government store locations and private entrepreneur locations

Variable	Correlation with number of government Stores in FSA	Correlation with number of private stores in FSA
FSA population/10,000	0.124	0.492
Per capita income in FSA/1000	0.217	-0.065
Number of food stores in FSA	0.157	0.657

that had been home to government stores because of the legitimated spatial template, it is possible that the government and private entrepreneurs used the same decision criteria to arrive at the same locations. To address this possibility, we present the analysis in Table 5 in which we compare the correlations between the number of former government stores in an FSA and the FSA control variables used in Table 3 with the correlations between the count of private stores in an FSA with those same FSA control variables.<sup>13</sup> The results indicate very different relationships between the FSA control variables (population, income, and the number of food retailers) and the two kinds of stores. The private stores are far more highly correlated with population and the number of food stores, and in contrast to the government stores, there is a slight negative correlation between the number of private stores in an FSA and income. Overall, these correlations suggest that the government and the private entrepreneurs followed different decision criteria in selecting locations.

## 6. Discussion

We examined the founding and failure of entrepreneurial ventures in the private liquor retailing industry in Calgary, Alberta, in the years following the deregulation of that market. This setting allows us to understand the effects of ancestral populations on the dynamics of new, successor populations. Our results have several implications for theory and future research. First, our analysis suggests further attention to scope conditions surrounding the density-dependence hypothesis that new foundings have a legitimation effect in new populations of organizations. In our context, private liquor stores appear to have inherited legitimacy from the former government population, and the number of private liquor stores in the city had a purely competitive effect on new store founding. This is reinforced by the failure analysis, where

<sup>13</sup>Ideally, we would regress the count of government stores on these variables, but we have insufficient statistical power to do so given the small number of FSAs involved.

we also did not find any evidence of legitimation processes. In other words, there is no legitimation process at low levels of density in this population; instead, our findings indicate that an organizational form can inherit legitimacy from a closely related form, if the identities of the two forms are similar (Ruef, 2000; Dobrev, 2001; Dobrev *et al.*, 2006).

We believe that this result offers evidence of the ecological legitimation–competition model, in an intriguing way. As Carroll (1997) points out, the legitimation process described in the ecological model has been subject to criticism, partly due to the difficulty of actually observing legitimation processes. Here, we approached this issue from a different angle; we observe a population in which we argue that legitimacy was already established, and if that were so, only competitive processes should be visible.

Second, we believe that our findings inform research that has examined how legitimation and competition “travel” (Carroll and Wade, 1991; Swaminathan and Wiedenmayer, 1991; Hannan *et al.*, 1995). Unlike past work that has examined the spatial travel of legitimacy, however, we find here that legitimacy appears to travel *temporally* from one population to its successor. Both the legitimacy of the private liquor store organizational form as well as the legitimacy of locations for instances of this organizational form seem to have stemmed from the ancestral population. We suggest that entrepreneurs rely on the cognitive template of the ancestral population to deal with the inherent uncertainty of the founding process. Following a location template reduces the need for the entrepreneur to provide an elaborate justification for choosing a given location, and this lies at the heart of legitimacy (Hannan and Freeman, 1989: 132).

Third, our results imply that founders of new ventures deal with entrepreneurial uncertainty by relying on legitimated templates, even if following these templates does not improve survival chances. We find that private liquor stores in the years following deregulation were significantly more likely to locate in areas that had been home to a greater number of government stores, indicating that founders in the private industry were strongly influenced by the spatial distribution of the ancestral industry (Hypothesis 3). However, while areas that were formerly home to a higher number of government stores were much more likely to attract entry of private stores, these areas also tended to have higher failure rates. This result, which contradicts our reasoning in Hypothesis 4, suggests that private stores that “follow the herd” by locating near where the government stores had been would thus in fact be putting themselves at a disadvantage.

Why might this be? While we can only speculate here, we suspect that the answer might lie in the different priorities of the government versus private entrepreneurs. In order to investigate this issue, we spoke with two people who had worked for the ALCB when the government was the sole retailer. We specifically discussed the process that the government employed to select store locations. In general, they claimed, the government did not employ market analysis when choosing locations.

Instead, location decisions often involved simple expedience. For example, stores were sometimes placed where the government already owned land, regardless of whether that was in a high traffic area. On one occasion, the government placed a store on a busy, divided street, which might have been optimal from a traffic perspective, except that the store was placed on the morning rush hour side of the street, and was very difficult to access from the side on which the evening rush hour took place.

Overall, the government representatives we spoke to suggested that the government's store locations would not be optimal under competitive conditions. Under the government-run system, the government could afford to be cavalier about location choices, because there were few stores, and they held a monopoly on liquor retailing. Thus, each store could, in effect, be a magnet store. Following deregulation, however, stores were more numerous and smaller, and location choice became much more important. Stores that followed the government template, then, were following a suboptimal location heuristic under the new environment. This finding highlights the importance of both the regulative and cognitive components of the institutional environment in influencing entrepreneurial choices and outcomes (Sine and David 2010; Tolbert, David, and Sine 2010).

While it may seem ironic that entrepreneurs choose locations that actually reduce their ventures' survival chances, our finding is consistent with experimental research by Moore *et al.* (2007). They found that entrepreneurs who expect the task ahead of them to be relatively easy are more likely to enter an industry in which their probability of success is low. In our context, the visible success of government-run stores may lead at least some entrepreneurs to believe that they too can be successful by founding stores in the same area. As Moore *et al.* (2007) suggest, they may simply overlook or underestimate the differences between the private and public contexts that we outline above.

The dynamic that we find is also consistent with that described by Sorenson and Audia (2000), who found that geographic "clusters" generated many foundings but ironically also had higher failure rates. Different mechanisms may be at work here, however. Whereas prior research has proffered both access to critical resources and institutional support as reasons for the persistence of high founding rates within clusters even in the presence of high failure rates (Sorenson and Audia, 2000; Sine and Lee, 2009), at the city level of analysis these reasons seem inapplicable. Within the boundaries of a city, we would expect little difference in knowledge, supplier functions, labor specialization, or wages. Thus, while one region of a country may have a larger pool of potential entrepreneurs able to found organizations of a particular kind than another region (Sorenson and Audia, 2000), within the boundaries of a city such differences are likely to be small. In our case, clusters of stores (i.e. near the former government stores) seem to have emerged for a different reason: from a kind of institutional imprinting, or collective memory of a prior population (Stark, 1996). Our study suggests that entrepreneurs follow



patterns from ancestral populations, and thus reveals how initial conditions can lead to persistent clustering of stores within a city (Feldman and Schreuder, 1996).

In this setting, therefore, neither supply-side nor demand-side benefits of clustering appear to be present. While knowledge spillover, proximity to inputs, or supply of skilled labor may produce agglomeration benefits in manufacturing or technologically intensive industries (Almeida and Kogut, 1999; Maskell, 2001; Aharonson *et al.*, 2007; Boschma and Wenting, 2007), they appear to provide little benefit in our context. For example, skilled workers do not comprise a significant input for liquor stores, nor are there significant search costs for consumers of gathering information about the products. Thus, we have a setting that helps to establish scope conditions for agglomeration economies. Future work could examine these conditions further by finding settings in which partial benefits from agglomeration accrue and establishing what factors drive agglomeration benefits in the face of local competition.

While the privatization of liquor retailing in Alberta provides an interesting lens through which we can view an industry being built on the ashes of an ancestral population in a modern industrialized economy, it is worth considering the degree to which our findings generalize. With regard to the inheritance of legitimacy, it is likely that similar dynamics could be seen in other settings in which one industry supplants a closely related one, which could happen because of similarity in the function that the industries fill, or in the technology that they employ. Our findings also suggest that few agglomeration benefits exist when supply-side conditions—e.g. relating to labor, raw materials, government support—are similar for all competitors. While this will likely be the case within a narrow geographic unit such as a city, supply conditions may also be similar under conditions of standardized labor, low transportation costs, and harmonized government policy. Our study thus suggests the need for theory and empirical research that accounts for the specific sources of both demand-side and supply-side agglomeration benefits, as well as the geographic scope of these benefits, in moderating the relationship between location and firm founding and failure.

In sum, our results build understanding of the iterative relationship between industry structure and entrepreneurial action. Location choices are especially important in the early years of a sector's development (Sine and Lee, 2009). New entrants must, among other things, assess the opportunities presented by any given location and balance these opportunities against the associated costs and risks (Baum and Haveman, 1997; Sorenson and Audia, 2000). The first set of entrants in an industry must make this choice in the absence of an existing structure. Here, we highlight the importance of ancestral populations in this choice. Over time, the location choices made by entrants collectively *determine* the spatial structure of the industry, which subsequent entrants are then confronted with (Greve, 2002). The distribution that takes shape as initial entrants make their choices can thus shape competition and subsequent location decisions well into the future. Beyond

understanding the choices of individual entrants, therefore, studying the early entrants in an industry can thus help scholars understand how the existing spatial distribution of firms comes about.

## Acknowledgements

The authors thank Abhirup Chakrabarti, Bernard Forgues, Arturs Kalnins, Peter Roberts, two anonymous reviewers, as well as seminar participants at Cornell University, the 2007 Academy of Management Annual Meetings, and the 2008 McGill-Cornell Conference on Institutions and Entrepreneurship for helpful comments. They also acknowledge the diligent research assistance of Laura Ierfino, Emilie Leforestier, and Ruilan Shi, and thank Alain Maisonneuve and Gerry McLennan of the Alberta Liquor and Gaming Commission for their insights into the privatization and the operations of the government liquor retailers. Robert David thanks the Cleghorn Faculty Scholar Award (Desautels Faculty of Management) for generous funding.

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