

SPATIAL CHANGES IN THE U.S. BREWING  
LANDSCAPE: A FOCUS ON THE  
GEOGRAPHY OF CRAFT  
BREWERIES FROM  
1982 TO 1994

BY

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## CHAPTER I

### THE RESEARCH PROBLEM

#### Introduction

"Bad beer is like bad art - if you endure enough of it, eventually you forget the alternatives" -Stephen Greenleaf, Bookcase, 1991 (taken from the Samuel Adams 1995 Calendar). In 1977, Jack McAuliffe opened New Albion Brewing Company in Sonoma, California, to reintroduce the American palette to domestically produced European beer styles. His tiny **microbrewery** (Appendix A) closed five years later, but New Albion marked the end of a 50 year trend in American brewing. From 1934 to 1984, 756 breweries declined to just 89 by a process of technological advancement, competition, and consolidation (BATF 1984).

The rise of **craft breweries**, microbreweries, and brewpubs (Appendix A), as a fixture in American popular culture, dates to 1982 when Bert Grant opened Yakima Brewing Company in Yakima, Washington. Yakima Brewing has the distinction of being the first craft brewery to successfully carve a niche in an industry dominated by nationwide giants. Though sluggish growth typified the first few years, America boasted 155 craft breweries by 1990. In 1994, ten years after the national low, the number increased to 434 small breweries in all but five states. Of the estimated beer consumption for 1994, these

businesses account for 1,670,000 barrels (Appendix A), or almost 1% of the total (Edgar 1994).

#### PURPOSE

The purpose of this study is to identify and explain the change of craft brewery locations from 1982 to 1994 through both time and space. Moreover, the study analyzes the change over space and time of the beer styles produced by craft breweries during the same years.

#### PROBLEM STATEMENT

Numerous questions guided this study. Where and why do craft breweries diffuse? Which regions and states contain the most craft brewing activity? Within any particular state, what types of urban areas support brewpubs? Within any given city, where are brewpubs located? How have the types of beer styles produced by craft breweries changed? Is there a regional bias to where certain styles are brewed?

#### STATEMENT OF HYPOTHESES

1. Craft breweries initially follow the contagion diffusion process and then reflect a hierarchical diffusion pattern.
2. Craft breweries are clustered into regions.
3. Brewpubs are primarily located in resort and university towns.

4. Brewpubs are secondarily located within the central city.
5. The popularity and variety of beer styles produced by craft breweries have changed through time.
6. Brewpubs and microbreweries differ in the types of beers they brew.
7. Craft brewery beer styles have a regional pattern.

#### METHODOLOGY

To analyze brewery locations, data from the Brewers Resource Directory, On Tap: A Field Guide to North American Brewpubs and Craft Breweries, survey data, telephone interviews, and the Institute of Brewing Studies Brewery List was compiled in a computer database. A complete list of the field names and types of data used in this thesis are in Appendix B. In order to map location and change over time, each brewery was assigned a geographic location using the zip code centroid. This was accomplished by utilizing a Geographic Information System (GIS).

The type of diffusion process influencing craft breweries was based on the monograph Spatial Diffusion (1969) by Gould and the textbook The Human Mosaic by Jordan, Domosh, and Rowntree (1994). Regional analysis was accomplished by using location quotients. Location quotients were entered in a GIS attribute file and displayed by choropleth maps.



State level analysis consisted of classifying the urban areas containing brewpubs using a functional classification type of resort town or university town. Classification was based on the article "A Functional Classification of Cities in the United States" by Harris (1943). Resort towns were found by locating the city on a state map and determining if ski resorts, national parks, and other recreational activities were the reason brewpubs located in that urban area. For example, the location of brewpubs in the small towns of Telluride, Colorado, or Breckenridge, Colorado, was explained by the market created by ski resort tourists. A complete list of those towns classified as "resort" is located in Appendix E.

Based on the Harris article, university towns were found by calculating the percentage of college students in an urban area. If the percentage was 20% or above (Harris used 25%), or if the presence of a university dominated an urban area, then it was classified as a university town. For example, brewpubs located in the towns of Fort Collins, Colorado, and Fayetteville, Arkansas, to serve the large market of drinking age students. These towns had a college enrollment of 22.9% and 22.2% respectively and should be considered university towns even though Harris used 25% as a threshold. A list of those towns classified as "university" is located in Appendix F.

Intracity brewpub location analysis required the classification of the location of a brewpub based on a

written description provided by a fieldguide or on the brewery's address. Within an urban area, brewpubs were only classified as either central city or non-central city.

Beer styles were included in the database and queried using a GIS. To display where each beer style was brewed, the zip code centroid was again used. Mapping each style over several years highlighted first where it originated then if it had a regional bias.

Manipulating a spreadsheet program determined how many breweries in any given year were producing a particular beer style. The number of places brewing a beer style was then made a percentage of the total. By comparing percentages over time, an overall list was created which ranked a style's change in frequency brewed. To maintain mathematical rigor, the average rank was used for any tied positions.

#### DATA COLLECTION

Fieldwork is essential to become familiar with a geographic topic. Personal visits were made to craft breweries in Alabama, Colorado, Kansas, Missouri, Oklahoma, and Texas to provide insight and background information on the industry. While attending the 1994 Great American Beer Festival in Denver, Colorado, a survey form was distributed to more than 100 breweries of which 43 returned completed forms. A copy of the survey form and cover letter is located in Appendix C. Use of a survey allowed access to

breweries from many different locations which would be otherwise inaccessible due to the large distances involved. While in the field, ample opportunities arose for interviews with brewery owners, brewmasters, and industry analysts.

The Institute of Brewing Studies, located in Boulder, Colorado, publishes an annual Brewers Resource Directory. The 1990 and 1994 guides contained information used in the database such as addresses, legalization dates, and the beer styles brewed at each craft brewery. Supplementary information for the database came from the book On Tap and numerous magazines such as The New Brewer, On Tap: the Newsletter, and Celebrator. To complete a database entry, telephone interviews provided information not found in print.

#### JUSTIFICATION OF THE STUDY

Cultural geography seeks to understand human activity in a physical setting throughout the United States and the world. Alcohol consumption and production patterns are important geographic phenomena which reveal such basic cultural patterns as ethnicity, religion, politics, and regional constraints in economic development. Studying the development of craft breweries served as an indication of whether America was becoming more homogenized or regionalized. Indeed, it was a useful analogy of the strong relationships between place, ethnicity, politics,

and economic forces.

Food, drink, and dress are frequently mentioned as topics overlooked by cultural geographers. Zelinsky lamented in his book The Cultural Geography of the United States that "The geographic cupboard is almost totally bare when it comes to serious work on what people eat and drink and where within the United States" (1973, 150).

The cultural tradition of alcohol in America is well documented, and this study adds to the corpus of literature. Focusing on a topic that was urban, industrial, and within popular culture contrasted with the traditional cultural geography studies that were rural, agricultural, and folk in nature.

This study also provided particular insight into the mechanics of market expansion through contagious and hierarchical diffusion. The proliferation of numerous small breweries serving a local market signaled a drastic change in the brewing industry. These craft breweries were increasing at a growth rate of 40% per year and continued to erode the production share of large breweries. Determining the types of places where successful craft breweries located can be used in future market research.

## CHAPTER II

### LITERATURE REVIEW

#### Geographic Studies of Alcohol

The works in existence deal with the patterns of alcohol consumption or the physical structures in which consumption takes place. Skinner, in "Drinking-Place Names in the Central United States," focuses on identifying regions based on what drinking establishments are called (1986). In his concluding section, he explains that a lack of establishments in the South produces a "Dixie Drought Belt" (1986, 29). Political, religious, and other cultural considerations serve to repress alcohol consumption in the South and today deter the opening of craft breweries.

A similar study by Hathaway in Landscape focuses on the change of America's bars over time (1986). He begins with the riotous frontier bar which evolves into the speakeasy. Hathaway notes a change in the perception of drinking places because of an increase in female patrons and increased social acceptance of drinking after the repeal of prohibition. He concludes by saying that an increase in drinking places occurs and is typified by new **dating** and **fern bars** (Appendix A). Hathaway offers, "New style bars project the image that they have nothing to hide" (1986, 9).

Hathaway is criticized by sociologist Oldenburg for

concentrating on the outward appearance of a drinking place and failing to consider the social function of a bar (1989b). In "There Was A Tavern in the Town," Oldenburg decries the loss of neighborhood bars and other "informal social centers" (1989b, 3). He states that the number of establishments has declined throughout America because of poor urban planning and alcohol consumption in the home. He finds Hathaway's new style bars are not social centers, but bars with ornate surroundings and high prices which do not encourage people to relax.

In his book, The Great Good Place, Oldenburg argues most people in any society have a "third place" (1989a). He explains that in addition to home and work, people have a place they frequent which provides a relaxed setting in which social contact is the main pursuit. He describes the famous French cafe and its importance as a reflection of French society. The book includes chapters on the English pub and American tavern, providing a forum for comparison with craft breweries.

Oldenburg relates a "great sameness" of third places, where all are neutral ground and people interact with a minimum of personal knowledge about each other. He defines a third place as a social leveler where "people of different socioeconomic backgrounds engage in the main activity of conversation" (1989a, 26). People can walk into a place, without prior planning, and expect to see familiar faces.

"Beer, Bourbon, and Boone's Farm," by geographers, Rooney and Butt, is the pioneer scholarly work on the consumption patterns of all legally produced alcoholic beverages (1978). They observe at the outset that the U.S. is a nation of beer-drinkers. This is explained by religion, ethnic heritage, urbanization, economics, and legal constraints. Beer consumption is higher in the north and west because of the influence of German settlement and migration as well as the presence of temperatures needed for lagering.

Articles on viticulture provide the most sources of information on the methodology used by geographers to study alcohol production. Research tends to concentrate on physical geography due to the specialized ecosystems needed for viable grape production. For example, Kohn writes in "Viticulture and the Natural Environment" that: "Of special interest to this geographer are the natural and environmental conditions which characterize the vineyards of the world" (1985, 43).

Viticultural studies focus on the grape variety and areas of grape production rather than the location of facilities used to make wine. Peters, in "Trends in California Viticulture," discusses the spatial change over time of acreage devoted to grapes since 1970 (1984). The majority of the study emphasizes the types of grapes best suited to expansion into new climatic areas.



Butt expands viticultural studies by deciphering the cultural landscape created by a wine producing area (1988). Here again he does not stray far from physical geography since he discusses the climatic restraints of topography. Moran, in "The Wine Appellation as Territory in France and California," ties legislation to viticultural areas (1993). He argues successful areas dominate legislation to ensure they remain preeminent. The legal aspect is one closely related to breweries as dominant barriers to craft breweries are state governments.

de Blij's book, Geography of Viticulture, details the easy merger of alcohol production and geography into one study (1981). He includes historical, economic, and cultural geography to produce a scholarly tract on wine production, distribution, and consumption. de Blij's use of regional geography is incorporated in this study to analyze the pattern of location over time and space and provide clues which help explain the process of brewery location.

### The U.S. Brewing Industry

Several books on the history of brewing in America exist. Unfortunately, these books are not written by geographers and are now outdated. Brewed in America, by Baron, dates to 1962 and History of the Brewing Industry and Brewing Science in America, by Penman and Arnold, dates to 1933. Both books provide detailed insight on the long



tradition of brewing in the United States. The book by Baron gives more information on the pre-Prohibition period.

In Malt Advocate, Moeller describes the history of beer in America in an abbreviated form. He writes of the glory days (before Prohibition), Prohibition, post-Prohibition, and finishes with the craft beer renaissance. Moeller provides a witty observation of the beer industry at the end: "People are drinking less but drinking better" (1995, 41).

"A Geography of Beer in the United States 1933-1977," a master's thesis by Gebhardt, contains a geographic study on the brewing industry after Prohibition (1979). Her analysis focuses on identifying "state to state variation in the production and consumption of beer since repeal" (1979, 11). In addition, she examines the industry by studying changes in brewery locations, size, and concentrations.

Gebhardt's conclusions demonstrate an increase in beer consumption from bottles and cans, rather than draught, due to an increased acceptance of drinking beer by women and people of all income levels. She speculates that the increasing cost of raw materials, energy, labor, and transportation will result in fewer breweries during the 1980s. Her final statement, "The 1990s will find only a few companies responsible for all beer produced in the United States," is happily refuted by the presence of craft breweries (1979, 73).

## CRAFT BREWING

The North American Brewers Resource Directory, first published in 1984 by Papazian at the Institute of Brewing Studies, is tailored specifically to small brewers. This invaluable book continues to provide information on craft brewery statistics, what beer styles are brewed by each craft brewery, equipment manufacturers, malt and hops suppliers, and legislation. The Institute now provides information on how to open and operate a small brewery and is linked to the American Homebrewers Association. The Directory has become essential to entrepreneurs interested in craft brewing. In addition to the Resource Directory, the Institute publishes an annual Brewery List. The list and directory supply the base information for the thesis database.

On Tap: A Field Guide to North American Brewpubs and Craft Breweries, by Johnson, provides database information missing from the Institute of Brewing Studies (1994a). The book contains descriptions of craft brewery locations, names and addresses of craft breweries, and beer styles brewed. In a telephone interview with Johnson in March 1995, he said people are now incorporating trips to breweries with family vacations! He predicts a day when craft brewery numbers could top 2,000.

Johnson's previous books, On Tap: Guide to North

American Brewpubs and Craft Breweries, U.S. East of the Mississippi and Canada and On Tap: Guide to North American Brewpubs and Craft Breweries, U.S. West of the Mississippi, contain useful data, such as brewing capacity, not found in his updated edition. Prior to November, 1995, Johnson published a bi-monthly newsletter to keep track of new brewery openings.

A number of books detailing the location and types of craft beers available in the U.S. continue to appear as small breweries increase throughout the country. The Beer Directory: An International Guide, The Guide to America's Microbrewed Beer, and The Field Guide to North America's Breweries and Microbreweries each contain listings of craft brewed beer and where it can be bought.

Several monthly publications devoted to the craft brewing industry exist and continue to flourish. A complete list taken from the Institute of Brewing Studies is provided in Appendix D. The sheer number of magazines available indicate the magnitude and popularity of craft brewing among the public.

An anonymous college professor known as John Student notes, in American Demographics, "Microbrew drinkers are more likely than average to be young and college-educated, to have above-average incomes, and to drink more than the average beer drinker" (1995, 35). His conclusions are based on a nationwide telephone survey of 1,519 adults conducted from September to December 1994. His article is

one of few attempting to determine who drinks craft beer.

Student finds variation in where people try microbrews. "29% of beer drinkers in northeastern states have tried one, compared with 25% in the Midwest, 32% in the West, and 18% in the South" (1995, 38). Though he does not define these regions, his findings of few people in the South trying a microbrew correspond with a lack of craft breweries in that region.

Student reveals that a change of homebrewing laws in 1979 helped spawn the craft brewing revolution. In that year, the federal government made it legal for a head-of-household to brew 200 gallons of beer for private consumption tax free. Relating to Oldenburg, in a way, he states, "(referring to brewpubs) ...many of which try to convey the friendly spirit of a British pub rather than the private, brooding nature of a traditional American bar" (1995, 39).

Along with American Demographics, The New Brewer: The Magazine for Micro- and Pub-Brewers explores the demographics of craft beer drinkers. In "Is Trouble Brewing for Craft Brewers?," Kilpatrick speculates craft beer is consumed by white males between 25-34 years old. His findings are corroborated by Student in the above mentioned article. Kilpatrick uses figures from the Urban Institute to show "the population trend for the total white (and white male) population between the ages of 25 and 34 is downward sloping" (1994, 43). He calls for an urgent

need of more survey research to find the target market. In a testament to computer networks, he advocates using homebrewer websites on the internet as sources of valuable information.

The same issue of The New Brewer contains an article written by Edgar devoted to an industry review for 1994. Edgar reports a growth rate of 40% in sales and categorizes the report by geographic regions. He states that California is flourishing with 13 new brewpubs and four microbreweries opening.

Edgar suggests "no where in the nation has this industry become as much a permanent part of the regional fabric...as in the Pacific Northwest" (1994, 16). The report mentions seven brewpubs and seven microbreweries opening with only one brewpub closing. His report characterizes the industry's health in the Mountain West, North Central, South, and the Northeast regions. This article provides information regarding beer styles and brewery locations not found in previously mentioned sources.

Edgar's review contains information not used in this thesis regarding craft brewery closings. The thesis only deals with successfully operating craft breweries since obtaining information on where breweries have closed for all study years is unavailable. The Institute of Brewing Studies has an industry factsheet which states for 1994 the failure rates for U.S. brewpubs at 1 in 6 and for

microbreweries 1 in 4. A lack of information on closing dates is a serious limitation to this study which is further discussed in Chapter IV under Diffusion as a Mechanism for Dispersal.

The article entitled "Brewing a Decade 1983 to 1993" gives a review of the formative craft brewing industry year, 1983 (1993). International correspondent Tanner provides information regarding who is brewing in that critical year. He details the slow growth and acceptance period and explains the numerous problems small breweries experience at the beginning of the brewing revolution.

Thomas seeks to find an answer to her article title "Will Craft Breweries Face a Shakeout in the Near Future?" by interviewing Robert Weinburg, a brewing industry statistician. The article contains several scenarios posed by Weinburg that would radically alter craft brewing. For example, "Suppose that (the big brewers) decide tomorrow to let superpremiums submerge and introduce their own Domestic Specialty brews?" (1996, 13). Weinburg cannot answer the question because he correctly states "No one knows the future." Another interesting point he makes is "you have a product where the consumer feels someone cares-that it's produced with tender loving care-and because of that, it's more expensive. How long can that image continue?" (1996, 21). The interview is a forum wherein Weinburg warns craft brewers to stay vigilant.

In his unpublished article "The Ascendance and



Diffusion of the American Microbrewery," Flack gives the first analysis of microbreweries completed by a geographer (1994). He does not thoroughly analyze where craft breweries are and how they diffuse. Instead, he focuses on explaining the appeal of craft brewing as a rejection of the national culture "in favor of something more local" (1994, 12). Flack's research provides a base for a comprehensive analysis of craft brewery locations to follow.

Flack links the rise of craft brewing to a consumers revolt against the British brewing industry. CAMRA, the Campaign for Real Ale, begins due to the closing of 40 percent of England's breweries in the 1960s. He identifies the American West coast and Colorado as the origin points for the brewing revolution and recognizes a lag in the South. His analysis is hampered by the acts of grouping all craft breweries (brewpubs and microbreweries) and regional breweries into a category called "microbrewery" as well as using a beginning study date of 1972.

#### Government Documents

In 1978, the Federal Trade Commission produced a summary report spanning the years 1933 to 1978 devoted to the brewing industry. It provides a window through which the future predictions of the study coincide with the rise of craft brewing. Obviously, the FTC did not predict craft brewing. Rather, it foresaw a continuation of the

consolidation trend. Interestingly, a comment on the lack of product differentiation and consumer brand loyalty is included in the summary chapter.

The Bureau of Alcohol, Tobacco, and Firearms (BATF) is the taxing and regulatory agency for the brewing industry. The BATF issues a yearly report called Beverage Distilled Spirits Plants and Breweries Authorized to Operate. This report lists the name and address of every brewery licensed to produce beer. Unfortunately, the BATF stopped issuing the report to the public in 1989 because of shrinking budgets.



## CHAPTER III

### HISTORICAL BACKGROUND OF THE U.S. BREWING INDUSTRY

#### Pre-Prohibition Era

The brewing industry in America began with the arrival of English settlers on the East coast. In 1609, the governor of Virginia advertised positions for two brewers in the colony (Baron 1962). During the industry's formative years, malt supplies were shipped to the colonies until the establishment of a domestic supply. Tavern owners bought beer directly from a commercial brewer licensed by the colony. Competing with beer, the availability of cheap rum from the West Indies kept beer consumption low until after the Revolutionary War. In 1700, New York passed an act encouraging beer production in the province (Baron 1962).

By 1810, the industry was well established with 132 breweries in the Northeast producing 135,000 barrels. Serving the population centers were 48 breweries in Pennsylvania, 42 in New York, and 13 in Ohio (Baron 1962). These brewery numbers did not account for production on the frontier.

The Prohibition movement began in the early 1800s. Started by various religious denominations as a reaction to strong liquor, and later including beer, Prohibitionists managed to elect officials in several states which, by

1854, passed prohibition laws (Gebhardt 1979). Strong reaction against the movement forced their quick repeal.

The 1850s was a decade of great change in the industry due to the influence of German settlement. New methods, owners, and brewmasters from Germany began the trend towards **lager beer** (Appendix A) and industrialization. Milwaukee developed into a brewing center with the opening of Schlitz, Blatz, and Miller brewing companies. Milwaukee's status was further enhanced by the 1871 Chicago fire which destroyed many breweries (Gebhardt 1979).

During this time breweries were a very profitable industry. Draught sales dominated as breweries delivered directly to the retail saloon or beer garden. Consumption in the home was low due to a lack of packaging. Many breweries used "tied houses" which meant the brewery owned the retail outlet and dictated which beers could be sold (Moeller 1995).

By the end of the Civil War, technological innovations transformed the brewing process. The introduction of the steam engine and consequent use of mechanized bottle washing, sterilization, and bottle filling served to increase output. Growth of the rail system allowed fiscally-able companies to expand distribution by shipping beer in refrigerated cars to distant markets. The use of imported European yeast decreased product loss from contamination (Baron 1962). The industry benefited from increased quality control and uniformity in taste.

The Civil War Era also provided the government an opportunity to tax beer. The 1862 Internal Revenue Act set the rate at \$1 per barrel. Taxation resulted in the formation of the United States Brewers Association. The Association represented the industry before Congress and the Internal Revenue Service, as well as fought prohibition (Gebhardt 1979).

In the 1880s, at the same time the industry expanded, the Anti-Saloon League formed and gained strength. The League was supported by Protestants, rural Americans and the middle class (Moeller 1995). By 1913, 12 states passed prohibition legislation and the number increased to 27 before a Congressional vote on the 18th Amendment took place (Gebhardt 1979).

By the 1916 national election, enough "dry" congressmen were elected to ensure passage of the Volstead Act, otherwise known as the 18th Amendment to the Constitution. Prohibitionists and World War I anti-war supporters damaged the brewing industry by boycotting German businesses and products. Thirty-six states ratified the 18th Amendment on January 16, 1919, and it went into effect one year later.

During Prohibition, brewers turned to other products in order to stay in business. Those that adapted produced ice cream, malted milk, and near-beer. Near-beer was made by brewing beer; then evaporating the alcohol. This

substance produced the famous quote "Whoever called it near beer was a bad judge of distance!"

#### Post-Prohibition Era

"Unpopular" and "unenforceable," repeal of the 18th Amendment occurred on April 7, 1933 (Gebhardt 1979). The new President, Franklin Roosevelt, was devoted to repeal. He recognized that employment and tax revenue created by the brewing industry would lessen the country's economic woes. Breweries that remained open had a definite advantage. They quickly switched from malted milk to beer. "By June 1933, 31 breweries were back in operation" (Baron 1962, 323). One year later, in June 1934, 756 breweries were operating. This was the highest number of breweries in the 20th century up to the present.

Post-Prohibition beer, almost all of it lager, was characterized by "less malt, less hops, less time, more adjuncts" (Moeller 1995, 39). Adjuncts are defined as items other than malt, hops, water and yeast allowed in beer for public consumption. For example, cereal grains such as rice and corn are used, in conjunction with malted barley, to produce fermentable sugars.

Once they were allowed to reopen, breweries in the North dominated production. In 1935, New York, Pennsylvania, Wisconsin, and Ohio combined to produce over 50% of the 45,228,605 barrels brewed (Gebhardt 1979). The trend of brewery closings, lasting 50 years, began.

Smaller breweries were unable to remain open because of increased transportation costs and a lack of pre-prohibition consumer loyalty.

Only 595 breweries were in operation with the approach of World War II in 1940. To retain increasing production, the Association of Brewers successfully lobbied to keep the industry on the War Labor Board's "essential list." By 1942, the number of breweries fell to 462. Losses were explained by increased costs of operation and expansion of capacity to coincide with market expansion (Gebhardt 1979).

#### Rise of the "Nationals"

During the 1940s the first company to facilitate interstate expansion was Falstaff. As the first **national brewery** (Appendix A), it opened breweries and distribution offices in Missouri, Louisiana, and Nebraska (Gebhardt 1979). This trend continued throughout the 1950s, 1960s and 1970s. By the 1950s, several companies built new breweries or bought existing ones to expand outside their original region.

Anheuser-Busch opened four plants; one in California and New Jersey, and two in Florida. Schlitz, Pabst, and Carling created 15 new breweries across the country. The impetus for expansion was to capture the areas of high population densities. The East and West coast markets along with Texas provided the best opportunity of reaching potential markets. With the addition of interstate

competition, breweries continued to close at a rapid pace. In 1960 only 229 breweries were in production. The number fell to 154 by 1970 (Gebhardt 1979).

The 1970s reflected rising production figures but decreasing brewery numbers. Antiquated facilities were gradually replaced by multi-million barrel capacity breweries. Miller Brewing Company opened plants with 8-million-barrels or more annual capacity in New Jersey and North Carolina. Industry leaders consolidated facilities to reduce costs. Aluminum can plants were now built alongside breweries to save transportation costs.

Coupled with changes in industry infrastructure, target marketing and legislation decreased the success rate for many **regional brewers** (Appendix A) from the 1960s to the 1980s. Companies targeted weight conscious consumers with mass-produced, low calorie lager beer using intensive television and print advertising. Advertising expenses of 6 million dollars in 1938 pale in comparison to 95 million dollars in 1960 (Baron 1962). Target marketing of lighter beers resulted in increased consumption by women (Gebhardt 1979). National giants introduced the seven ounce bottle for people who wanted their beer to remain cold while slowly drinking. Environmental restrictions on packaging led to a ban on ring pull tabs. Increasing glass costs shifted packaging to aluminum.

The Federal Trade Commission, in 1978, reported five companies controlling 70% of beer production. The "Big



Five" were Anheuser-Busch, Miller, Schlitz, Pabst, and Falstaff. It is important to realize companies that modernized and expanded in the 1940s and 1950s were taking a major risk. Modernization resulted in increasing market dominance. The "Big Five" were not giants when they decided to grow. Coors Brewing Company was an exception to interstate expansion. Coors produced all its beer at the nation's largest brewery in Golden, Colorado. In 1976, the company brewed 13.7 million barrels.

Throughout this era of increasing costs and competition, regional breweries struggled to survive. Consumption shifted from the tavern to the home. Local breweries producing ales (Appendix A) realized the negative effects of the American consumer's passion for light bodied lager. Draught sales to taverns, a mainstay for breweries unable to afford a bottling line, were replaced by package sales. A lack of capital hindered the construction of new facilities. Nationwide advertising was too costly.

Surprisingly, some regional breweries continued to remain in business. Fritz Maytag rescued Anchor Steam Brewing Company from bankruptcy in 1965, and built a cult following in the San Francisco Bay area. Yuengling Brewing Company, the oldest continuously operating brewery in America, continued to produce English beers for a local market in Pennsylvania. Regional breweries were now an exception in an industry dominated by national breweries.

The lack of American beer variety was mitigated by

increased sales of imported beer. Homebrewing drew more people into drinking a wider variety of beers not available domestically. Increased consumer awareness resulted in a radical alteration of the brewing industry in the 1980s. Since national brewers were unable to cater to a variety of local and regional tastes, individual entrepreneurs saw an opportunity. Stout, Porter, Bitter, Mild, Strong, Dunkelweizen, Alt, and other beer styles were unknown to most Americans. Craft breweries came of age and began returning America to its pre-Prohibition days of locally produced beer for local consumption.



## CHAPTER IV

### CRAFT BREWERY LOCATION ANALYSIS

#### Diffusion as a Mechanism for Dispersal

To analyze craft brewery locations on a national scale, data including the year of opening, address (including zip code), and type of craft brewery (brewpub = 0 and microbrewery = 1) were entered into a database. Data sources were the Brewers Resource Directory, Brewery List, telephone interviews, publications by Johnson, and survey forms.

The database was imported into a GIS where latitude and longitude coordinates were assigned to each entry, based on zip code centroid. The database was queried for all craft breweries classified as brewpubs and saved as a separate file. Using the same technique isolated all microbreweries into a single file. Brewpubs and microbreweries were analyzed individually to ascertain their diffusion type.

Maps representing brewpub locations were created for the years 1986 to 1994. The same process was used to map microbreweries. The resulting maps indicated the change over time and space of each brewery type. The maps only span the years 1986 to 1994 because, prior to 1985, only five brewpubs and seven microbreweries existed in the United States. The years 1982 to 1985 were represented in

tabular form.

Based on the resulting tables and maps, points of origin and patterns of diffusion were easily discerned. In addition, consulting articles which discussed the formative years of craft breweries clarified diffusion types. The monograph, Spatial Diffusion, by Gould, and the textbook, The Human Mosaic, by Jordan, Domosh, and Rowntree provided descriptions of the possible types of diffusion allowing comparison to actual craft brewery location changes.

Location analysis was limited to craft breweries which had not closed during the study years 1982 to 1994. The data for closings were unavailable. Therefore, all findings represented successful craft breweries. The omission of closed craft breweries brought into question the validity of results. The impact of those breweries on diffusion remains unknown. The paths of diffusion discussed in this thesis may change as information can be found and incorporated into a similar study. However, it was valid to study and understand the location of only the industry's success stories.

Database accuracy was limited by the source material. Because of publication dates, some craft breweries which opened in late 1994 were not included. In several cases, data was contradictory between sources. If data could not be correlated to a third source, the primary source for data was the Resource Directory. Inaccuracy in the Directory passed to the database as other sources rarely

included opening dates. Where possible, data were cross checked. Microbreweries that had increased their capacity above 15,000 barrels were not included in the study as they were missing from sources devoted to craft brewing. Contract brewing companies, i.e., those which hire another company to produce their beer, were excluded because they did not own a facility (Appendix A). Due to the limitations, the brewery count was skewed at the state level; however, this did not affect the overall pattern of expansion.

The origin of craft breweries can be traced to a single place of origin, Sonoma, California, and the growth of craft brewing in the last decade is the result of diffusion. It is therefore appropriate to include a brief discussion of the theoretical aspects of cultural diffusion here. Social scientists have identified variations of the diffusion process; cultural diffusion is the spatial spread of learned ideas, innovations, and attitudes (Jordan et al. 1994). As a phenomenon moves through space and time, it is said to diffuse. The diffusion process comes in many forms. Expansion diffusion occurs if an idea spreads and the total number of "adopters" increases. Relocation diffusion results when people who adopt an innovation move from place to place, carrying the idea with them.

Expansion diffusion is further divided into stimulus, contagious, and hierarchical diffusion. Stimulus diffusion occurs when the "adopters" keep the premise of an

innovation but not the actual innovation. For example, reindeer herders began herding only after exposure to cattle herders from southern cultures (Jordan et al. 1994). Contagious diffusion occurs only by personal contact with an innovation. Many diseases are only spread by touching a carrier. Finally, hierarchical diffusion results in ideas leaping temporarily over intervening people or urban areas. The innovation or idea moves from important places or people to less important people or places and on down the order (Gould 1969).

Time-distance decay is an important element in diffusion. The acceptance of an innovation decreases with distance. Jordan states "an innovation will be accepted most thoroughly in the areas closest to where it originates" (1994, 17). If acceptance decreases with distance, then acceptance decreases with time (it takes time to spread outward) resulting in what is called time-distance decay. The neighborhood effect occurs when acceptance is most rapid in small clusters around an initial adopter.

Physical and cultural barriers also slow the adoption of an innovation. For example, mountain ranges (physical) and legislation (cultural) are absorbing barriers as they stop diffusion from spreading. Most barriers are permeable, allowing some diffusion through, but slowing or weakening the innovation's spread.

Diffusion moves through three distinct stages. First,

the innovation grows at a slow pace due to a lack of interested people or the innovation has no clearly shown benefit (Jordan et al. 1994). During the second stage, rapid growth and acceptance results in an innovation's wide geographic spread. The last stage is typified by slow growth, possibly due to saturation or a waning of interest.

#### National Scale

The introduction of craft breweries dates to 1977 when Jack McAuliffe opened New Albion Brewing Company in California (Johnson 1994a). However, the rise of craft brewing began when Bert Grant opened Yakima Brewing Company, in the resort town of Yakima, Washington. The influence of New Albion was too great to ignore. Many of the original craft brewery entrepreneurs visited New Albion for advice and inspiration before the brewery closed in 1981.

The origin of craft breweries was on the West coast of America. In just 12 years the number of craft breweries rose from one, in 1982, to 434 in 1994 (Figure 1). As can be seen from Figure 2, Colorado, the West coast, and the Northeast contained the most craft breweries; probably due to population density and the willingness to quickly adopt locally produced beers. This section addresses which diffusion process influenced craft breweries to produce the 1994 map.

Both brewpubs and microbreweries undergo expansion

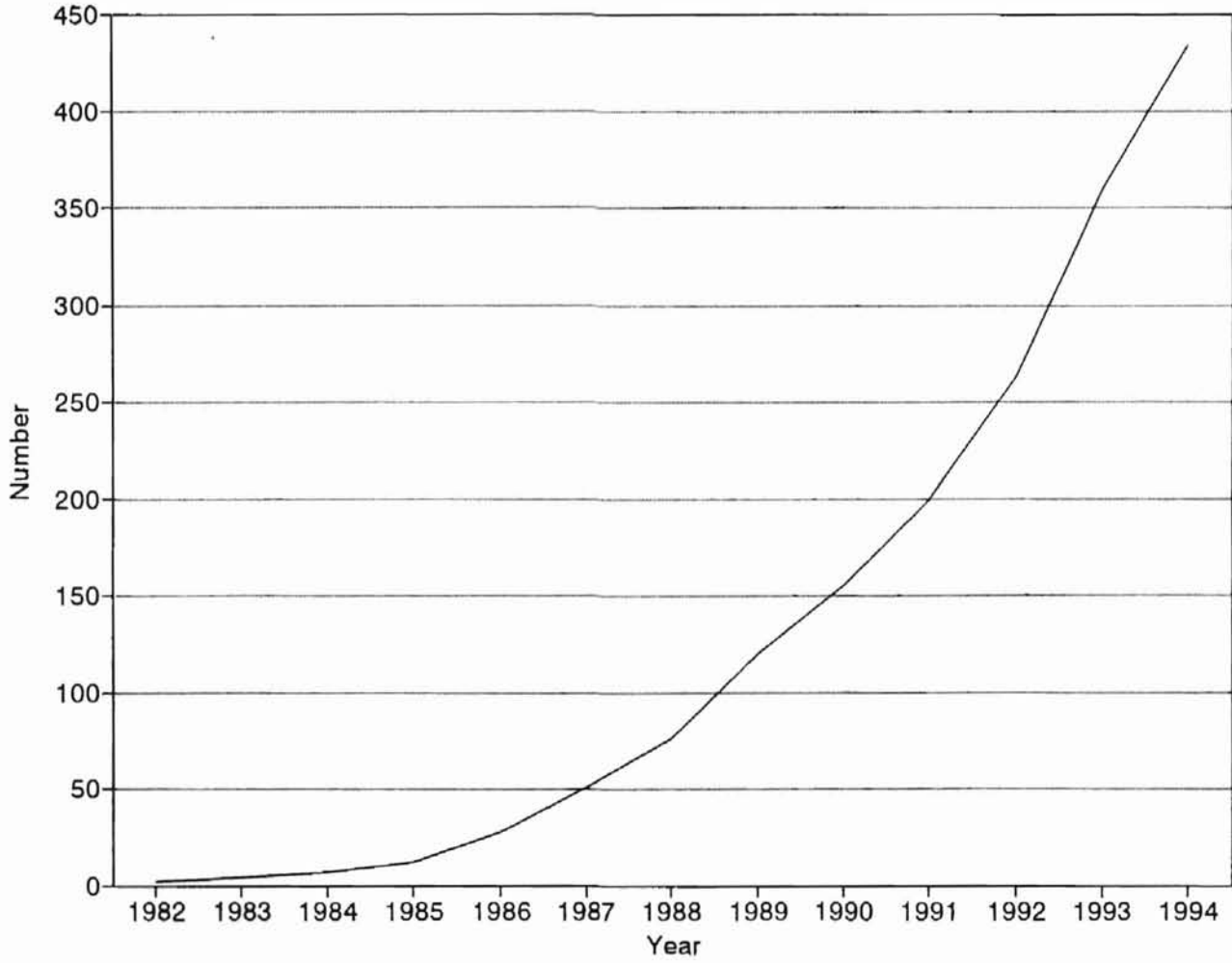


Figure 1. Increase in Craft Breweries 1982-1994

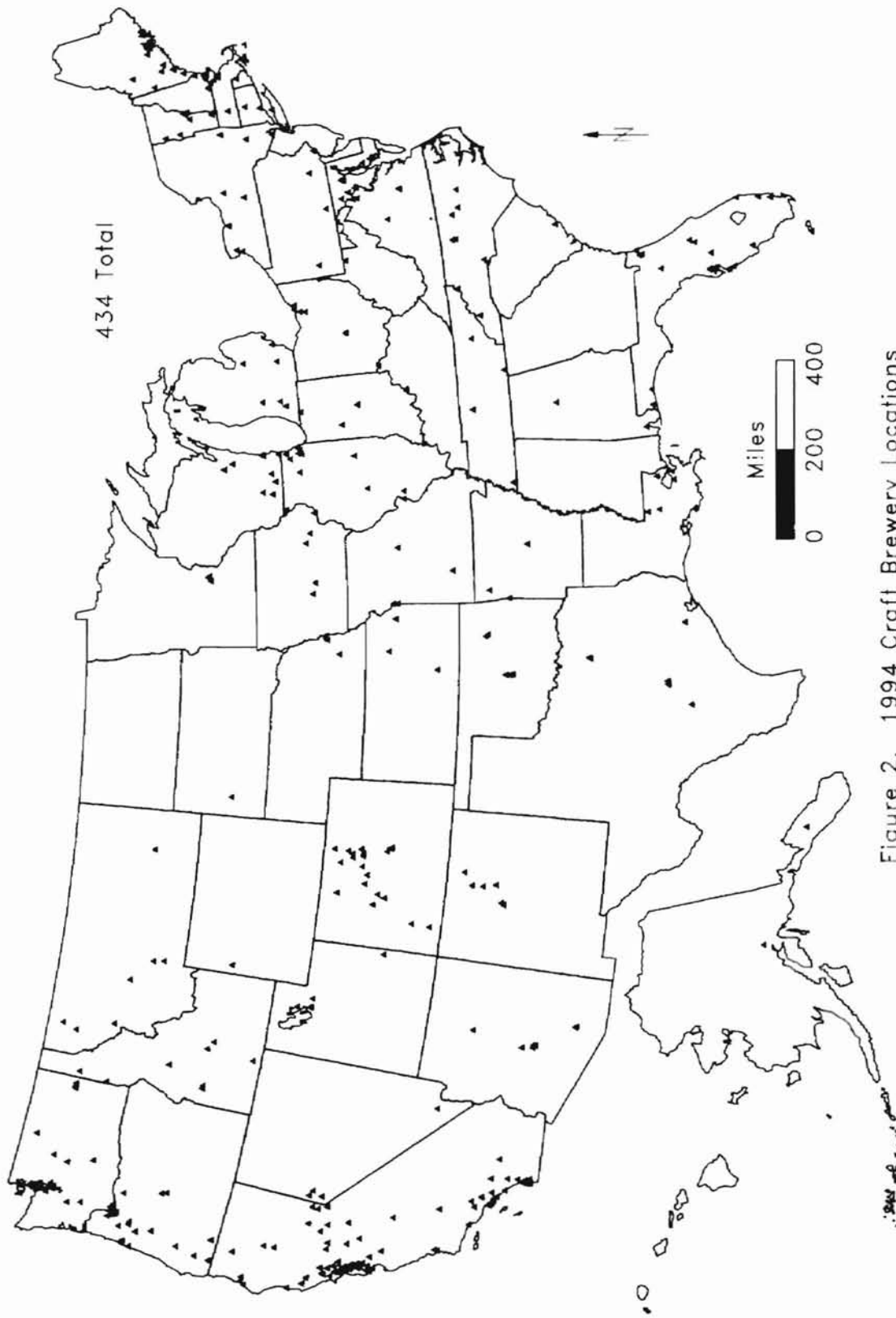


Figure 2. 1994 Craft Brewery Locations

Source: Brewers Resource Directory



diffusion as the number of adopters increased to more than 400 by 1994. Moreover, contagious diffusion occurred when they first appeared. Original innovators received visits from people interested in joining the industry. The personal contact with craft brewery adopters in one area influenced decisions to open in a different area. By 1986, hierarchical and relocation diffusion occurred as brewpubs jumped from the West to East coast. The diffusion path of brewpubs proceeded along a hierarchy of East and West coast cities and then moved towards the central U.S. By contrast, microbreweries diffused from the West coast to Montana, Iowa, Michigan, later to the East coast and Great Lakes area, and finally towards the interior states.

In 1982, Bert Grant reintroduced European beer style to accepting patrons and launched a successful beer renaissance. Prior to the 18th Amendment, small companies brewing beer for local consumption were all too common. However, it has been demonstrated that, after Prohibition, market expansion, technology, and competition removed most traces of locally produced beer from the landscape. Furthermore, changes in legislation outlawed the brewpub concept, (i.e. sales from producer directly to consumer), in many states.

With their origin in Washington state, craft breweries quickly spread to California. In 1983, one brewpub and one microbrewery opened. Buffalo Bill's Brewpub located in Hayward, a college town in the San Francisco bay area.



Mendocino Brewing Company opened in Hopland, a rural town, frequented by thousands of tourists, on scenic Highway 101.

The novelty of craft breweries drew people to experience a new idea in the brewing industry. "For five years or so, we knew everyone going into the brewpub business because they all came here first to see ours" - Michael Laybourn, Mendocino Brewing Co (Thomas 1993, 22).

The comraderie of people who began the craft brewing revolution was explained by the problems they encountered. Malt and hop suppliers were initially hesitant to sell their products in small quantities. Equipment was accumulated from junkyards or dairy auctions (Tanner 1993). Few craft brewers were educated in brewing science, many were homebrewers, and product consistency and quality were sometimes lacking. These barriers were slowly overcome and craft brewing began to expand.

In 1984, only three microbreweries opened, one in California, one in Washington, and one in Montana, bringing the total number of craft breweries to seven (Tables I and II). The total was seven because Yakima Brewing Company was classified as both a microbrewery and a brewpub by the Institute of Brewing Studies. The hierarchical diffusion of microbreweries began with the addition of Helena, Montana. Microbreweries initially diffused to rural or small urban areas, not large metropolitan areas. Their location types were not classified, as with brewpubs, but it is postulated that university and resort towns were

TABLE I

## NUMBER OF BREWBUPS IN EACH STATE FOR A GIVEN YEAR

<u>State</u>	<u>94</u>	<u>93</u>	<u>92</u>	<u>91</u>	<u>90</u>	<u>89</u>	<u>88</u>	<u>87</u>	<u>86</u>	<u>85</u>	<u>84</u>	<u>83</u>	<u>82</u>
AL	1	1											
AZ	9	6	6	6	5	4	1	1					
AR	3	2	1										
CA	63	53	41	36	31	20	14	8	6	3	1	1	
CO	19	18	14	12	4	3	2						
CT	1	1	1	1									
DC	1	1	1										
FL	19	18	11	9	6	3							
ID	3	3	2	1									
IL	11	6	6	2	2	2	2						
IN	3	3	2	1									
IA	3	3	2	1	1								
KS	3	3	1	1	1	1							
KY	2	2	1										
LA	2	1	1	1									
ME	6	4	2	1	1	1	1						
MD	4	3	2	2	2	2							
MA	5	5	5	3	3	3	2	2	1				
MI	3	2											
MN	2	2	1	1	1	1							
MO	4	2	1	1									
NE	6	6	5	1									
NV	4	4	1	1	1	1	1	1					
NH	3	2	1	1									
NM	6	4	2										
NY	11	10	6	4	3	3	2	1	1				
NC	8	7	7	6	5	3	1	1	1				
OH	7	7	5	4	3	3	1						
OK	6	5	1										
OR	19	19	15	14	11	7	7	3	3	1			
PA	2	2	2	2	2	1							
RI	1	1											
SD	1	1	1	1									
TN	3	2	1										
TX	8	1											
UT	4	3	3	2	1	1							
VT	4	4	3	3	1	1	1						
VA	4	3	1	1	1	1	1	1					
WA	10	9	6	5	4	4	2	1	1	1	1	1	1
WV	1	1	1										
WI	6	5	5	5	5	4	3	2					
WY	1												
SUM:	282	236	168	129	94	69	41	21	13	5	2	2	1

TABLE II

## NUMBER OF MICROBREWERIES IN EACH STATE FOR A GIVEN YEAR

<u>State</u>	<u>94</u>	<u>93</u>	<u>92</u>	<u>91</u>	<u>90</u>	<u>89</u>	<u>88</u>	<u>87</u>	<u>86</u>	<u>85</u>	<u>84</u>	<u>83</u>	<u>82</u>
AL	1	1	1										
AK	2	2	2	2	1	1	1	1	1				
CA	25	21	17	14	14	12	10	8	3	2	2	1	
CO	18	13	7	4	3	1							
CT	2	2	2	2	2	2							
FL	1	1	1										
ID	5	4	2	1	1	1	1	1					
IL	3	3	3	2	2	1							
IN	1	1	1	1	1	1							
IA	2	2	2	1	1	1	1	1	1	1			
KS	1	1	1										
KY	1	1	1	1	1	1	1	1					
LA	2	2	1	1	1	1	1	1	1				
ME	7	5	4	3	2	1	1	1	1				
MD	3	3	2	1	1	1							
MA	8	4	3	1	1	1	1						
MI	4	3	3	2	2	2	2	1	1	1			
MN	2	2	2	2	2	2	2	2	1				
MO	1	1	1	1	1	1							
MT	7	6	5	4	2	2	2	2	1	1	1		
NH	1	1	1										
NM	2	2	2	1	1	1	1						
NY	2	2	2	1	1								
NC	3	1											
OH	2	1	1	1	1	1							
OR	12	10	5	3	2	2	1						
PA	3	3	3	3	2	2	2	2					
SC	1												
TN	1	1	1	1	1	1							
TX	4	3	2	1	1	1							
UT	2	1	1	1	1	1	1	1	1				
VT	4	3	3	3	2	1	1	1					
VA	2	2	1	1	1								
WA	11	11	9	7	6	4	3	3	2	2	2	1	1
WI	5	4	3	3	3	3	3	3	2				
WY	1	1	1	1	1	1							
SUM	152	124	95	70	61	51	35	30	15	7	5	2	1

dominant. A detailed description of the hierarchical diffusion type experienced by brewpubs can be found in the section on state level analysis.

Hierarchical and contagious diffusion occurred simultaneously during 1985. Brewpubs increased in number to five with the addition of one each in Sacramento and Truckee, California, and one in Portland, Oregon. Two microbreweries expanded outside the West coast core region to Amana, Iowa, and Kalamazoo, Michigan, bringing the total number to seven.

By 1986, microbreweries expanded to Alaska, Louisiana, Maine, Minnesota, Utah, and Wisconsin (Figure 3). Their path of diffusion differed from brewpubs, which jumped directly to the East coast. Brewpubs opened in Massachusetts, New York, and North Carolina (Figure 4). Contagious diffusion continued in California with the most expansion, including four new breweries, three brewpubs and one microbrewery.

Microbreweries established a presence on the East coast in 1987. Pennsylvania and Vermont accounted for three new establishments. Outside the East coast Utah and Kentucky each contributed one brewery. The core region on the West coast was depicted as northern California and the state of Washington, where a combined six microbreweries opened. The year 1987 marked the first microbrewery in the large urban area around Los Angeles (Figure 5). The absence of craft breweries in New York City and Los

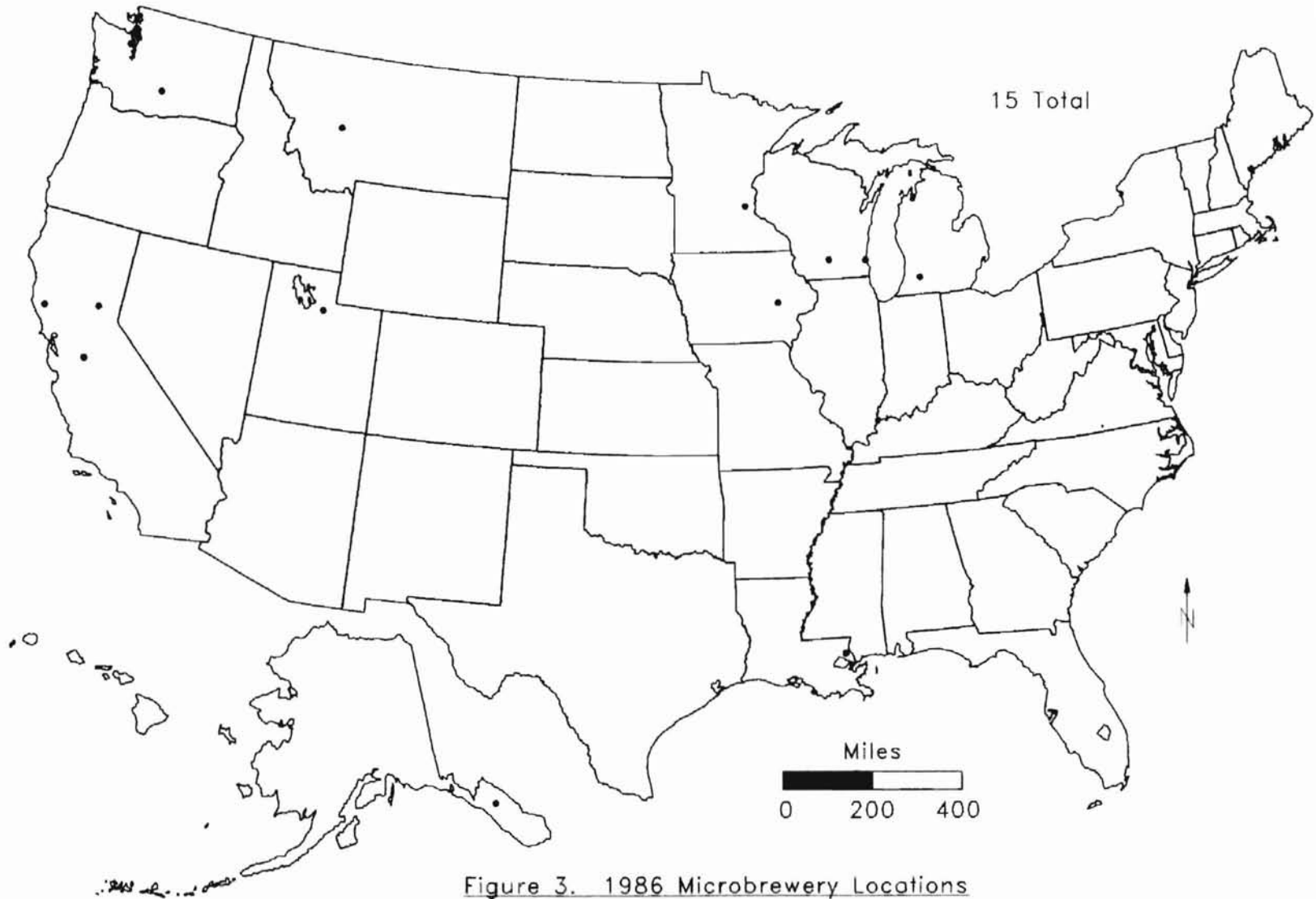


Figure 3. 1986 Microbrewery Locations  
Source: Brewers Resource Directory

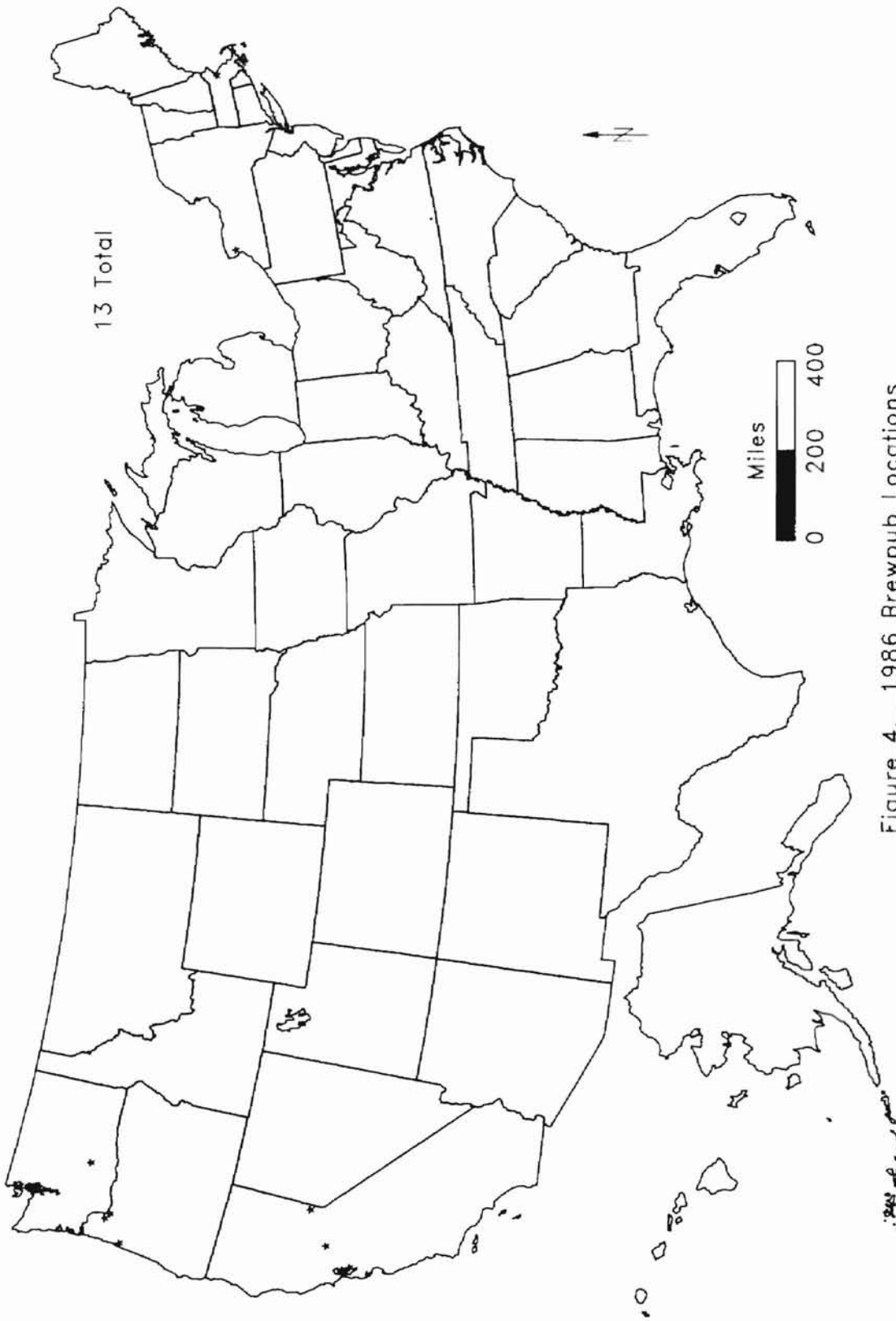


Figure 4. 1986 Brewpub Locations  
Source: Brewers Resource Directory

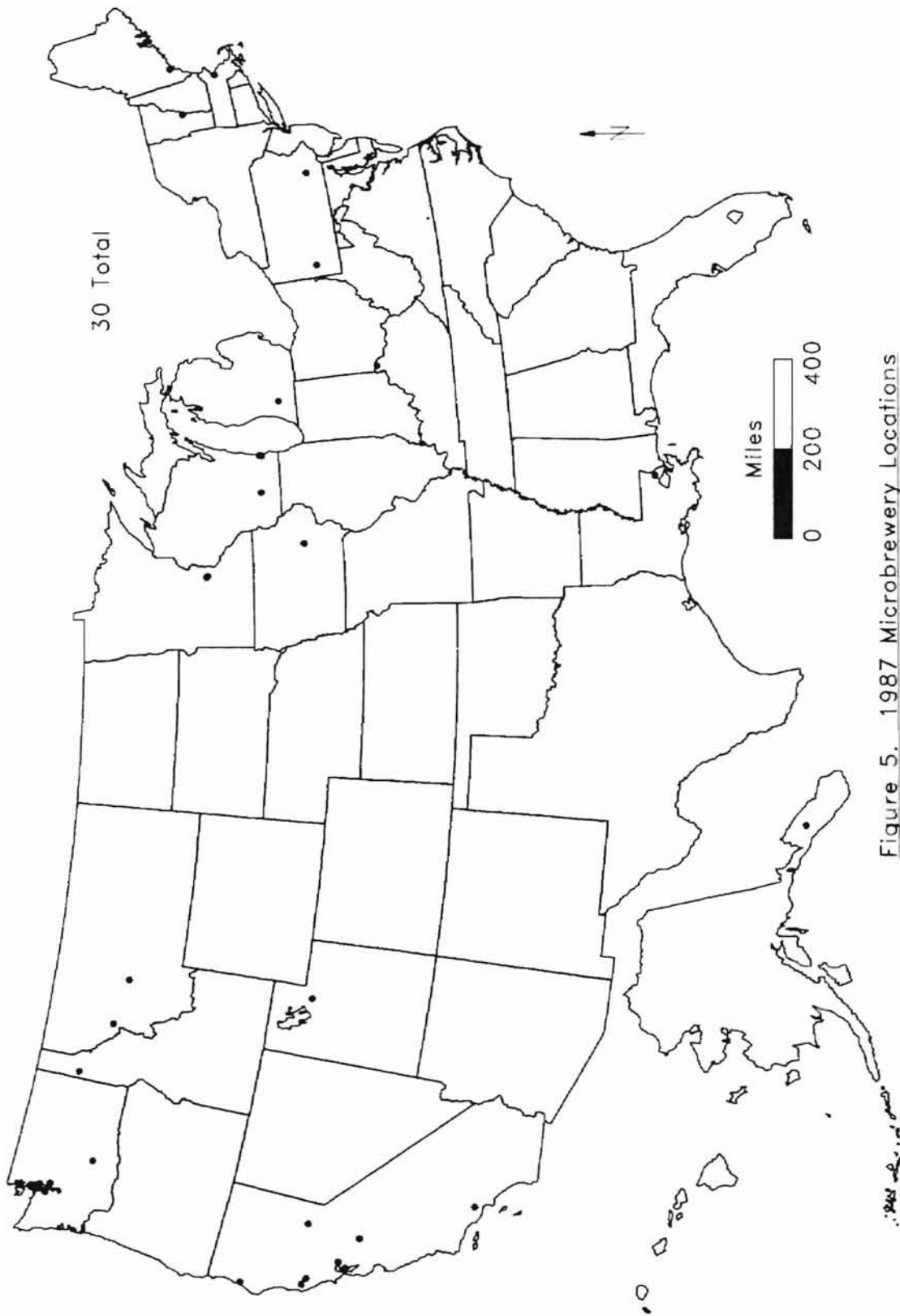


Figure 5. 1987 Microbrewery Locations

Source: Brewers Resource Directory

Angeles, cities considered as the core origin points of American popular culture, was a notable finding (Figures 5 and 6). This conclusion is at variance from the perception that New York City and Los Angeles are the origin points for innovations in American popular culture.

In 1987, brewpubs began to diffuse towards the center of the U.S. The new states were Virginia, Wisconsin, Arizona, and Nevada (Figure 6). Northern California, Washington, and northern Oregon were places where brewpubs began to cluster. The total number of brewpubs and microbreweries was 51.

Prior to 1988, microbrewery numbers expanded faster, and to more states, than brewpubs (Figure 7). Microbreweries were relatively unencumbered by the barrier of restrictive legislation. After repeal of the 18th Amendment, most states did not legislate against breweries as long as the beer was sold to a wholesaler and then a retailer, the three-tier system. However, after repeal, 41 states made it illegal for brewers to sell alcohol directly to the retailer or consumer, effectively outlawing brewpubs.

Washington and California emerged as leaders in the industry because no legislation slowed diffusion, and all craft breweries were legal. Ten states were excluded from anti-brewpub laws before 1982 (Figure 8). Any of these ten had the opportunity to begin the innovation of craft brewing, but the origin states were California and



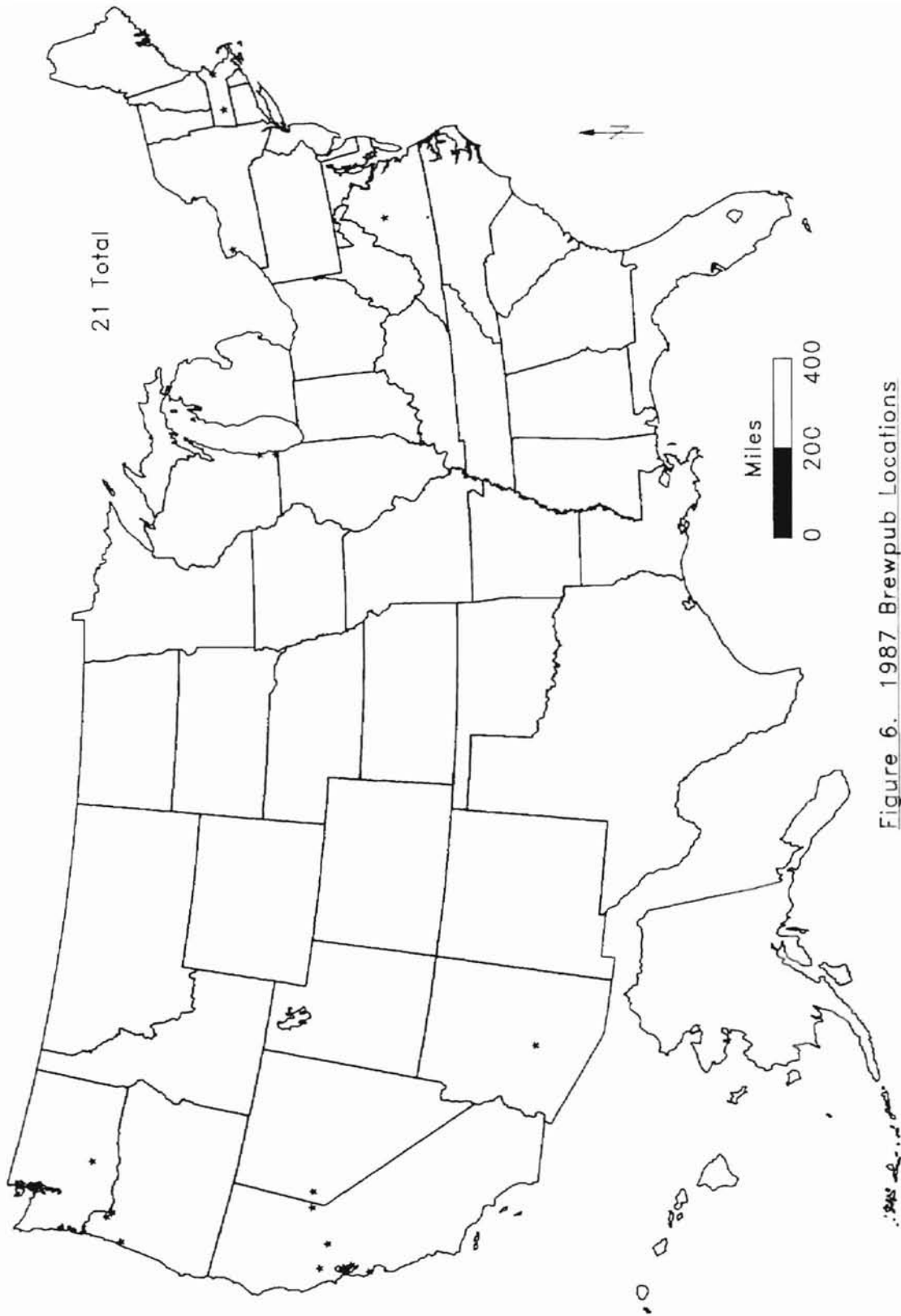


Figure 6. 1987 Brewpub Locations  
 Source: Brewers Resource Directory

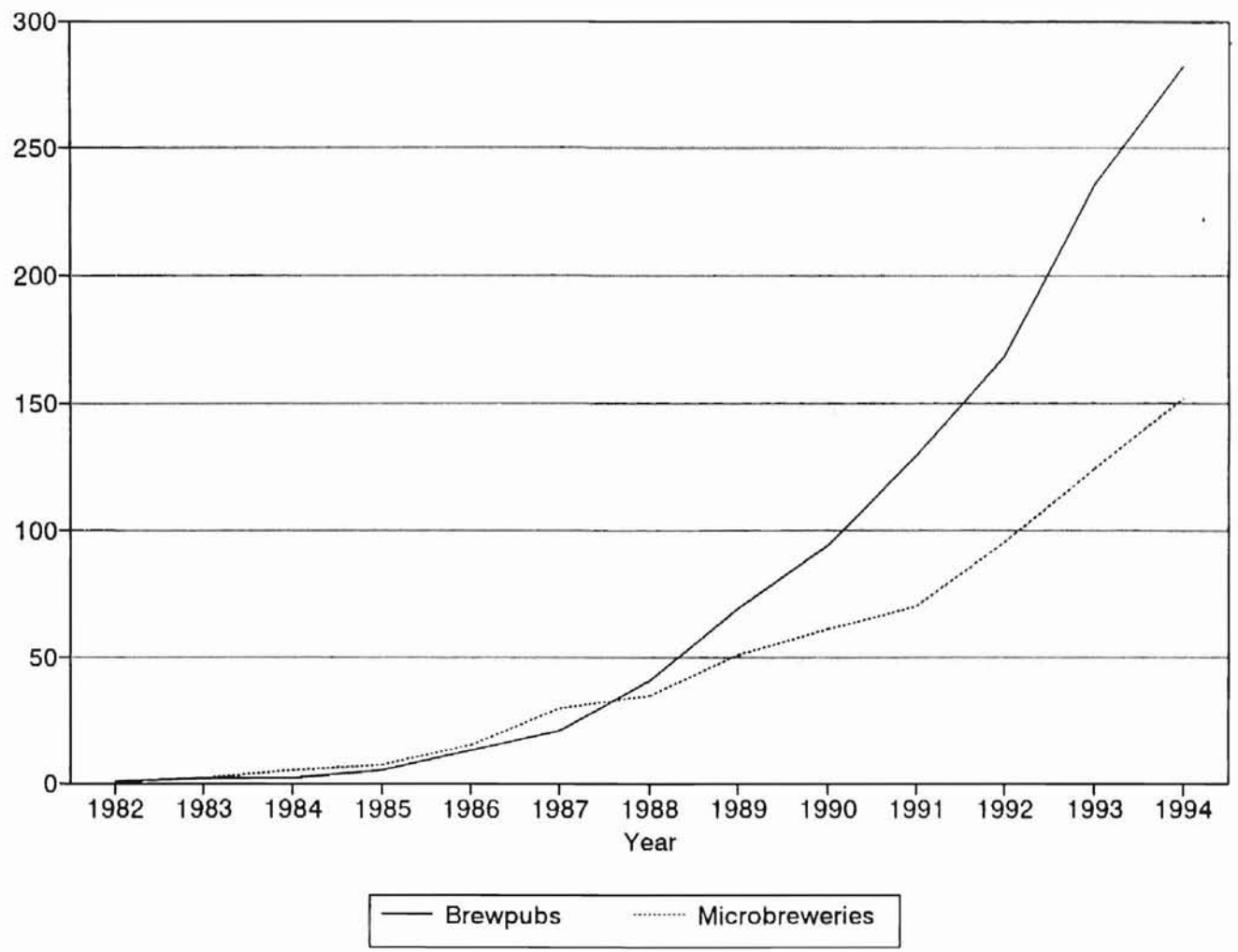


Figure 7. Increase in Craft Brewery Types 1982-1994

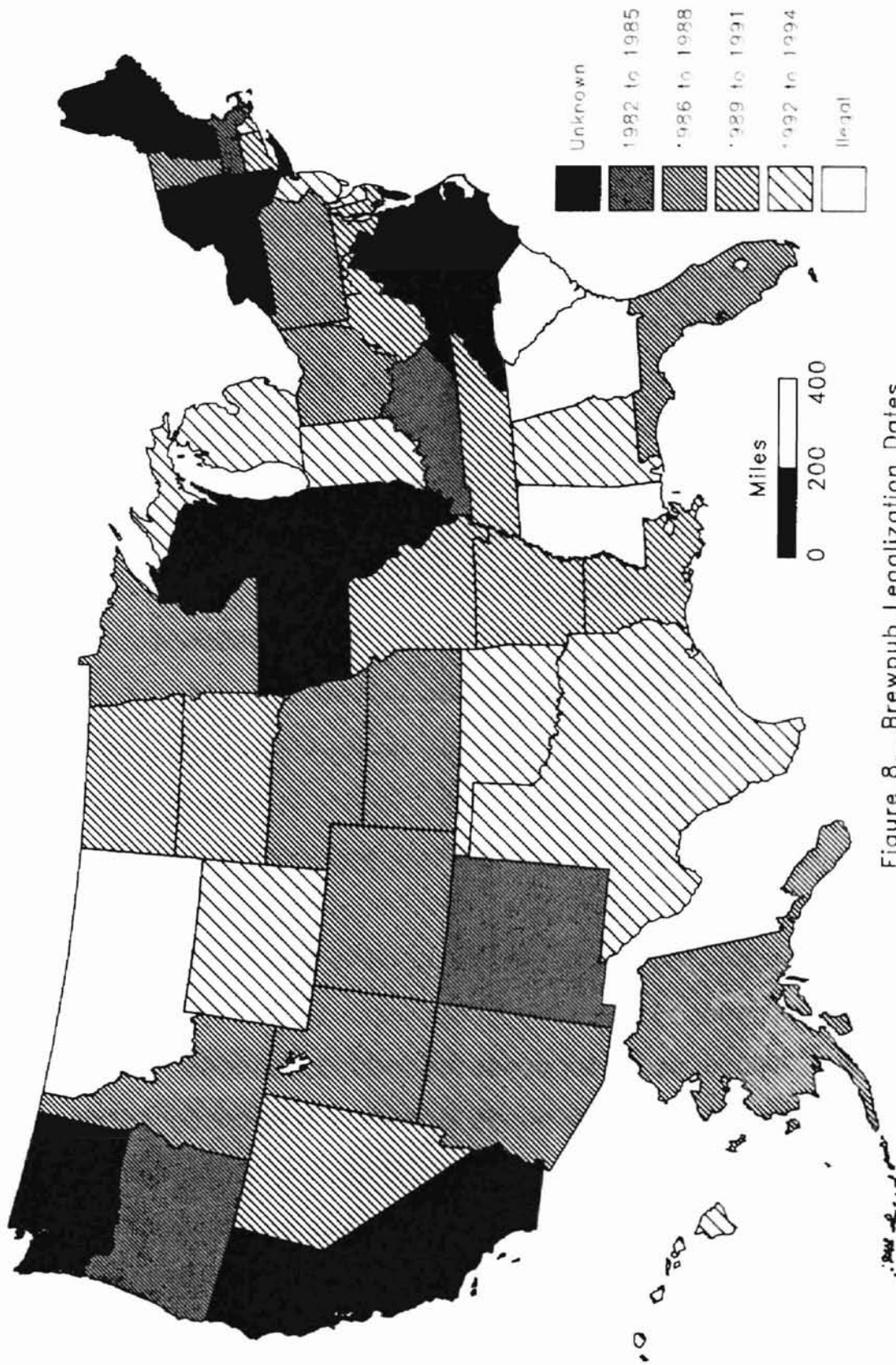


Figure 8. Brewpub Legalization Dates

Washington, simply because several people in those states were early adopters of a popular culture innovation.

By 1988, 25 states allowed brewpubs and a faster diffusion rate results. Legalizing brewpubs did not mean they automatically appeared, e.g., Alaska passed legislation in 1988 and still did not have a brewpub in 1994. By 1991, only 12 states prohibited brewpubs. The content of these laws influenced the diffusion process. Montana allowed microbreweries but not brewpubs. Alabama passed a law allowing brewpubs only in counties where breweries were located before Prohibition, limited to only three counties. Furthermore, Alabama's brewpubs must be located in either a state or federal historic district. In addition, states with dry counties, such as Tennessee and Arkansas, posed a barrier to the location of craft breweries within a state. Microbrewery diffusion was hampered by prohibitive license fees in many states such as Oklahoma.

In 1987, there were 51 craft breweries, of which 21 were brewpubs and 30 microbreweries. This year marked the end of the initial diffusion stage of slow growth. Craft breweries entered the second phase of diffusion and opened at an increasingly accelerated rate, which was sustained to 1994. Brewpubs maintained leadership in total numbers but not in number of states (Tables I and II). Craft brewery expansion steadily increased, but diffusion to new states was sometimes slowed. The years 1988 to 1991 indicated

limited diffusion of microbreweries to new states, except for 1989, when ten states became adopters. In 1988, only New Mexico, Massachusetts, and Oregon opened their first microbrewery (Figure 9). Oregon was quick to accept brewpubs but not microbreweries.

By comparing tables I and II, it was seen that each craft brewery type initially expanded to different states. This may be explained by the unwillingness of residents to open an unproved business, prohibitive legislation, or the need to be the first. The original craft brewery in a state had an advantage over all newcomers in marketing and establishing the product. Additionally, one brewery type may have followed the other into a state only after the original brewery established a market for interesting beer styles. The only states which opened both brewery types in the same year were the core states of Washington and California, as well as Maryland, which opened a brewpub and microbrewery in 1989.

In 1988, brewpubs were inaugurated in Colorado, Illinois, Vermont, Maine, and Ohio (Figure 10). By 1989, brewpub numbers grew to 69 and microbreweries increased to 51, both significant increases over the previous year. The year 1989 indicated microbrewery expansion to ten new states. The first microbreweries opened in Texas, Indiana, Illinois, Ohio, Tennessee, Missouri, Colorado, Wyoming, Connecticut, and Maryland, locating in the Great Lakes region and continuing to expand across the central United

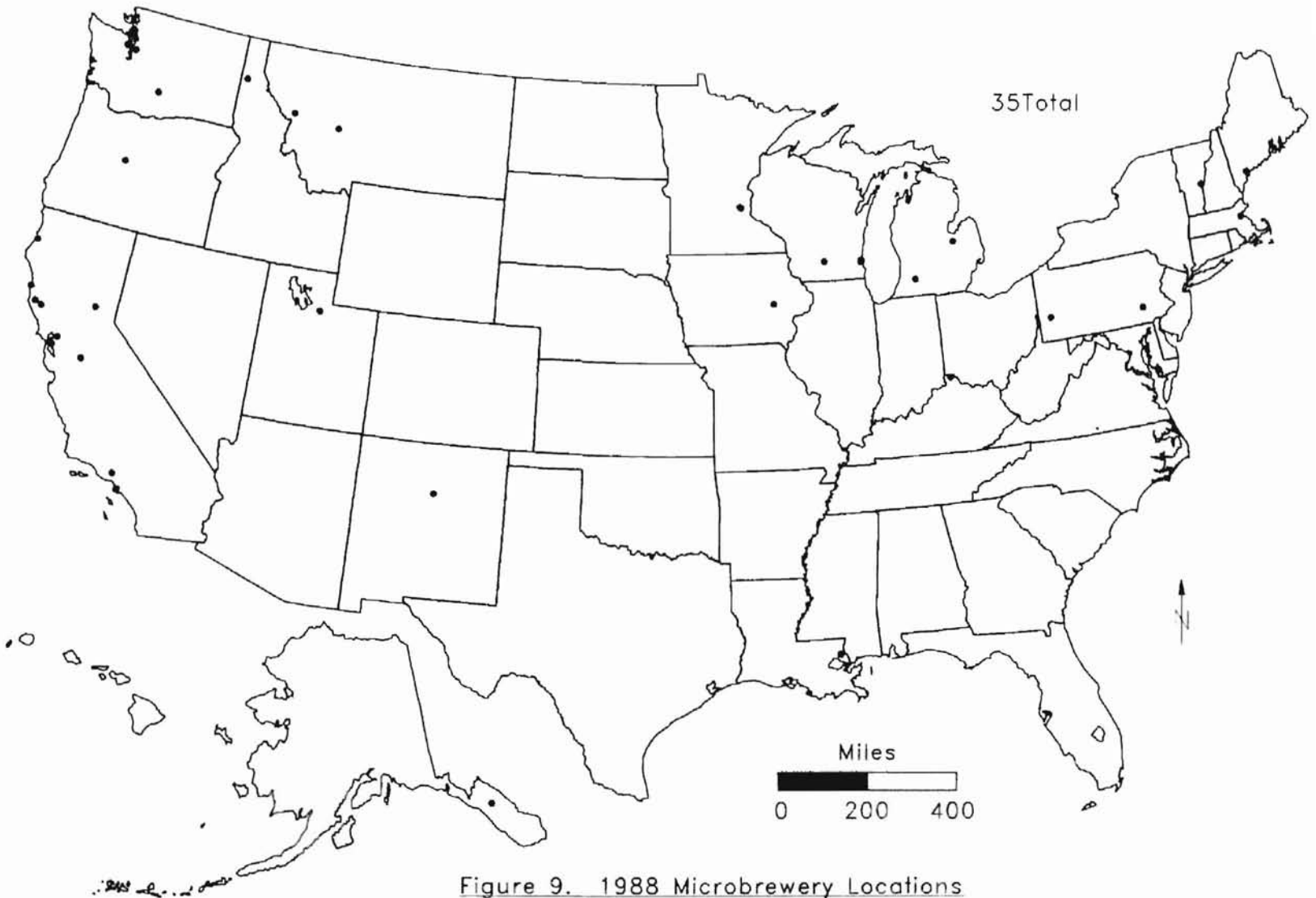


Figure 9. 1988 Microbrewery Locations  
Source: Brewers Resouce Directory

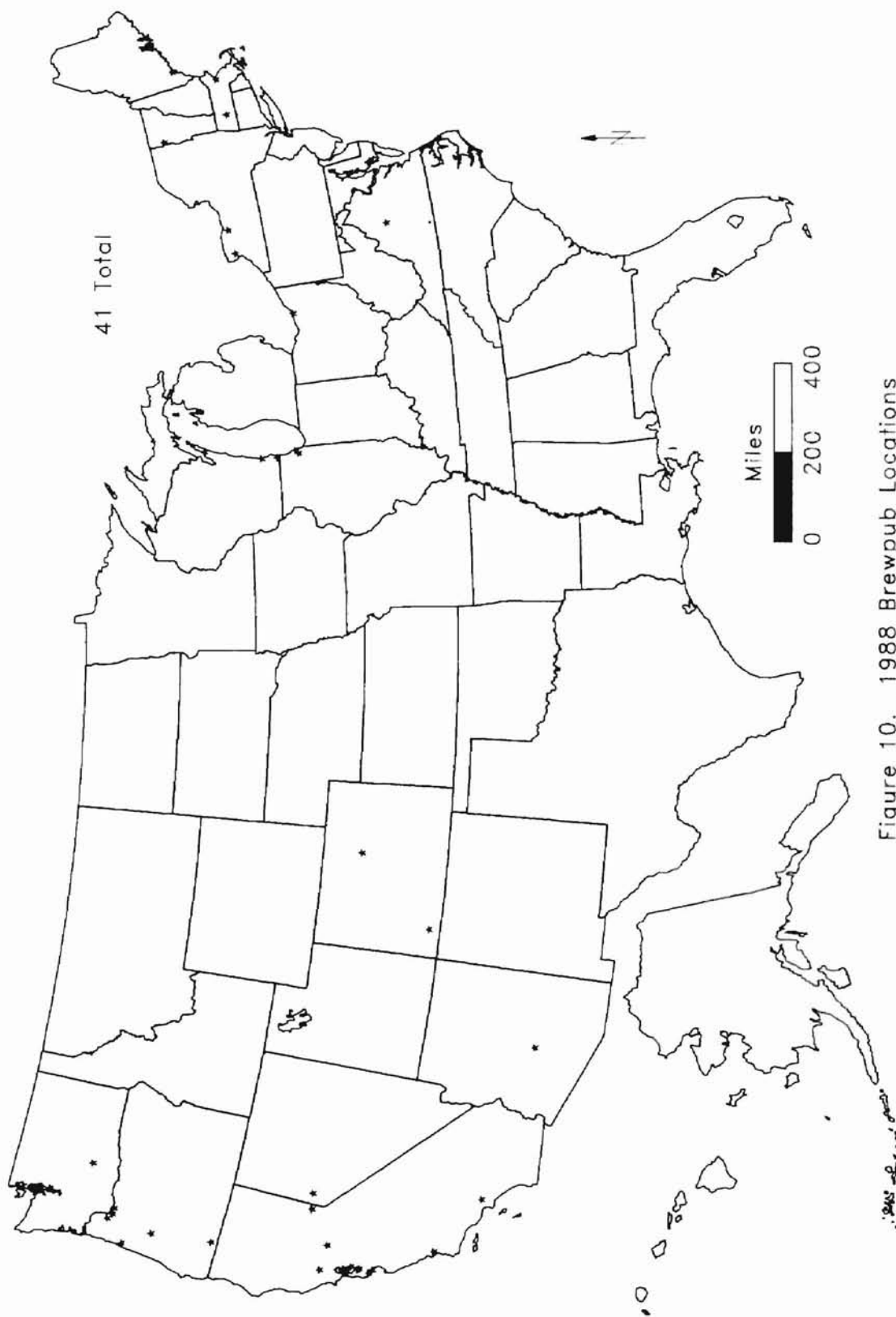


Figure 10. 1988 Brewpub Locations  
 Source: Brewers Resource Directory

States (Figure 11).

In 1989, owing to changes in legislation, brewpubs diffused to Minnesota, Florida, Maryland, Pennsylvania, Kansas, and Utah (Figure 12). With the addition of Kansas, brewpubs occupied the central United States. By 1990, brewpubs were firmly established in southern California and all along the West coast (Figure 13). Brewpubs were clustered around the San Francisco Bay area, Phoenix, Arizona, and Portland, Oregon. The only state adopting its first brewpub was Iowa. Microbreweries lagged behind brewpubs in total number but not in number of states. Thirty states maintained micros while only 22 had brewpubs.

Comparing the 1991 map (Figure 14) to Figure 8 (brewpub legalization dates), growth during the years 1989 to 1991 was determined by legalization dates. By 1991, South Dakota, Missouri, New Hampshire, and Louisiana each gained a brewpub, once laws changed. The total number of brewpubs was 129. The anomaly of Indiana's brewpub opening in 1991, when the map of legalization dates shows the state did not change its law until 1992-1994, may be due to using the date of incorporation as the year of opening rather than the date the doors open to the public.

During 1990, diffusion of microbreweries to new states once again decreased. Expansion was limited to Virginia and New York (Figure 15). However, the number increased from 51 to 61 with infilling in California, Colorado, Illinois, Maine, Vermont, and Washington (Table II). In



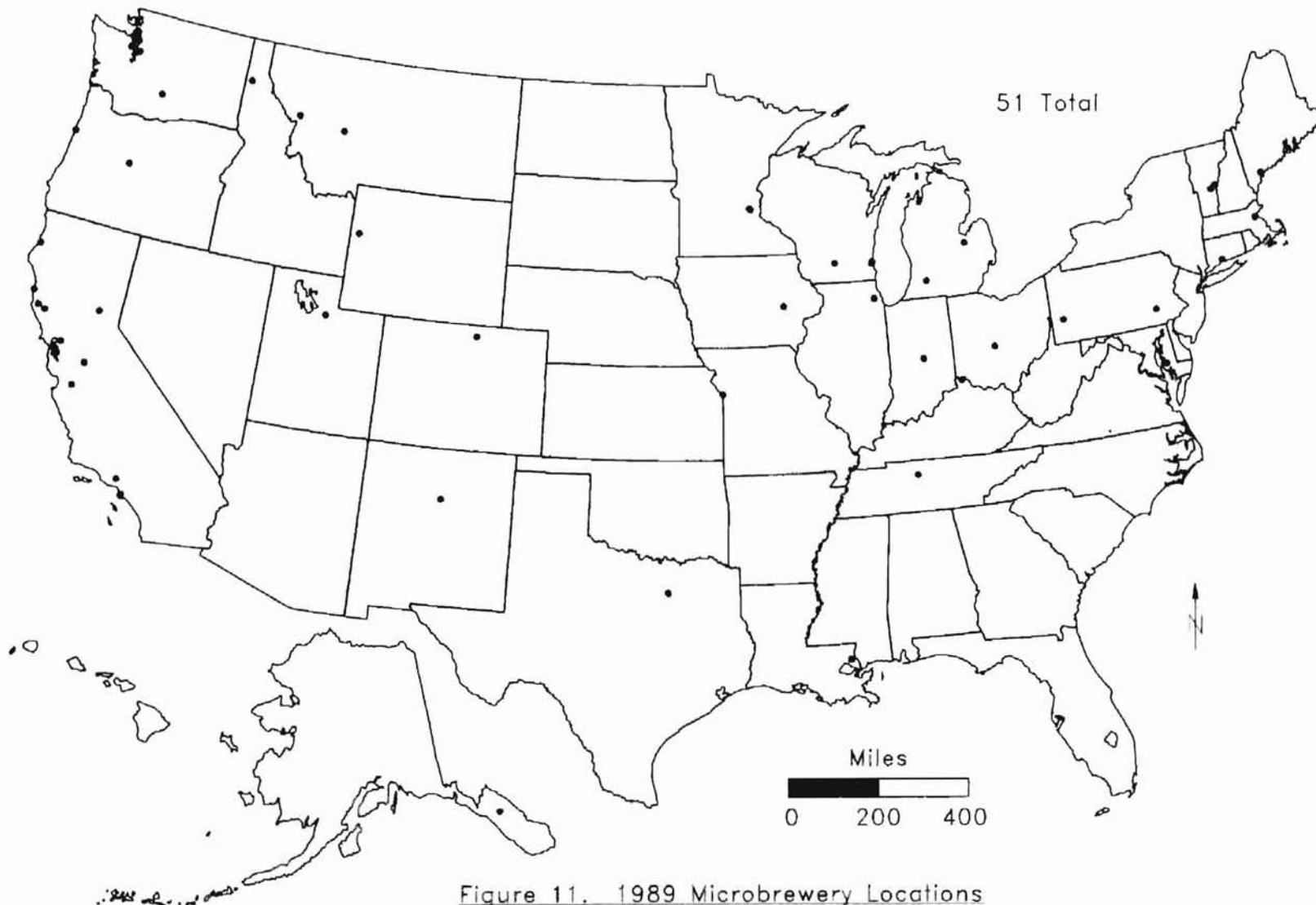


Figure 11. 1989 Microbrewery Locations  
Source: Brewers Resouce Directory

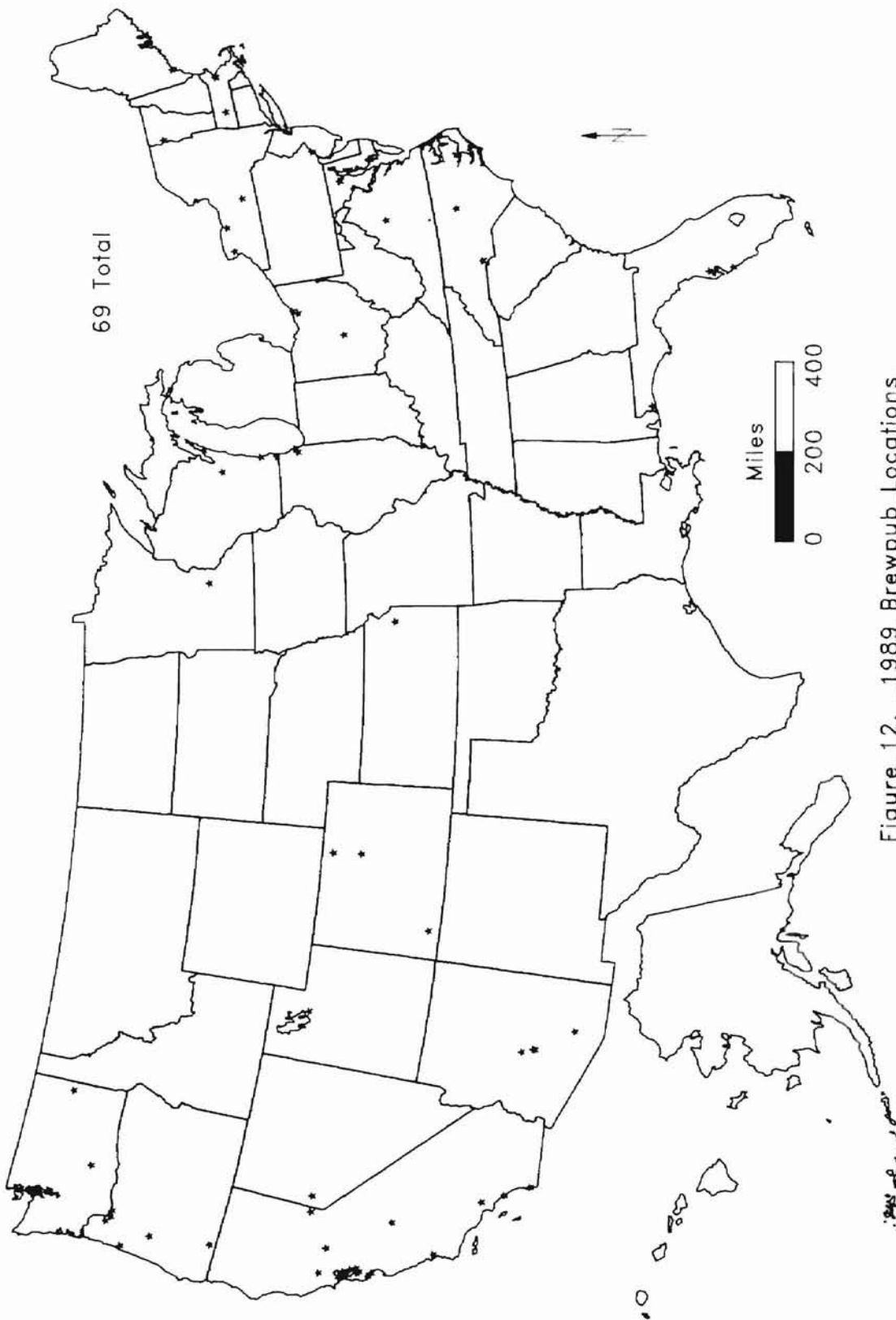


Figure 12. 1989 Brewpub Locations

Source: Brewers Resource Directory

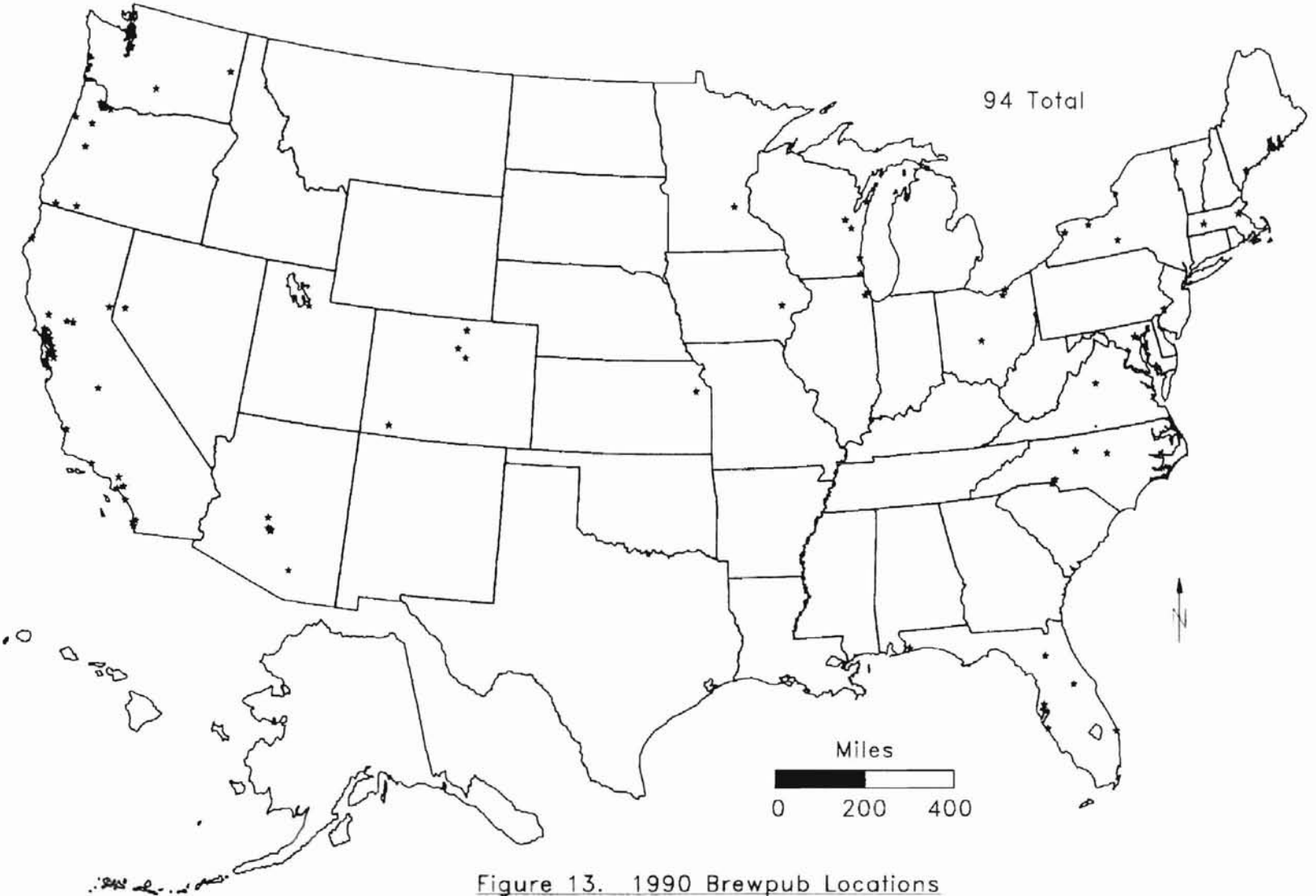


Figure 13. 1990 Brewpub Locations  
Source: Brewers Resource Directory

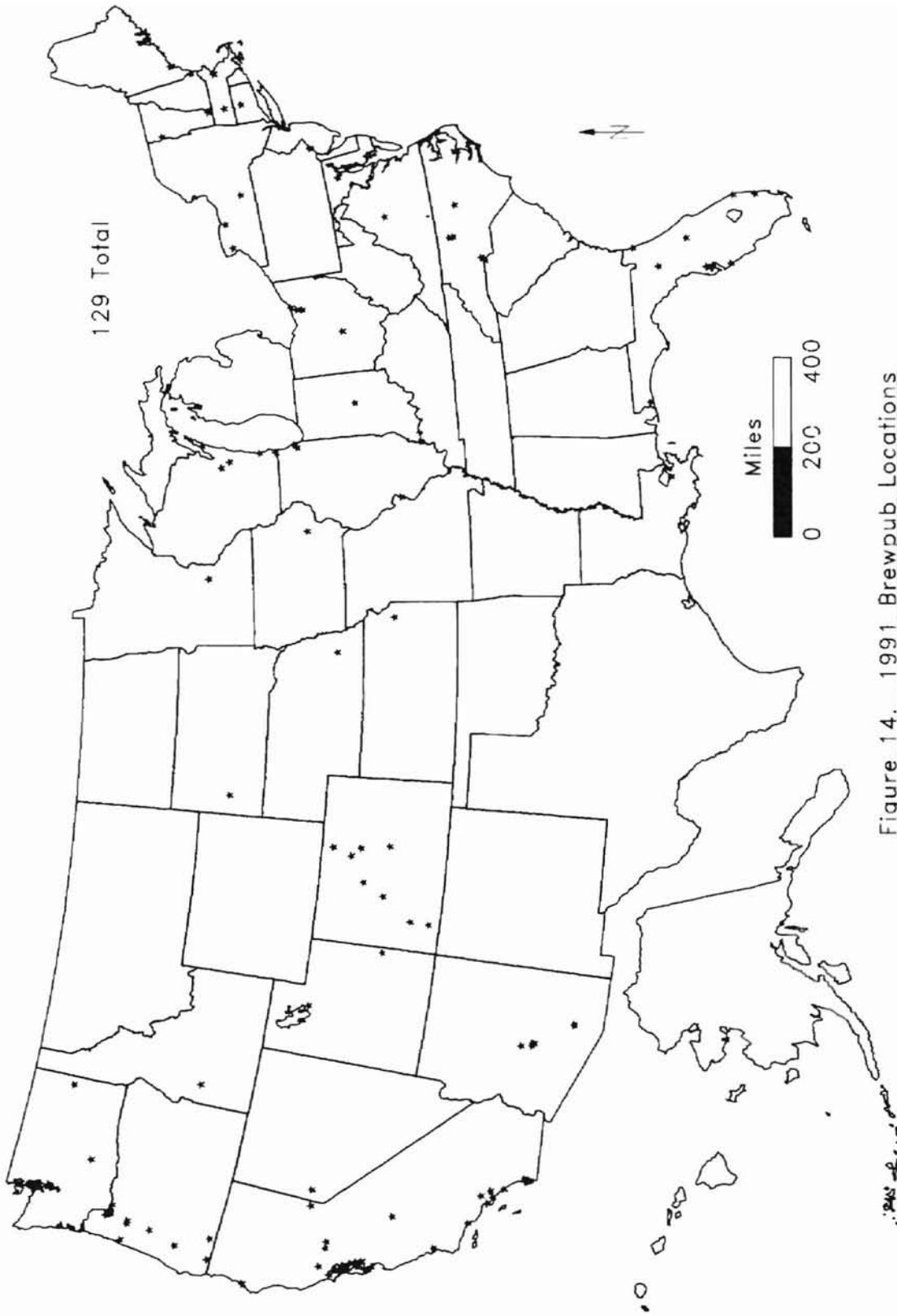


Figure 14. 1991 Brewpub Locations

Source: Brewers Resource Directory

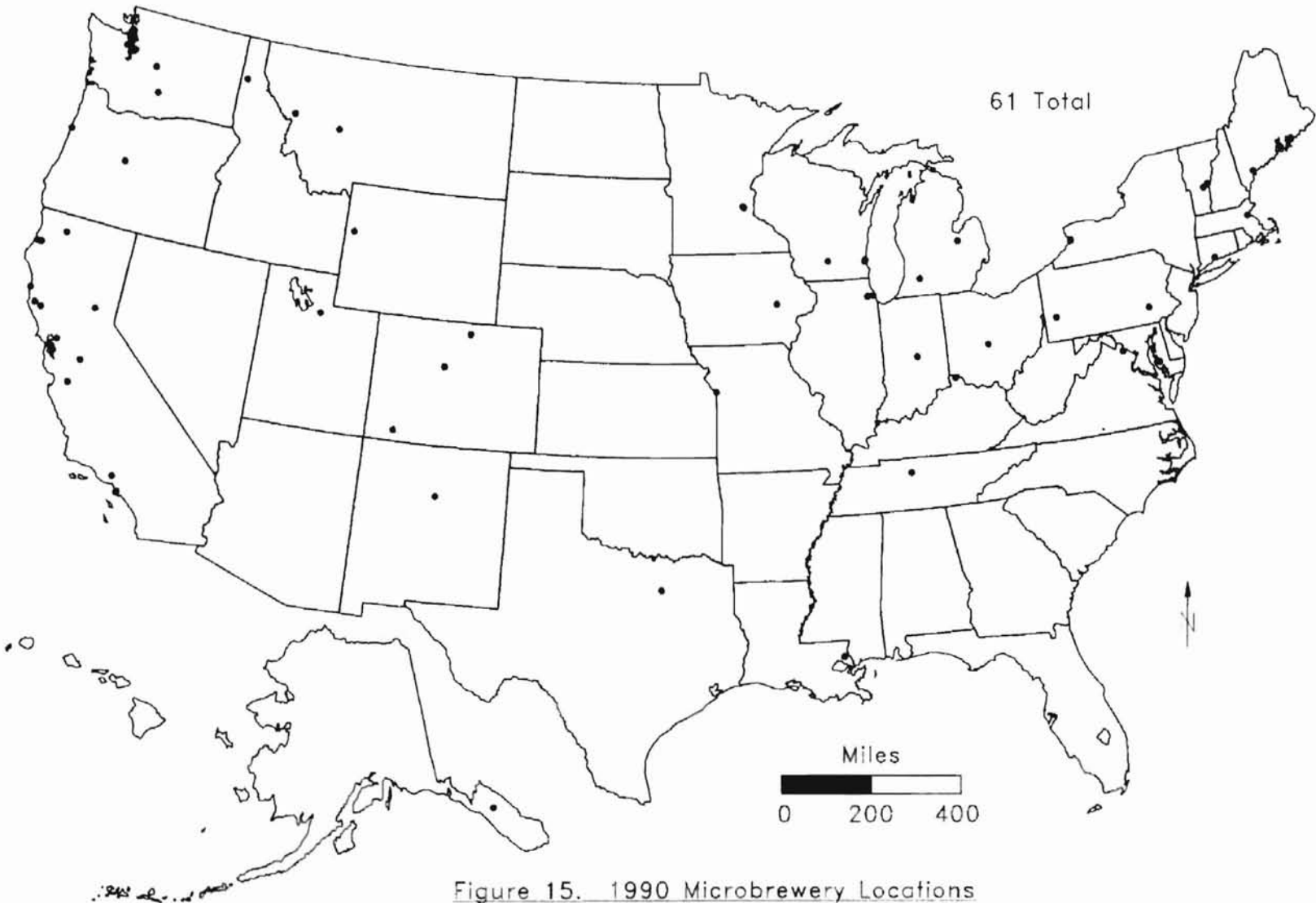


Figure 15. 1990 Microbrewery Locations  
Source: Brewers Resource Directory

1991, no microbrewery opened in a new state but the total number increased to 70 (Figure 16).

The period of limited microbrewery expansion to new states changed in 1992, when Florida, Kansas, New Hampshire, and Alabama opened one each, bringing the total to 95 (Figure 17). It is unknown what barriers to diffusion kept microbreweries from entering new states. Several possibilities are the increased costs of buying bottling lines, keg fillers and kegs, the problem of finding a beer distributor willing to carry microbrewery products, zoning, exorbitant state beer taxes, or prohibitive state licensing fees.

Brewpub growth to new states remained vigorous except in 1990 and 1994 when Iowa and Wyoming respectively were the only adopters. In 1992, 168 brewpubs were in all but 11 states (Figure 18). New additions included Oklahoma, Arkansas, New Mexico, Kentucky, West Virginia, Tennessee, and the District of Columbia.

By 1993, craft brewery numbers were a phenomenal 360, including 124 micros and 236 brewpubs (Figures 19 and 20). Microbreweries, after expansion to new states in 1992, again manifested slow diffusion with only North Carolina opening its first microbrewery. This trend continued in 1994 with the addition of South Carolina (Figure 21). During 1993, the growth from 95 to 124 occurred because of increased numbers in California, Colorado, Idaho, Louisiana, Maine, Maryland, Massachusetts, Montana, Oregon,

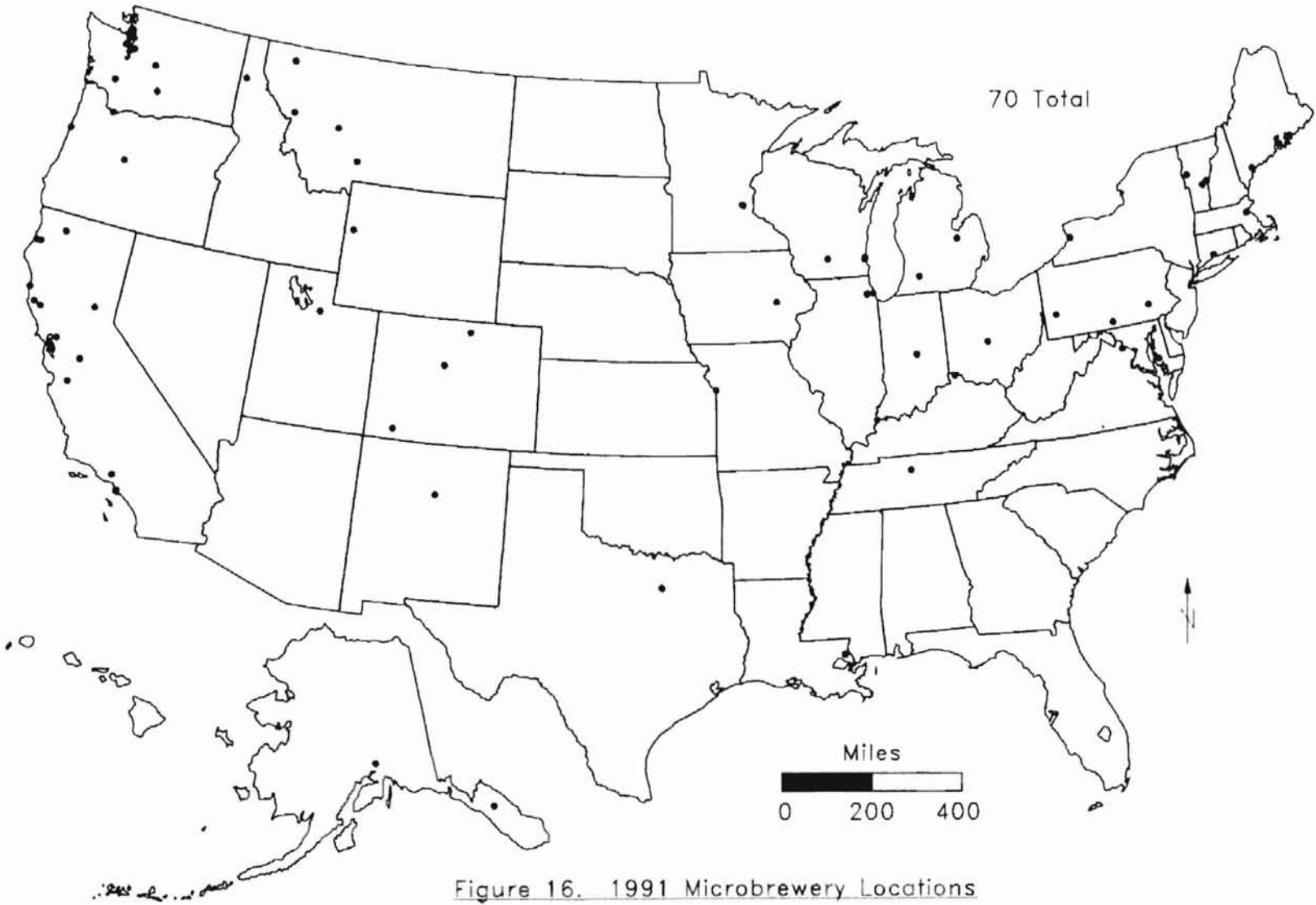


Figure 16. 1991 Microbrewery Locations  
Source: Brewers Resouce Directory

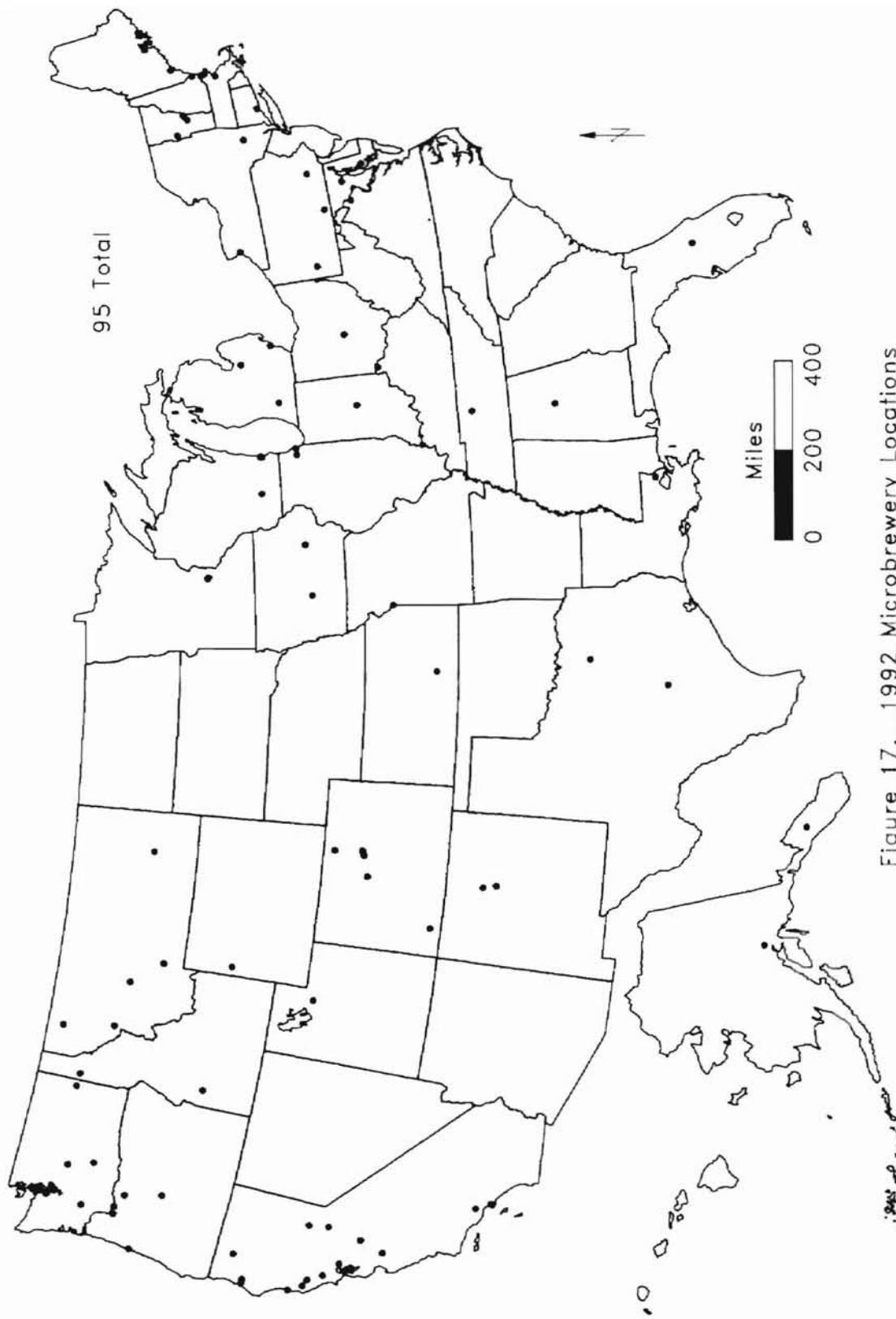


Figure 17. 1992 Microbrewery Locations

Source: Brewers Resource Directory



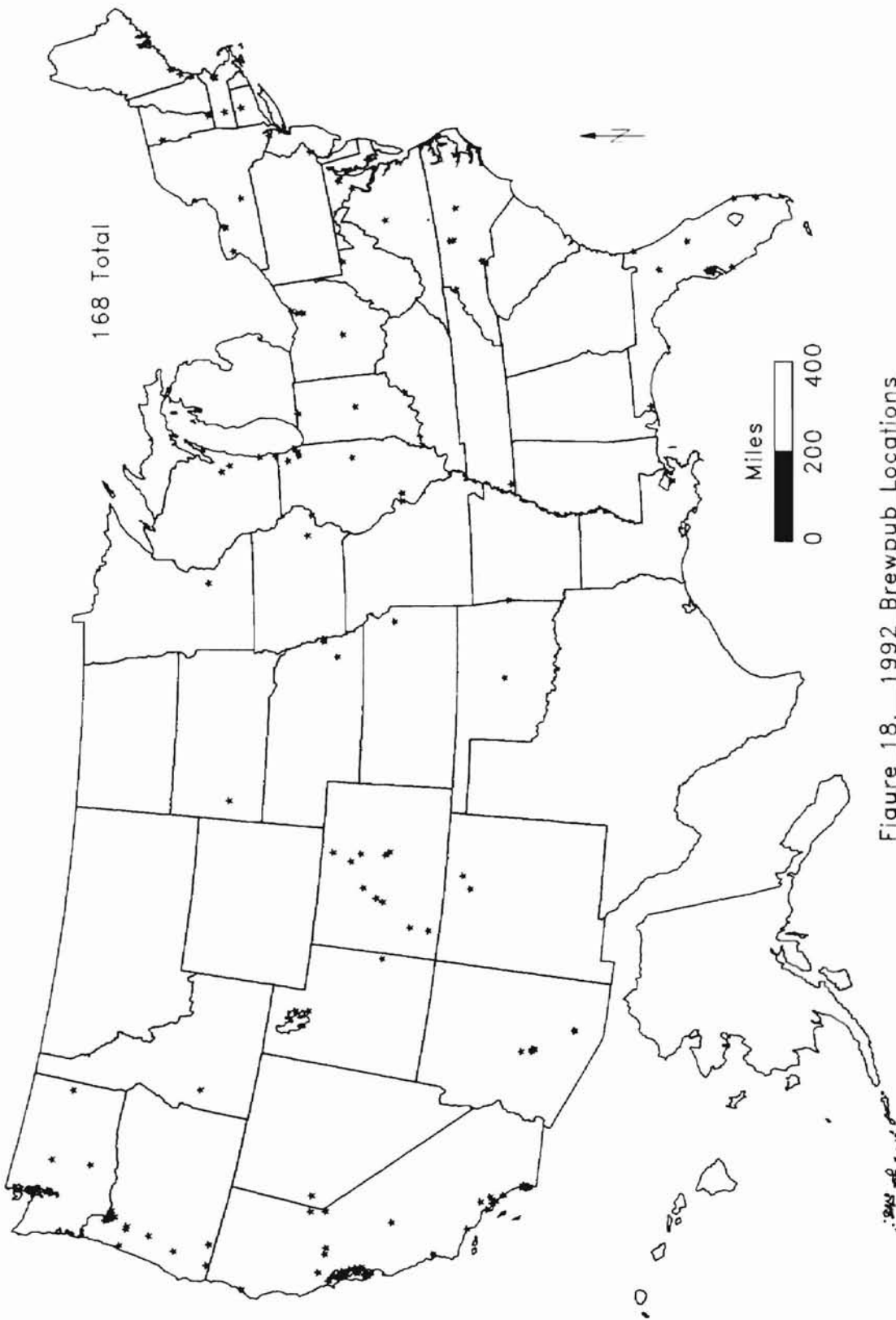


Figure 18. 1992 Brewpub Locations

Source: Brewers Resource Directory

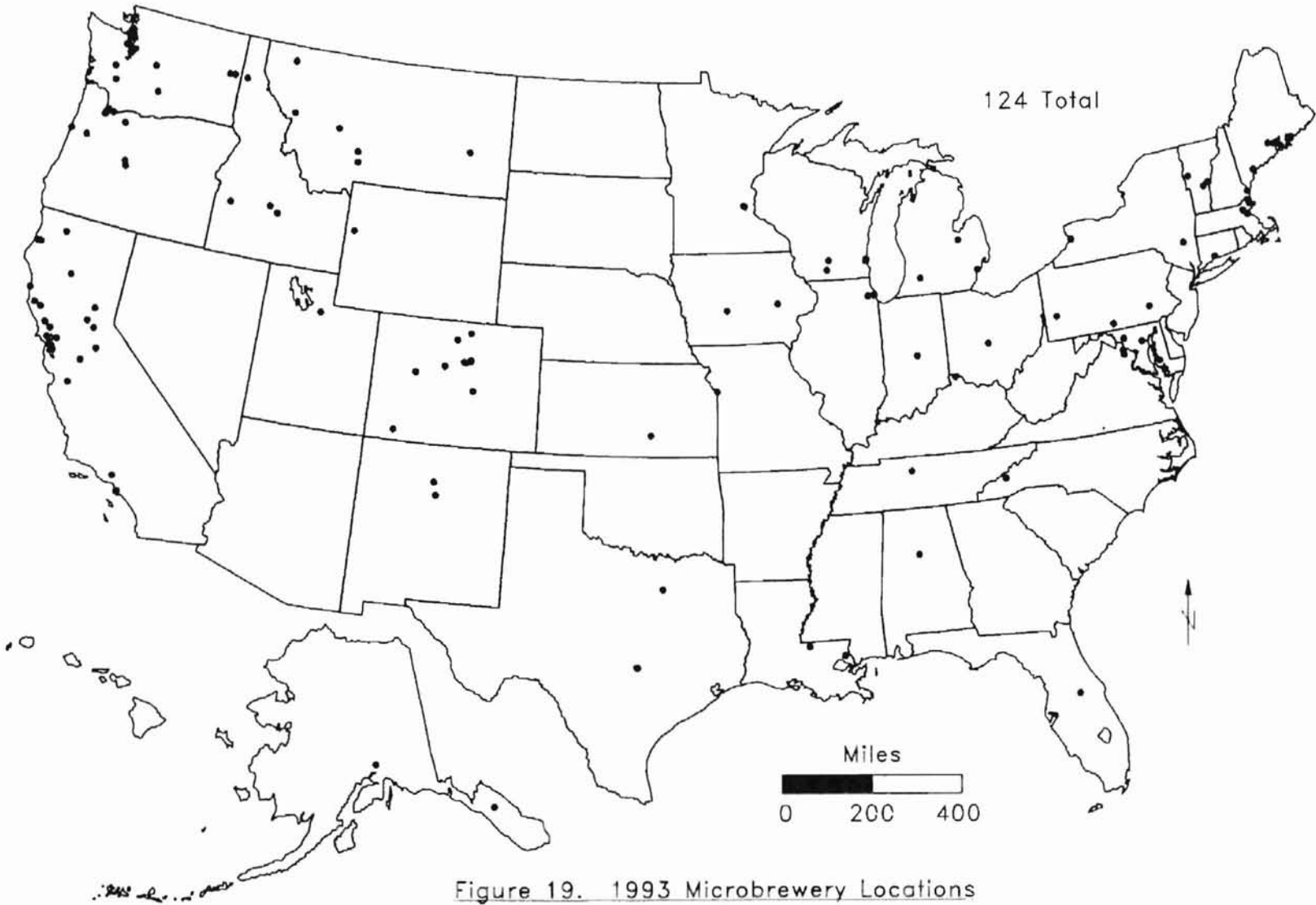


Figure 19. 1993 Microbrewery Locations  
Source: Brewers Resource Directory

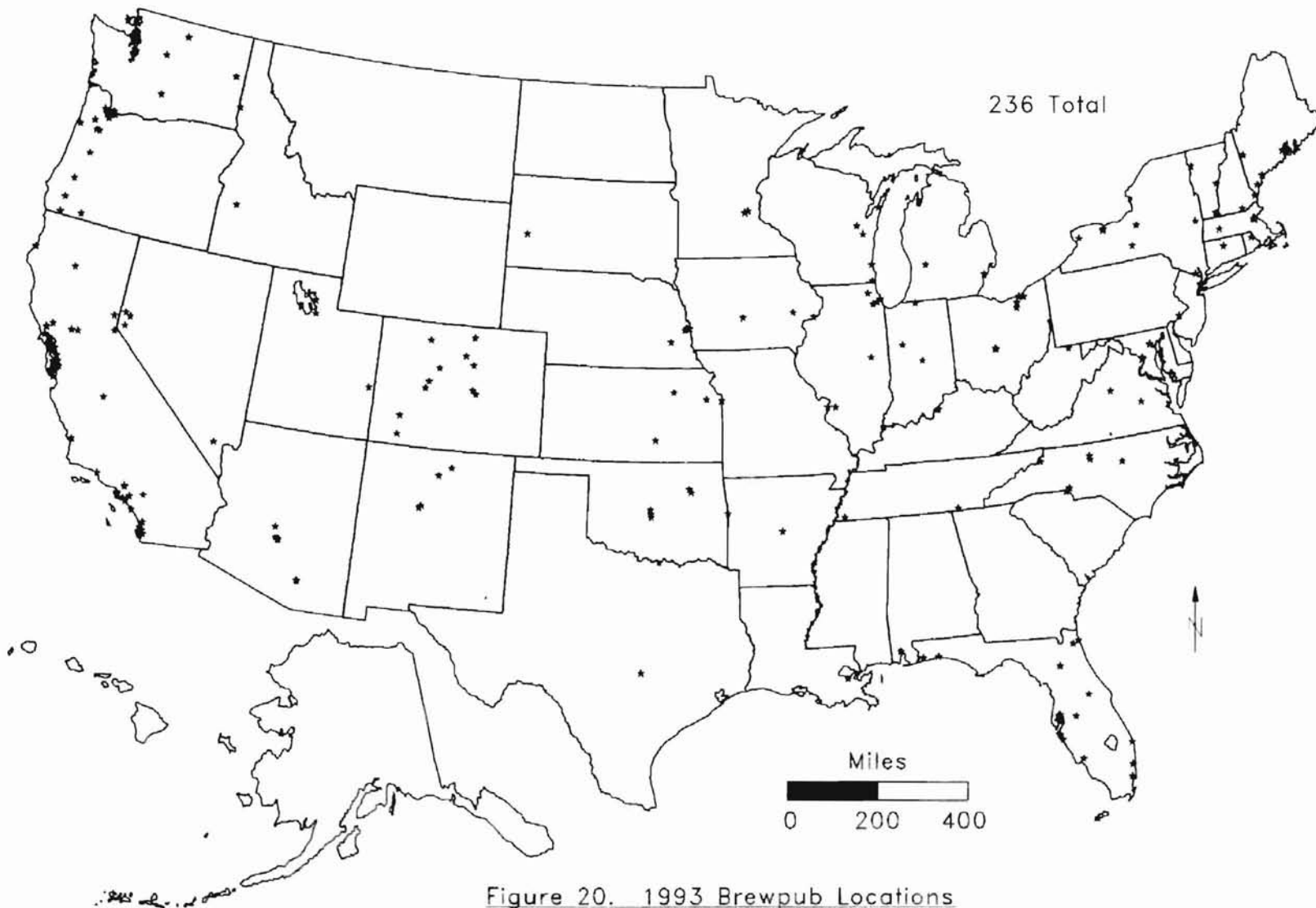


Figure 20. 1993 Brewpub Locations  
Source: Brewers Resouce Directory

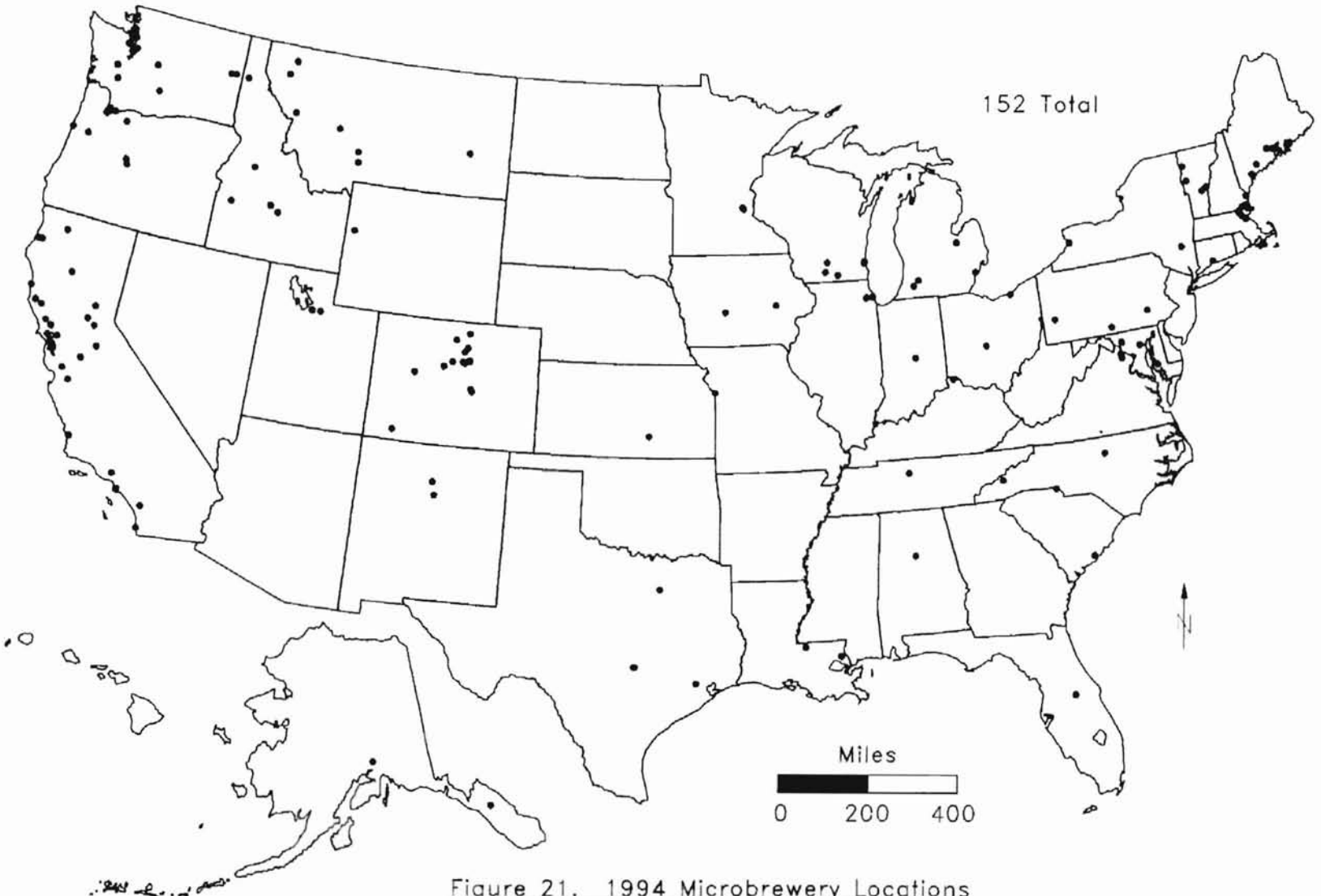


Figure 21. 1994 Microbrewery Locations  
Source: Brewers Resouce Directory

Washington, and Wisconsin. In 1993, brewpubs diffused to Alabama, Michigan, Rhode Island, and Texas. In 1994, brewpub diffusion to new states was limited to Wyoming (Figure 22).

The effects of time-distance decay were apparent by 1994 (Figures 21 and 22). In the case of craft breweries, most adoption took place close to the region of origin, the West coast. California contained the highest number of both brewpubs (63) and microbreweries (25). Regarding brewpubs, the neighborhood effect, rapid adoption in small groups around an initial adopter, was clearly evident in San Francisco, California, and the Lake Tahoe area in California and Nevada. Additionally, small clusters were represented around Los Angeles, California; San Diego, California; Portland, Oregon; Chicago, Illinois; and Cleveland, Ohio. The neighborhood effect for microbreweries was less intense. Clusters were again depicted around San Francisco, California, and Portland, Oregon. The areas around Denver, Colorado, and Boston, Massachusetts, indicated some grouping. A more thorough discussion of brewpub locations around cities is contained in Chapter V.

The barrier of legislation was previously explained; however, the map of 1994 brewpub locations reflected a lack of establishments in the South. The influence of religion or politics was probably the cause. Skinner described a "Dixie Drought Belt" in "Drinking Place Names in the

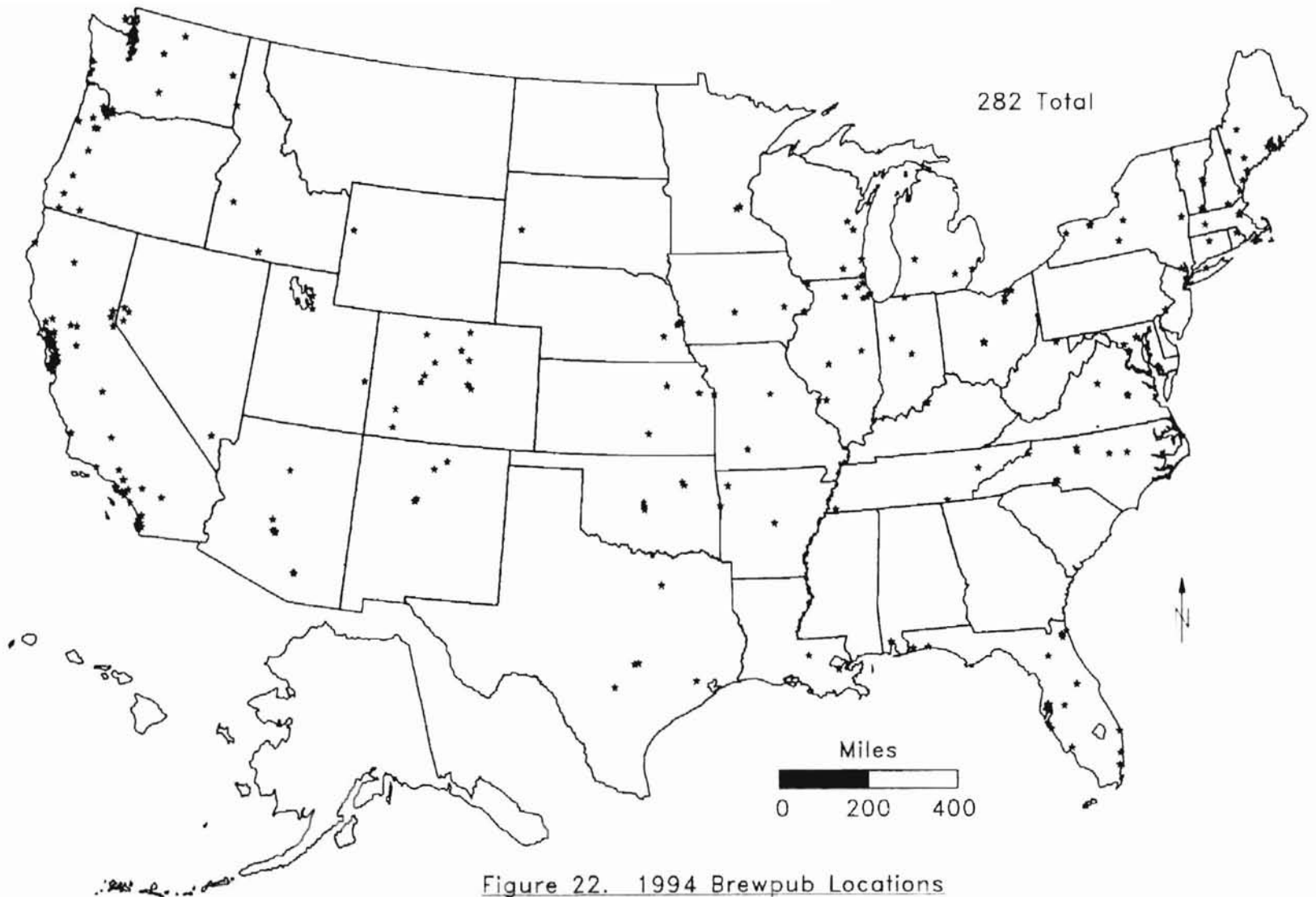


Figure 22. 1994 Brewpub Locations  
Source: Brewers Resource Directory

Central United States" (1986, 15). The same "Drought" was true of craft brewery locations. Political and religious considerations repressed alcohol consumption in the South and deterred the opening of craft breweries.

Microbreweries were found in Alabama and South Carolina, whereas Mississippi, Georgia, and South Carolina legislated against the brewpub concept. Alabama changed its law in 1992 to allow brewpubs but only in a very limited area.

From 1982 to 1994, craft breweries diffused throughout the U.S. By 1994, craft breweries were in 45 states. Brewpub diffusion was hampered by legislation and, as a result, did not rapidly proliferate to new states until 1988. Diffusion was both contagious and hierarchical as brewpubs jumped from West coast to East coast in 1986, then diffused towards the center of America. Expansion to new states was slow in 1990 and 1994, but brewpubs were in 42 states by 1994. This was a change over 1990 when microbreweries were in more states than brewpubs. The effects of distance and time indicate most adoption was in the region of origin and the neighborhood effect was strong around San Francisco and Lake Tahoe.

Rapid microbrewery expansion to new states began in 1986 with openings in six states. Diffusion was contagious and hierarchical but microbreweries did not jump directly to the East coast; instead, they diffused to Montana, Iowa, Michigan, Alaska, Louisiana, Utah, Wisconsin, Minnesota, and Maine. Then microbreweries moved along the East coast

and Great Lakes area. The years 1986 and 1989 reflected the most expansion to new states. In several years none or only a few states recorded their first microbrewery. In 1994, microbreweries were in 36 states.

Craft breweries are in the second stage of diffusion. While growth to new states was limited in some years, the overall number of craft breweries increased at a quick pace (Tables I and II). Initially, microbreweries diffused to new states faster than brewpubs, but by 1994, the opposite was true. The core culture areas of New York City and Los Angeles were slow to accept craft breweries. Hierarchical diffusion, explored in the state level analysis section, seemed to be from smaller urban areas up the hierarchy to large urban areas. Each craft brewery type did not diffuse to the same state at the same time, possibly due to prohibitive legislation or the need to find if a market for unfamiliar beer existed.

Finally, regarding diffusion patterns, Ormand suggested susceptibility to an innovation was more crucial than distance or time since mass media had effectively reduced the effects of distance. Inhabitants of a place will not respond identically to an innovation. People have the right and ability to say no (Jordan et al. 1994).

#### Regional Scale

To analyze craft brewery locations on a regional scale, location quotients, at the state level, were



calculated for the years 1990 and 1994. By using location quotients, states with a high craft brewery density, as compared to population, were depicted. Brewpubs, microbreweries, and both taken together as craft breweries, were each studied at the regional level.

Location quotients are a simple way to measure if a region, in this case a state, has a greater or lesser share of an activity than the national average (Isard 1960). Craft brewery location quotients were based on the number of craft breweries in a state, and in the nation, and the state and national population for any given year. They were used to determine if a state had a higher or lower number of breweries per person than the nation. The equation used in this study was as follows:

$$LQ = \frac{\text{\# of establishments in nation}}{\text{national population}} \div \frac{\text{\# of establishments in state}}{\text{state population}}$$

A location quotient of 1.00 means the state has the same number of breweries per person as the nation. A location quotient less than 1.00 means the state has a lower number of breweries per person than the nation. A location quotient answer above 1.00 means the state has a higher number of breweries per person than the nation.

Location quotients do have limitations. States with a high number of people per craft brewery were not necessarily states with a large amount of industry activity. For example, Vermont (LQ= 6.33) had a higher

quotient of brewpubs than California (LQ= 1.84) in 1994, even though it had only four establishments whereas California had 63. This anomaly was caused by Vermont's low population. However, the quotient did mean that on a state to state comparison, for 1994 only, Vermont had more breweries per person than California. Therefore, the question was asked, do some regions or states have a clustering of more craft breweries per person than others?

The resulting location quotients for a year were ranked and states with high and low numbers could be identified and discussed. Tabular data were mapped using quintiles (each of the five categories have the same number of states), making states/regions with high location quotients easily identifiable.

The benefit of location quotient analysis was the use of readily available data. Census data for 1990 and 1994 were easily gathered. Database information regarding the number of brewpubs or microbreweries in a state, for 1990 and 1994, were quickly obtained.

Used in conjunction with data presented in the section on national scale, state to state comparison of location quotients highlighted where craft brewing was most prevalent among the nation's population. For the years 1990 and 1994, location quotients were compared for change over time. If a state's location quotient increased, craft breweries were becoming more concentrated. Craft brewery location quotients provided a single indicator of the

states which had a high or low number of breweries per person.

The year 1990 was chosen because sufficient states have either brewpubs, microbreweries, or both to reflect a nationwide geographic spread. The year 1994 was the last one studied in this thesis. In 1990, states in the Pacific Northwest, the Mountain West, and Upper New England had the highest ranking of craft brewery location quotients, ranging from 8.55 to 3.30 (Figure 23). The next category, 2.92 to 1.33 characterized California, Nevada, Arizona, Utah, Idaho, Alaska, and Wisconsin. The middle category represented those states just above or just below the nationwide score of 1.00. These states included New Mexico, Iowa, Minnesota, Virginia, Maryland, Rhode Island, and Massachusetts and were close to the national mean of 1.00 craft brewery per 1,604,579 people (Table III).

The last two categories represented states well below the national mean. The map also depicted those states devoid of craft breweries. The South and Great Plains appeared as regions lacking any activity. Of the 35 states with craft breweries, 20 had quotients above 1.00 (Table III). States quick to adopt craft breweries were located in the top ten except for Colorado which received its first brewery in 1988. Vermont was ranked first with an LQ of 8.55. The lowest ranking was Texas with .094. This was expected of a state with only one craft brewery to serve almost 17 million people!



TABLE III

## 1990 RANKING OF CRAFT BREWERY LOCATION QUOTIENTS

155 CRAFT BREWERIES		MEAN=1	OR	1,604,579	PEOPLE
<u>RANK</u>	<u>STATE</u>	<u>LO</u>		<u>#</u>	<u>OF CRAFT BREWERIES</u>
1	Vermont	8.55		3	
2	Oregon	7.338		13	
3	Montana	4.016		2	
4	Maine	3.92		3	
5	Wyoming	3.537		1	
6	Colorado	3.409		7	
7	Washington	3.297		10	
8	Alaska	2.917		1	
9	Wisconsin	2.624		8	
10	California	2.426		45	
11	Arizona	2.188		5	
12	Utah	1.862		2	
13	Idaho	1.593		1	
14	Nevada	1.335		1	
15	North Carolina	1.21		5	
16	Iowa	1.155		2	
17	Minnesota	1.10		3	
18	Massachusetts	1.066		4	
19	New Mexico	1.059		1	
20	Maryland	1.006		3	
21	Connecticut	.976		2	
22	Florida	.744		6	
23	Kansas	.647		1	
24	Ohio	.591		4	
25	Illinois	.561		4	
26	Pennsylvania	.54		4	
27	Virginia	.518		2	
28	Kentucky	.435		1	
29	Louisiana	.38		1	
30	New York	.356		4	
31	Michigan	.345		2	
32	Tennessee	.328		1	
33	Missouri	.313		1	
34	Indiana	.289		1	
35	Texas	.094		1	

When craft breweries were separated, the actions of each type initially moving to different states became noticeable. States which have microbreweries but not brewpubs were conspicuous. For example, Montana, Wyoming, Idaho, Texas, Louisiana, Michigan, Indiana, and Alaska had high quotients (Figure 24). When compared to the brewpub map, these same states lacked activity (Figure 25). Only Vermont was ranked in the top category for both brewery types. Nevada, Arizona, and Florida had brewpubs but not microbreweries. One constant on both maps was the ranking of the Middle Atlantic states in the lowest category due to a high population concentration.

Seventeen of the 30 states with microbreweries were above the national mean and 15 of the 22 states with brewpubs were above the national mean, further highlighting the faster diffusion and acceptance of microbreweries in new states (Tables IV and V). Oregon had the highest number of brewpubs per person and Vermont the highest number of microbreweries. No states had the same ranking for both brewery types.

The 1994 craft brewery map did not look significantly different. More states, 45, had craft breweries and the highest location quotients were in the Pacific Northwest, Mountain West and Upper New England (Figure 26). The second highest category included Alaska, California, Nevada, Arizona, Utah, Nebraska, and Oklahoma. States with

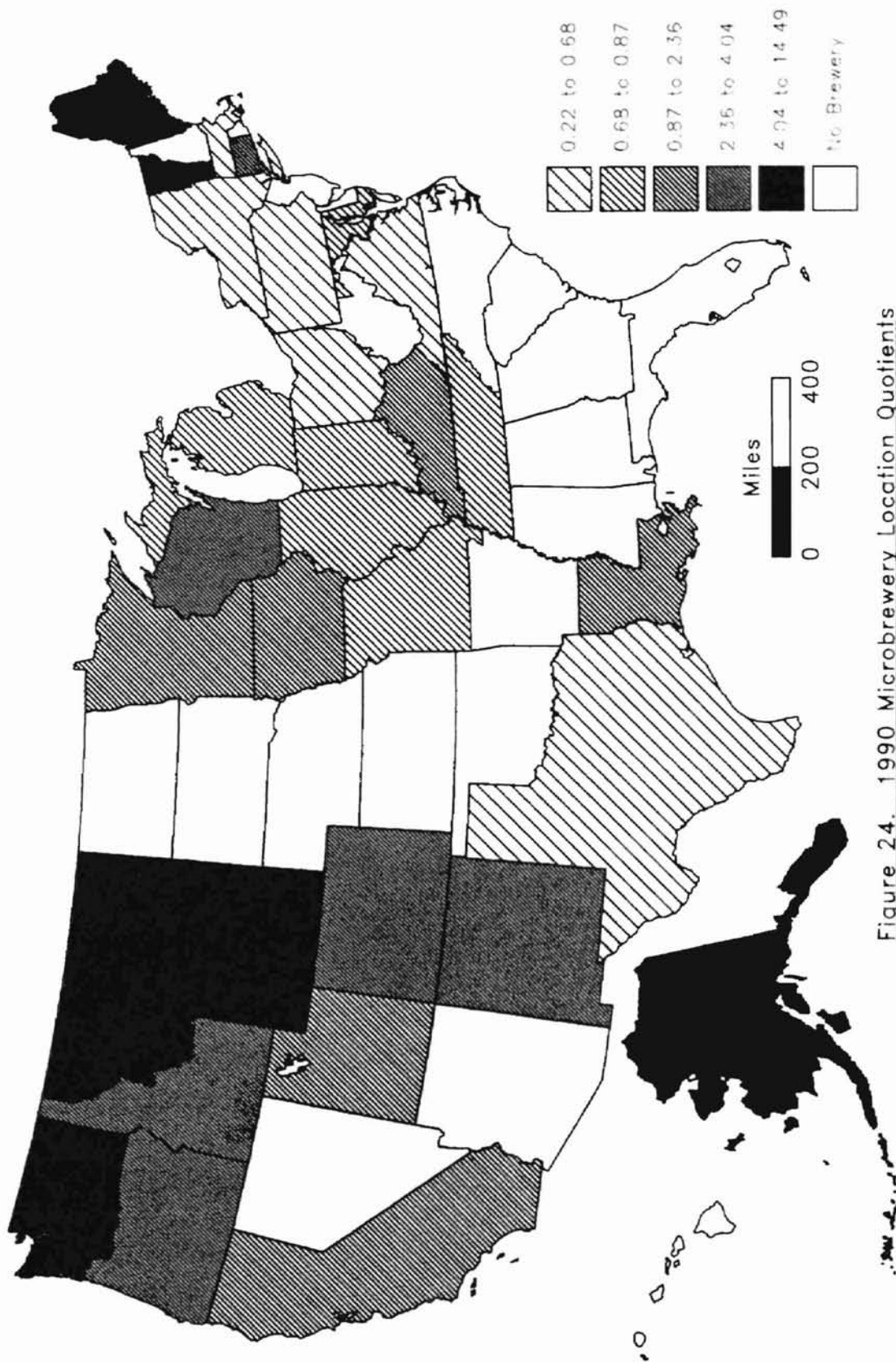


Figure 24. 1990 Microbrewery Location Quotients



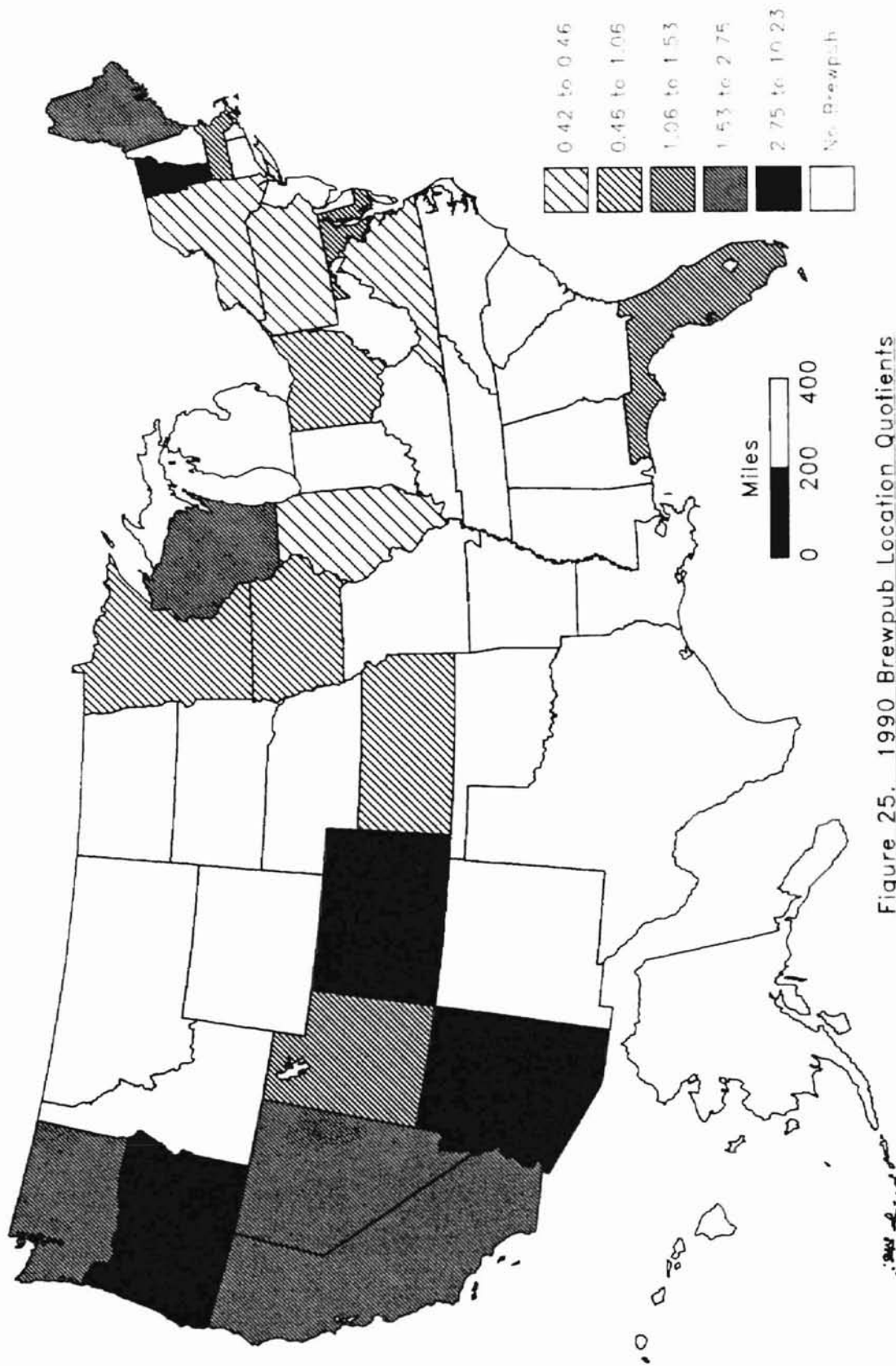


Figure 25. 1990 Brewpub Location Quotients

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TABLE IV

## 1990 RANKING OF BREWPUB LOCATION QUOTIENTS

94 BREWPUBS		MEAN=1 OR 2,645,849 PEOPLE	
<u>RANK</u>	<u>STATE</u>	<u>LQ</u>	<u># OF BREWPUBS</u>
1	Oregon	10.239	11
2	Vermont	4.7	1
3	Arizona	3.609	5
4	Colorado	3.212	4
5	California	2.756	31
6	Wisconsin	2.70	5
7	Nevada	2.20	1
8	Washington	2.17	4
9	Maine	2.15	1
10	North Carolina	1.995	5
11	Utah	1.535	1
12	Massachusetts	1.319	3
13	Florida	1.227	6
14	Maryland	1.10	2
15	Kansas	1.067	1
16	Iowa	.952	1
17	Ohio	.731	3
18	Minnesota	.604	1
19	Illinois	.462	2
20	Pennsylvania	.445	2
21	New York	.44	3
22	Virginia	.427	1

TABLE V

## 1990 RANKING OF MICROBREWERY LOCATION QUOTIENTS

61 MICROBREWERIES            MEAN=1    OR    4,077,211    PEOPLE

<u>RANK</u>	<u>STATE</u>	<u>LQ</u>	<u># OF MICROBREWERIES</u>
1	Vermont	14.49	2
2	Montana	10.20	2
3	Wyoming	8.988	1
4	Alaska	7.41	1
5	Maine	6.64	2
6	Washington	5.026	6
7	Idaho	4.049	1
8	Colorado	3.71	3
9	Oregon	2.868	2
10	New Mexico	2.619	1
11	Wisconsin	2.50	3
12	Connecticut	2.48	2
13	Utah	2.366	1
14	California	1.918	14
15	Minnesota	1.863	2
16	Iowa	1.468	1
17	Kentucky	1.106	1
18	Louisiana	.96	1
19	Michigan	.877	2
20	Maryland	.85	1
21	Tennessee	.835	1
22	Missouri	.796	1
23	Indiana	.735	1
24	Illinois	.71	2
25	Pennsylvania	.686	2
26	Massachusetts	.677	1
27	Virginia	.658	1
28	Ohio	.375	1
29	Texas	.24	1
30	New York	.226	1

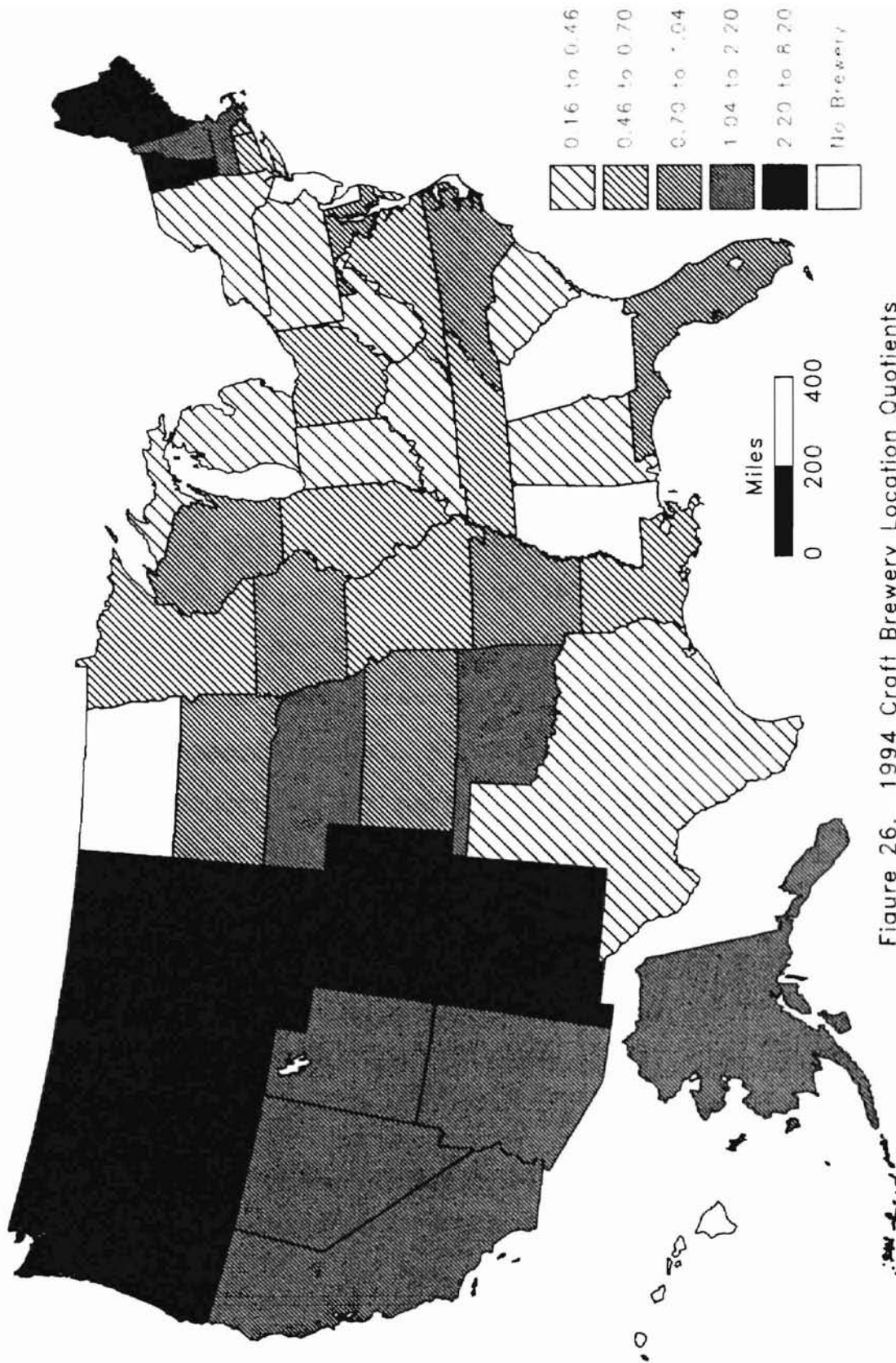


Figure 26. 1994 Craft Brewery Location Quotients

quotients close to the national mean, one brewery per 587,736 people, included North Carolina, Kansas, the District of Columbia, Florida, and Maryland (Table VI). Hawaii, North Dakota, Georgia, Mississippi, Delaware, and New Jersey had no craft breweries. Low location quotients were found in the Ohio River Valley, Mid-Atlantic states, and the South.

In 1994, several states had high location quotients for both brewpubs and microbreweries (Tables VII and VIII). These states included Vermont, Maine, Oregon, Idaho, and Colorado. Twenty-two of 42 states with brewpubs were above the national mean. Seventeen of 36 states with microbreweries were above the national mean.

Figures 27 and 28 revealed states in the Pacific Northwest, Mountain West, and Upper New England had a high number of breweries per person. Diffusion of both types to these regions, resulted in quick acceptance and expansion. With the exception of California, many of the states with high populations had not experienced the rapid adoption of craft breweries around an initial innovator.

#### State Scale

Location analysis was not limited to finding paths of diffusion and states with a high number of breweries compared to population. The hierarchical diffusion of brewpubs was further analyzed based on the types of urban areas in which brewpubs are located. This data were then

TABLE VI

## 1994 RANKING OF CRAFT BREWERY LOCATION QUOTIENTS

434 CRAFT BREWERIES		MEAN=1	OR	587,736	PEOPLE
<u>RANK</u>	<u>STATE</u>	<u>LQ</u>		<u>#</u>	<u>OF CRAFT BREWERIES</u>
1	Vermont	8.20		8	
2	Colorado	6.27		37	
3	Maine	6.18		13	
4	Oregon	6.13		31	
5	Montana	5.0		7	
6	Idaho	4.41		8	
7	New Mexico	2.97		8	
8	Wyoming	2.53		2	
9	Washington	2.40		21	
10	Nebraska	2.20		6	
11	New Hampshire	2.10		4	
12	Alaska	1.99		2	
13	Utah	1.95		6	
14	Nevada	1.76		4	
15	California	1.66		87	
16	Arizona	1.38		9	
17	Massachusetts	1.27		13	
18	Oklahoma	1.10		6	
19	Iowa	1.04		5	
20	D.C.	1.004		1	
21	North Carolina	.95		11	
22	Kansas	.93		4	

TABLE VI CONTINUED

23	Florida	.872	20
24	Maryland	.836	7
25	South Dakota	.830	1
26	Wisconsin	.77	11
27	Arkansas	.736	3
28	Illinois	.709	14
29	Rhode Island	.59	1
30	Missouri	.57	5
31	Virginia	.55	6
32	Louisiana	.549	4
33	Connecticut	.538	3
34	Minnesota	.530	4
35	Ohio	.48	9
36	Kentucky	.468	3
37	Tennessee	.460	4
38	Michigan	.44	7
39	New York	.42	13
40	Indiana	.415	4
41	Texas	.40	12
42	West Virginia	.32	21
43	Alabama	.28	2
44	Pennsylvania	.24	5
45	South Carolina	.163	1

TABLE VII

## 1994 RANKING OF BREWPUB LOCATION QUOTIENTS

282 BREWPUBS

MEAN= 1 OR 904,530 PEOPLE

<u>RANK</u>	<u>STATE</u>	<u>LQ</u>	<u># OF BREWPUBS</u>
1	Vermont	6.33	4
2	Oregon	5.78	19
3	Colorado	4.96	19
4	Maine	4.389	6
5	New Mexico	3.41	6
6	Nebraska	3.39	6
7	Nevada	2.70	4
8	Idaho	2.54	3
9	New Hampshire	2.43	3
10	Arizona	2.12	9
11	Utah	1.997	4
12	Wyoming	1.946	1
13	California	1.844	63
14	Washington	1.759	10
15	Oklahoma	1.693	6
16	D.C.	1.546	1
17	South Dakota	1.277	1
18	Florida	1.275	19
19	Arkansas	1.133	3
20	Wisconsin	1.087	6
21	Kansas	1.079	3
22	North Carolina	1.058	8
23	Iowa	.968	3
24	Rhode Island	.903	1
25	Illinois	.857	11
26	Massachusetts	.808	5
27	Maryland	.735	4
28	Mississippi	.697	4
29	Ohio	.574	7
30	Virginia	.565	4
31	New York	.549	11
32	Tennessee	.540	3
33	West Virginia	.50	1
34	Kentucky	.481	2
35	Indiana	.479	3
36	Louisiana	.422	2
37	Texas	.409	8
38	Minnesota	.404	2
39	Michigan	.287	3
40	Connecticut	.275	1
41	Alabama	.219	1
42	Pennsylvania	.151	2

TABLE VIII

## 1994 RANKING OF MICROBREWERY LOCATION QUOTIENTS

152 MICROBREWERIES            MEAN=1    OR    1,678,141    PEOPLE

<u>RANK</u>	<u>STATE</u>	<u>LQ</u>	<u># OF MICROBREWERIES</u>
1	Montana	14.289	7
2	Vermont	11.75	4
3	Maine	9.50	7
4	Colorado	8.70	18
5	Idaho	7.87	5
6	Oregon	6.78	12
7	Alaska	5.71	2
8	Wyoming	3.61	1
9	Washington	3.59	11
10	Massachusetts	2.24	8
11	New Mexico	2.12	2
12	Utah	1.85	2
13	Wisconsin	1.68	5
14	New Hampshire	1.50	1
15	California	1.35	25
16	Iowa	1.19	2
17	Maryland	1.0238	3
18	Connecticut	1.0235	2
19	Louisiana	.784	2
20	Minnesota	.75	2
21	North Carolina	.736	3
22	Michigan	.712	4
23	Kansas	.667	1
24	Virginia	.525	2
25	South Carolina	.466	1
26	Kentucky	.447	1
27	Illinois	.434	3
28	Pennsylvania	.42	3
29	Alabama	.406	1
30	Texas	.380	4
31	Tennessee	.334	1
32	Missouri	.323	1
33	Ohio	.305	2
34	Indiana	.297	1
35	New York	.185	2
36	Florida	.124	1



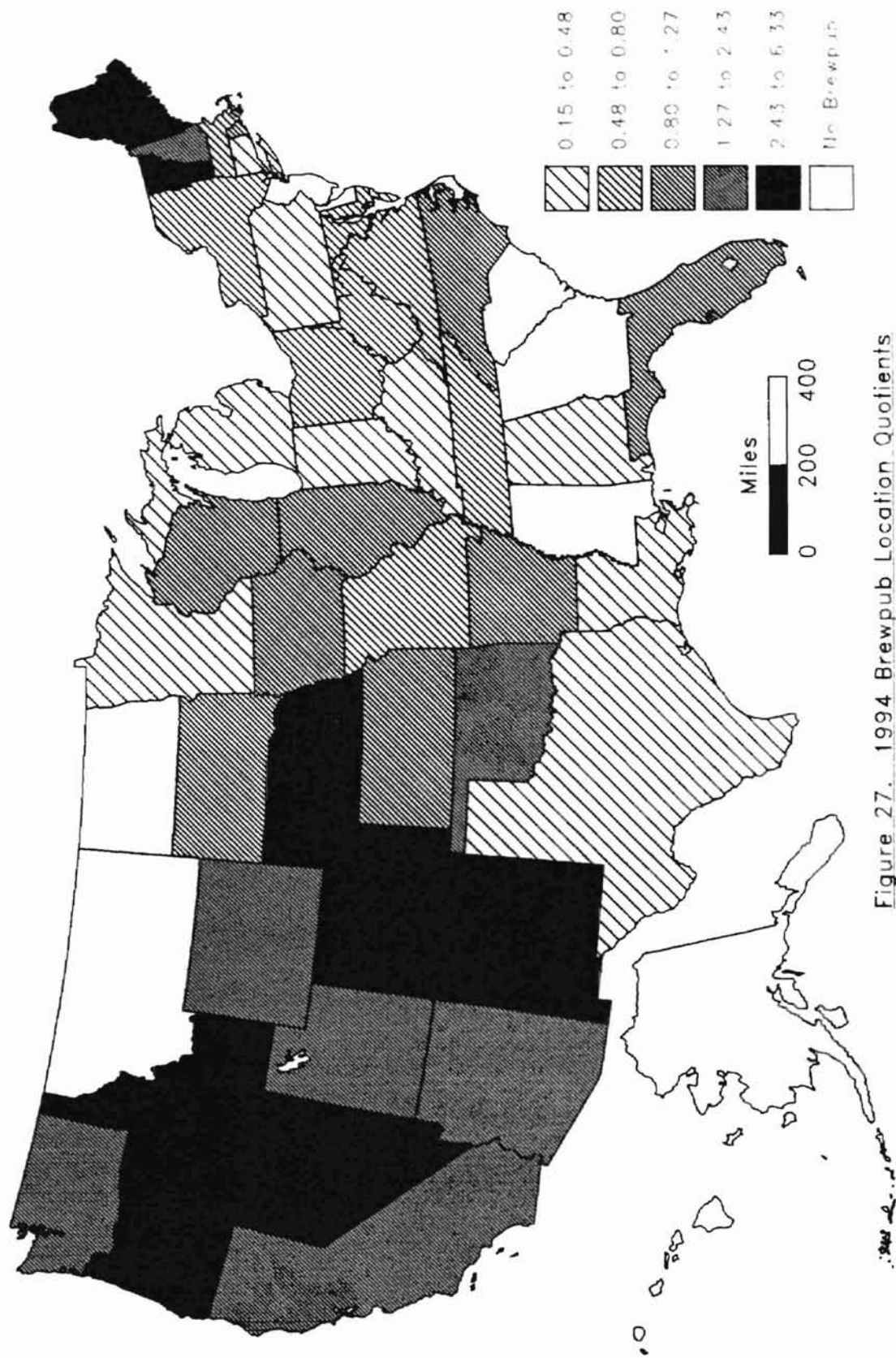


Figure 27. 1994 Brewpub Location Quotients

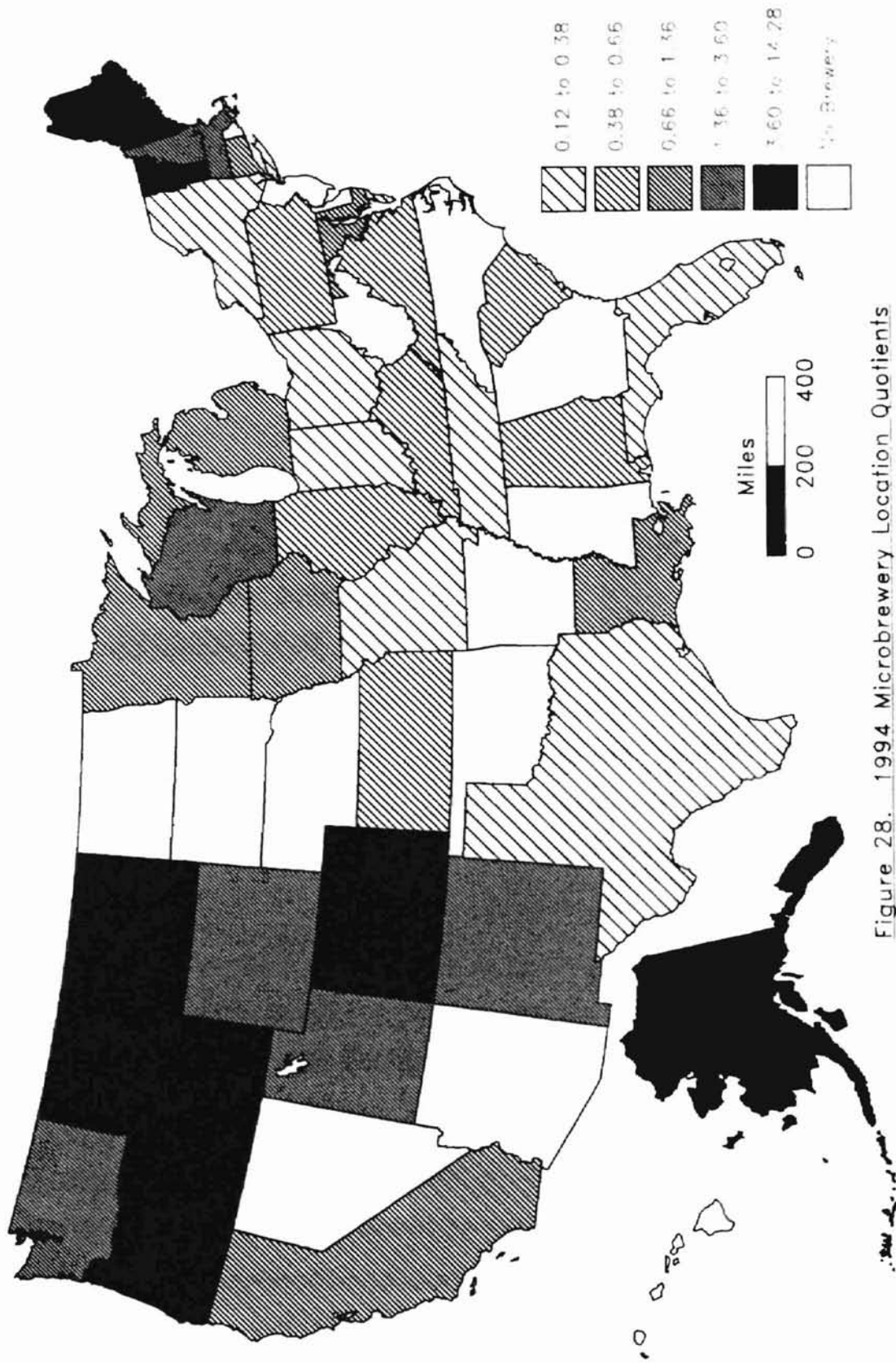


Figure 28. 1994 Microbrewery Location Quotients

analyzed for changes over time.

As speculated earlier, the types of towns which adopted craft breweries were non-metropolitan areas. To analyze the types of places where brewpubs located, each city was classified as either resort, university, or "other" for the years 1986 to 1994. The "other" category was a catchall because classifying every city with a brewpub was beyond the scope of this study. Resort towns and university towns were analyzed because they were easy to determine. Initial survey data and personal visits, indicated these urban types are common places where brewpubs can be found.

University towns were classified according to the percentage of people enrolled in college as found in 1994 census data. This approach was similar to that used by Harris in his article "A Functional Classification of Cities in the United States" (1943). Harris categorized university towns as those with at least 25% of the city population enrolled in college. This study used 20% or more as the threshold in order to include the known university towns of Fayetteville, Arkansas, and Fort Collins, Colorado. In addition, any city with 15% or more enrollment was classified as a university town only after further enquiry determined brewpubs located in that town to target the university market. This was accomplished by checking a map and reading descriptions in On Tap to determine if a brewpub was located near a university. Any

towns not easily justified as university were classified as "other."

Resort towns were classified based on target market and proximity to recreation activities. Towns were classified as resort if brewpubs locate in a city to capture the market created by tourists. Many brewpubs located next to casinos, ski resorts, and other recreational activities, and these were easily recognized as resort towns. For example, Breckenridge, Colorado; Telluride, Colorado; Lake Tahoe, California; Aspen, Colorado; Kennebunk, Maine; Las Vegas, Nevada; Taos, New Mexico; Manteo, North Carolina; and Moab, Utah were well known as resort towns.

Those towns not readily identified as resort towns were found in the Rand McNally Atlas (1995) and On Tap to see if they located in proximity to recreation activities. In this manner Davenport, Iowa, was classified as a resort town because the brewpub located next door to a casino and positioned to receive the majority of its market from tourists. Harris, discussing resort towns, stated no satisfactory criterion was found. Any towns where it was unclear if recreational activities were the facilitator of brewpub location were classified as "other."

In 1986, during the first stage of diffusion, over 60% of all brewpub locations were classified as either resort or university (Table IX). As brewpubs opened in more and more cities, the importance of resort and university towns

TABLE IX  
 BREWPUB LOCATION CHANGE 1986-1994

1986

<u>Location Type</u>	<u>Number</u>	<u>Percentage</u>
University	5	38.4
Resort	4	30.7
Other	4	30.7

13 Total

1988

University	13	31.7
Resort	9	21.9
Other	19	46.3

41 Total

1990

University	26	27.6
Resort	14	14.8
Other	54	57.4

94 Total

1992

University	36	21.4
Resort	33	19.6
Other	99	58.9

168 Total

1994

University	56	19.8
Resort	58	20.5
Other	168	59.5

282 Total

diminished over time. Prior to 1990, resort and university towns were the dominant location type. Brewpubs diffused up the urban hierarchy from smaller resort/university towns to large urban areas of any functional classification type. This type of diffusion has been called a reverse order hierarchical diffusion (Carney 1994). Traditional hierarchical diffusion follows a path from large metropolitan areas down a hierarchy towards smaller, and finally, rural communities.

From 1986 to 1994 university locations steadily fell from 38.4% to 19.8% (Figure 29). In 1986, during initial diffusion, brewpubs were found in more university towns than all other types. University towns are known to quickly accept such cultural changes as music, clothing, and opinions. The same was true for brewpubs. The attitudes of people in university towns, a willingness to try something new, helped explain why these were favored locations. In addition, it is well known that university students consume considerable quantities of beer. Moreover, consumption has tended toward unusual beer styles.

The prevalence of university towns changed in 1988 when 46.3% of all brewpubs were classified as "other." As brewpubs reached the second stage of diffusion, the type of town was no longer a factor as increasing acceptance was seen from people in all urban area types. By 1990, university towns fell to 27.6%. In 1994 only 19.8% of

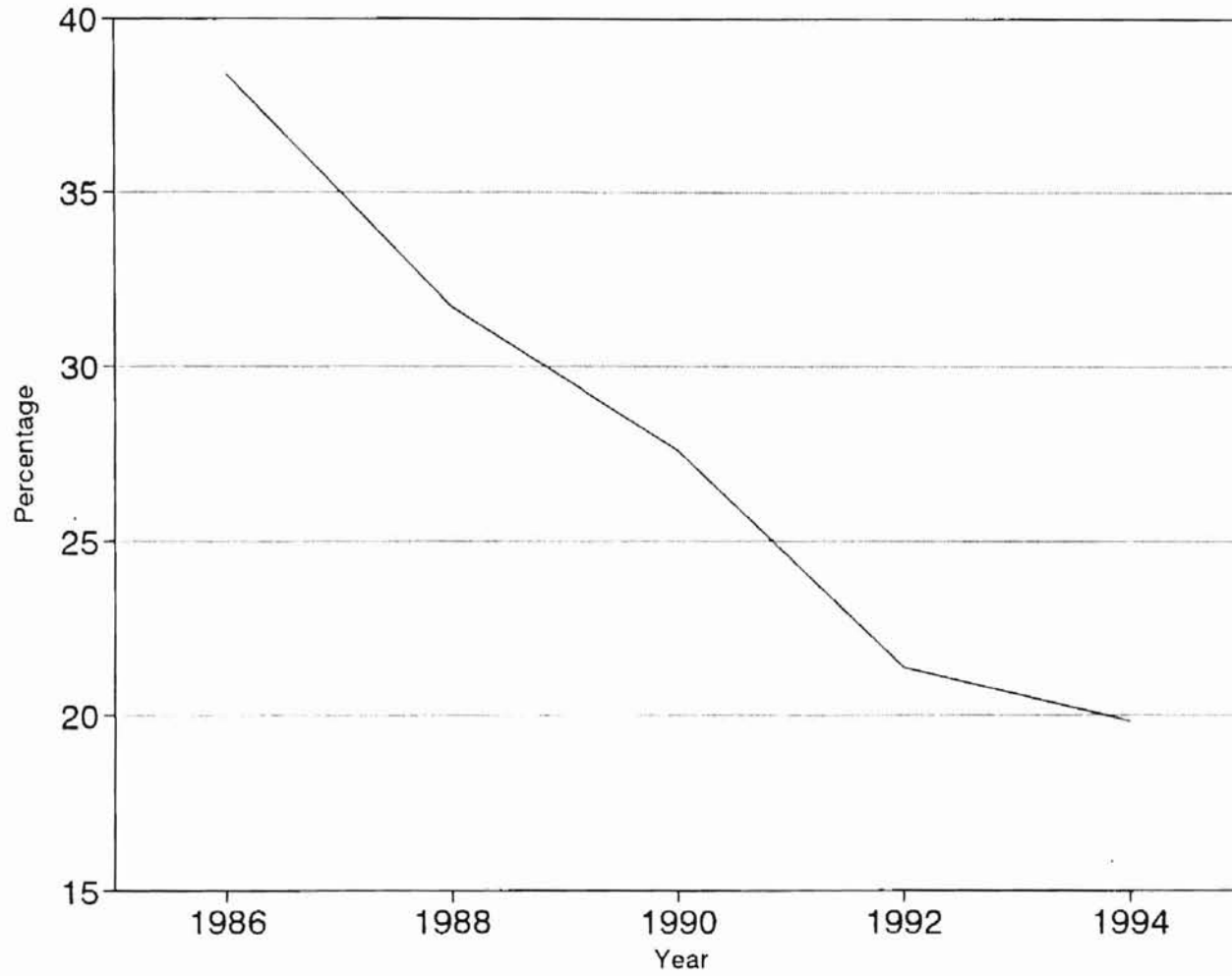


Figure 29. Change in University Location 1986-1994

location types were university.

While the percentage of university towns declined, the total number of brewpubs in university settings increased. Beginning with only five towns in 1986, brewpubs were in 13 towns by 1988. In 1990, 26 brewpubs were in university towns. By 1994, 56 brewpubs in 42 university towns were operating (Figure 30). As brewpubs were accepted by more urban areas, many brewpub owners realized university towns were still a favored location (Appendix F).

During the study years, resort towns were never the dominant type of location. However, in 1986, resort towns accounted for almost one-third of all locations. Resort towns declined in frequency, from 30.7% to 14.8% until 1990 (Figure 31). In 1992, the percentage began to escalate as brewpubs were recognized as a successful business in resort town markets.

By 1992, 33 towns, 19.6%, were classified as resort. In 1994, 58 brewpubs were in 55 resort towns or 20.5% of all location types. As stated earlier, many brewpubs located near ski resorts. The majority of brewpubs in Vermont and Maine located in ski resort towns (Figure 32). This helped explain why craft brewing was quickly adopted in Upper New England. The high number of breweries in the Mountain West was also explained by the presence of ski resorts. Even with seasonal fluctuations in town population, resort towns supported brewpubs (Appendix E).

The neighborhood effect mentioned around Lake Tahoe,



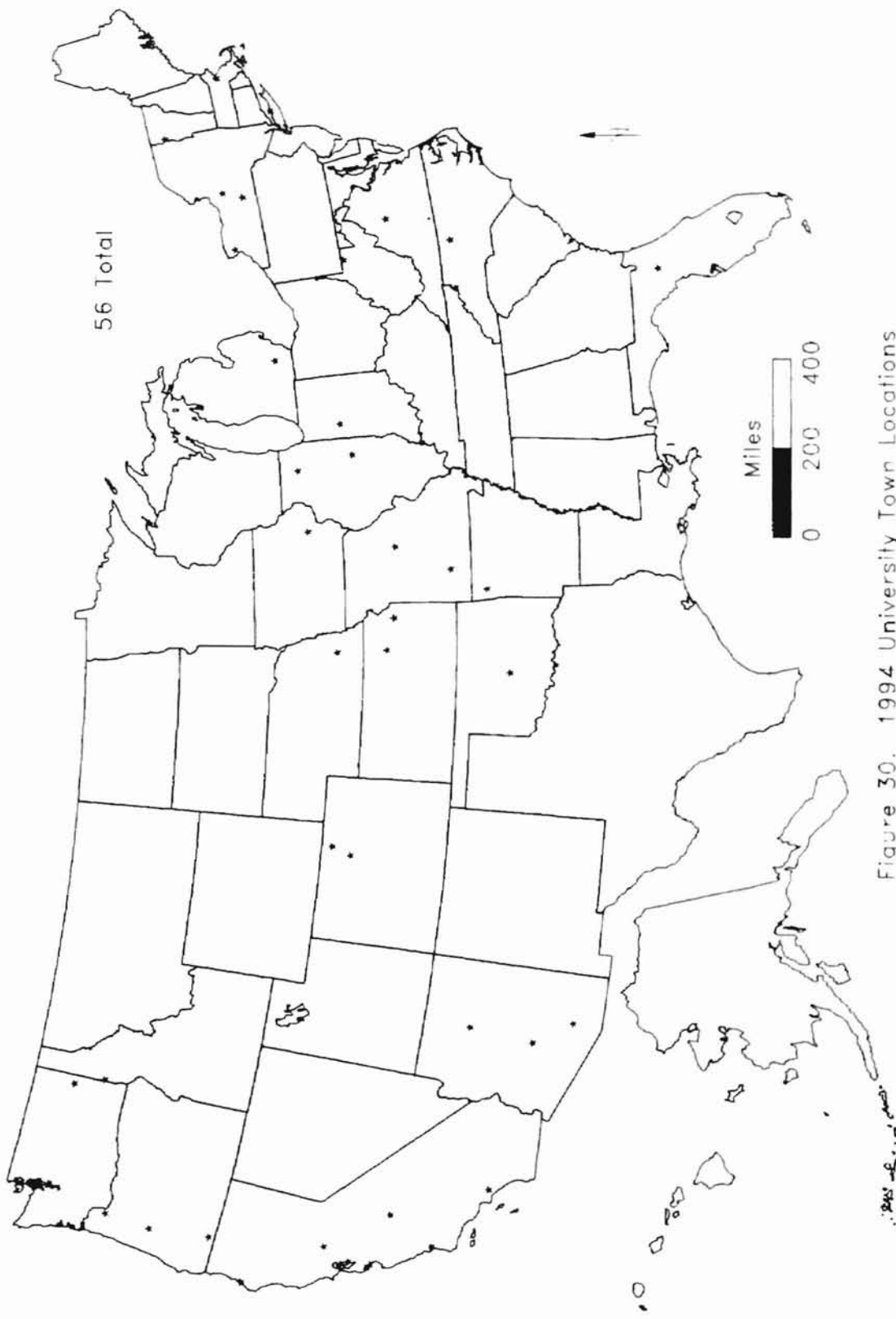


Figure 30. 1994 University Town Locations

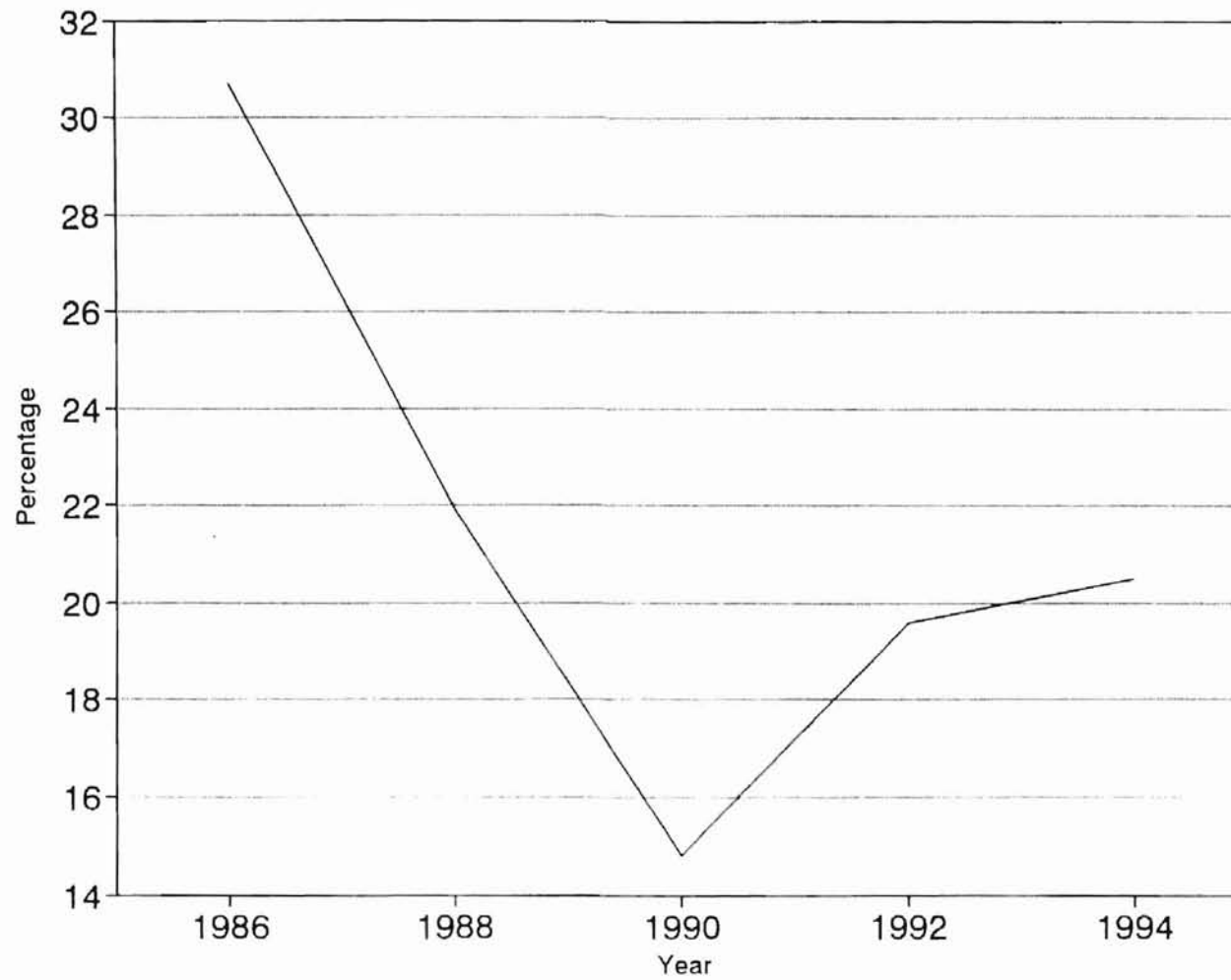


Figure 31. Change in Resort Location 1986-1994

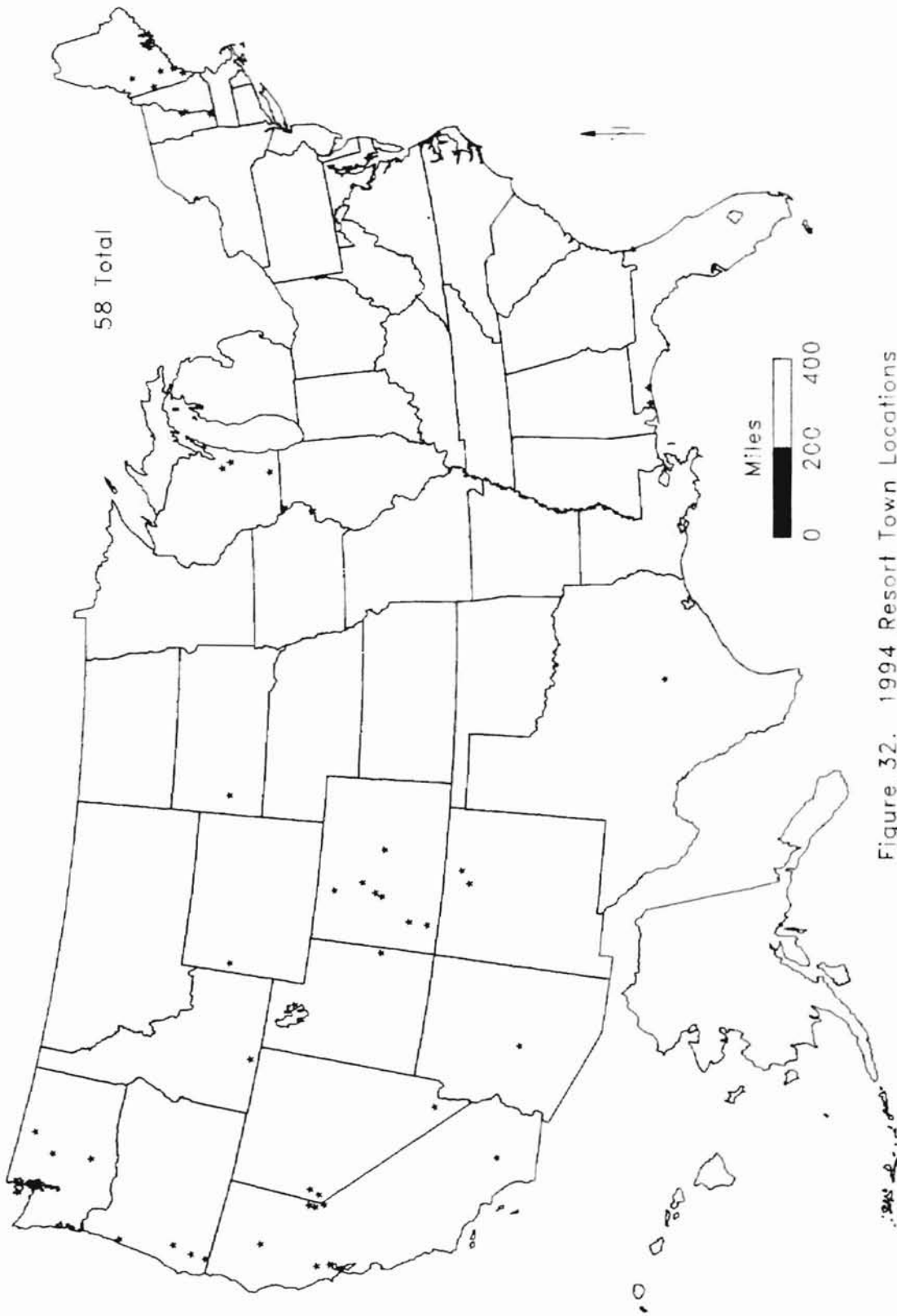


Figure 32. 1994 Resort Town Locations

was explained by the location of brewpubs in resort towns (Figure 32). Ski resorts and other outdoor activities were a magnet to brewpub locations. The lone resort town in Texas was Fredericksburg. Fredericksburg had built a sizable tourist market based upon the German flavor of the town. The Pacific Northwest, known for its outdoor recreation, was a region where brewpubs located in resort towns. The resort towns along the Mississippi River offered casinos. In Wisconsin, the towns of Appleton, Sturgeon Bay, and Whitewater were tourist destinations near state parks and lakes. A lack of towns along the East and West coasts was explained by the problem of classifying many cities as resort. While many urban areas were tourist destinations, it is unclear if brewpubs served tourists or the large number of city residents.

The hypothesis, brewpubs are located in resort and university towns, was not specifically rejected; however, while overall numbers had increased, the importance of these urban types diminished after 1990. During initial diffusion, brewpubs were preeminent in university and resort towns. This changed in 1990 as brewpubs were now predominantly found in large urban areas with a myriad of functions. For example, large numbers of brewpubs were revealed to operate in Chicago, Cincinnati, Cleveland, Milwaukee, Oklahoma City, Dallas, and Houston. It was these large city types which now contained the majority of brewpubs.

## Intracity scale

Microbreweries were not analyzed at the intracity scale. For microbrewery owners, location decision-making is not a major concern. It is speculated that microbrewery location at this scale was based upon such factors as low rent and zoning. Many of the microbreweries personally visited by the author were located in industrial parks. Microbreweries can brew and bottle beer in any facility. It did not matter where the facility was located. Brewpubs, on the other hand, must locate in an area where people frequent. Since they are a restaurant/brewery and sell directly to the public, their location within a city was significant.

Based on interviews, survey data, and personal visits to brewpubs, it was hypothesized they located in the central city, or central business district. Many brewpubs personally visited were located in a city's historic district which was usually located close or in the city center. As cities expanded and the affluent population fled to the suburbs, the inner city fell into disrepair. However, an increasing trend in American cities, no matter what size, is the revitalization of the downtown as well as gentrification of inner city housing. Many cities have districts comprised of refurbished buildings which offer a myriad of nightclubs, shopping, and restaurants.

To analyze at the intracity scale, all brewpubs in the database were classified as either central or non-central. Classification was based on a brewpub's address and written description in On Tap. The field guide provided a summary of directions to each brewpub and frequently mentioned if a brewpub was located downtown. The address of those brewpubs not mentioned as downtown were checked. Based upon address alone it was possible to find a downtown location. Coupled with a city map, if available, all addresses with a street number below 2,000 were classified as central.

The location of brewpubs in the central city remained around 70% to 85% from 1986 to 1994 (Figure 33). Even during the initial stage of diffusion, brewpubs located centrally. A brief upward trend was seen in 1988 when 85.3% of all brewpubs located in the central business district. It was apparent brewpubs were a centralizing factor in urban areas, contrary to the trend of many retailers fleeing to the suburbs. The Main Street Program of the National Trust for Historic Preservation helped rehabilitate the downtown commercial districts of many cities with a population of 50,000 or less. Massive urban renewal projects during the 1960s to the present provided places for brewpubs to successfully locate.

It is not just America's older cities which had revitalized their downtowns. With the Main Street Program, many smaller urban areas used incentives to entice the

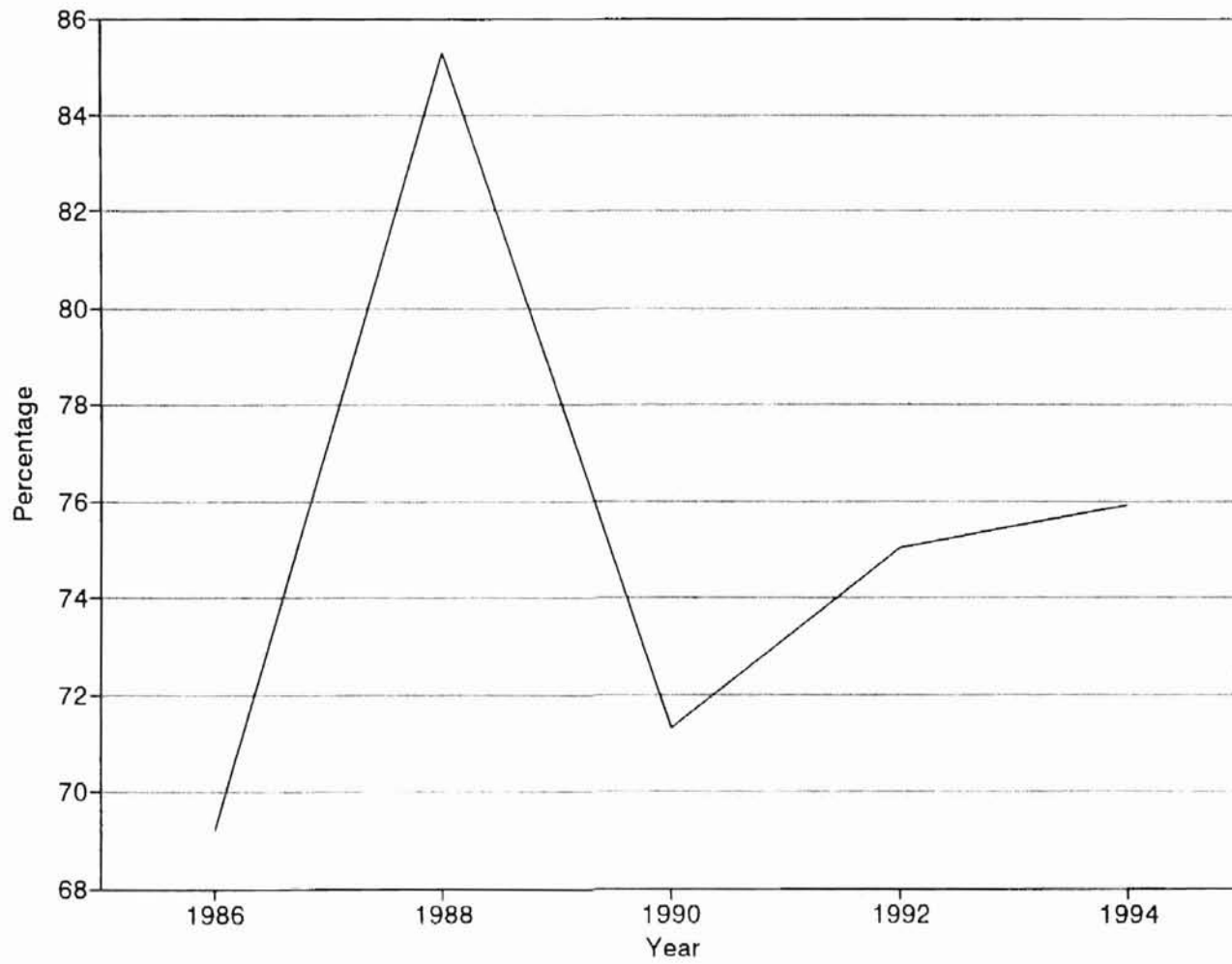


Figure 33. Change in Centrally Located Brewpubs 1986-1994

retail sector back to the downtown. Only in 1986, with resort towns, did the percentage of brewpubs in the central city fall below 50% (Table X). From 1986 to 1988, resort towns were last in percentage located downtown. This may be explained by brewpubs locating closer to ski resorts or other recreation facilities in order to maximize exposure to tourists. Once brewpubs were known to more people in more states, locations in the central city again increased. In 1992, 81.8% of brewpubs were downtown.

University towns had the highest percentage of brewpubs located in the central city than all others for all years studied (Table X). This may be due to the fact that universities were located centrally or, more likely, brewpubs located in an entertainment district close to the campus frequented by university students. For example, in Stillwater, Oklahoma, this would be referred to as "the strip."

Though brewpubs locations were predominantly central, the number of brewpubs locating outside the central city increased as more and more brewpubs opened. These brewpubs located in areas of high retail trade other than the central city. If more than one brewpub is in a city, it may or may not be located in the same area as the innovator.



TABLE X

## BREW PUB CENTRAL LOCATION CHANGE 1986-1994

<u>LOCATION TYPE</u>	<u>NUMBER</u>	<u>NUMBER</u>	<u>CENTRAL</u>	<u>PERCENTAGE</u>
1986				
University	5	4		80.0
Resort	4	2		50.0
Other	4	3		75.0
Total	13	9		Overall% = <u>69.2</u>
1988				
University	13	12		92.3
Resort	9	7		77.7
Other	19	16		84.2
Total	41	35		Overall% = <u>85.3</u>
1990				
University	26	24		92.3
Resort	14	10		71.4
Other	54	33		61.1
Total	94	67		Overall% = <u>71.3</u>
1992				
University	36	34		94.4
Resort	33	27		81.8
Other	99	65		65.6
Total	168	126		Overall% = <u>75.0</u>
1993				
University	56	51		91.0
Resort	58	47		81.0
Other	168	116		69.0
Total	282	214		Overall% = <u>75.9</u>

## CHAPTER V

### BEER STYLE ANALYSIS

#### Variety

To analyze beer styles, each database entry for a craft brewery included the styles of beer produced in 1994. For each of the 48 possible styles, either a one or zero was entered. If a brewery made the style, a one was entered, if it did not, a zero was entered (Appendix B). The database was then manipulated to show how many styles were made at each brewery and the total number of each brewery type producing a particular style.

Data sources were The Brewers Resource Directory, On Tap, and telephone interviews. Data were limited by the accuracy of each brewery reporting which beer styles it brewed to the sources. Many breweries produced a seasonal beer which varied throughout the year. It is unknown if reported styles were made year round or seasonally. Change over time analysis was skewed if breweries had not made the same styles they reported in 1994.

With the emergence of craft breweries, the variety of beer styles brewed in the United States dramatically increased. The Brewers Resource Directory listed 48 different beer styles. Within each category, room existed for continuing variety. For example, many varieties of stout were brewed and Imperial Stout, Cream Stout, Oatmeal

Stout, were but a few. Imagination was the only limiting factor in how a beer style could be individualized to the brewers' tastes.

In 1994, craft breweries throughout America brewed 47 of 48 possible styles; the lone exception was German Ale. Analysis was limited to the years between 1986 and 1994. The year 1986 was used because enough breweries were open across the country to give meaningful results. As the total number of craft breweries increased it follows that a wider variety of styles became available.

Since the success of an establishment was based partly on the beers it made, craft brewers needed to offer a distinctive product. Microbreweries had an early lead in variety. In 1986, 15 microbreweries brewed 32 different styles (Figure 34). For comparison, only 24 styles were made by 13 brewpubs in the same year.

In 1988, after craft breweries entered the second stage of diffusion, variety rapidly increased for both types. Through the study years, brewpubs and microbreweries switched back and forth regarding most variety. In 1988, brewpubs led with 42 beer styles, while micros made 39. Two years later, micros and brewpubs brewed the same number of types (43) but not the same styles. In 1992, micros were again first in variety (43). By the end of the study years, both craft brewery types were tied with 46 apiece.

To explain the profusion of beer styles, cities which

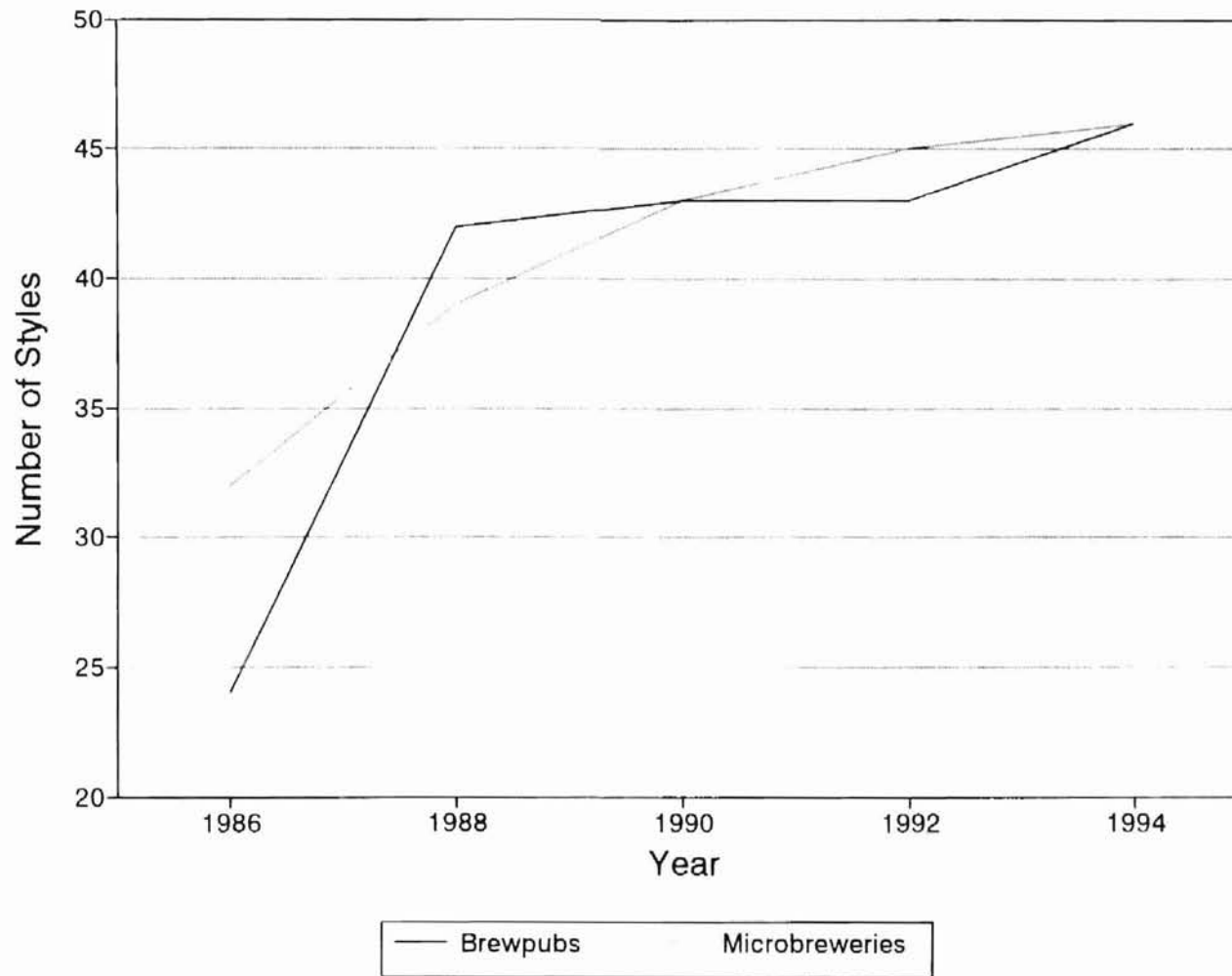


Figure 34. Change in Beer Style Variety 1986-1994

had two or more of the same craft brewery type, in 1994, were analyzed for beer style variety. It was presumed the more breweries in a city the more beer style variety. Craft breweries with competition in a city may have brewed differing styles in order to increase individuality and, therefore, attract a wider number of customers.

The average number of styles per craft brewery was plotted against the number of craft breweries in a city. The results of analysis differed markedly from expected results. As figure 35 shows, a higher number of brewpubs in a city did not dictate more variety in beer styles. For brewpubs, 106 in 41 cities were studied. Cities with two brewpubs marketed anywhere between three and ten different beer styles. The range was almost the same for cities with three brewpubs. The increase of variety after 1988 was not explained by intracity competition.

The number of beer styles available at any given time of the year in a brewpub was dictated by the number of storage tanks. The more holding tanks, the greater the number of beers a brewpub could offer. However, this did not mean all brewpubs had to brew the same styles. If brewpubs were not brewing the same number of styles, as the number of holding tanks in a city, variety should have increased. These findings were curious because brewpubs did not have different styles than their intracity competition. One explanation for this is the variation among how a single style tastes (For example, Stout). It

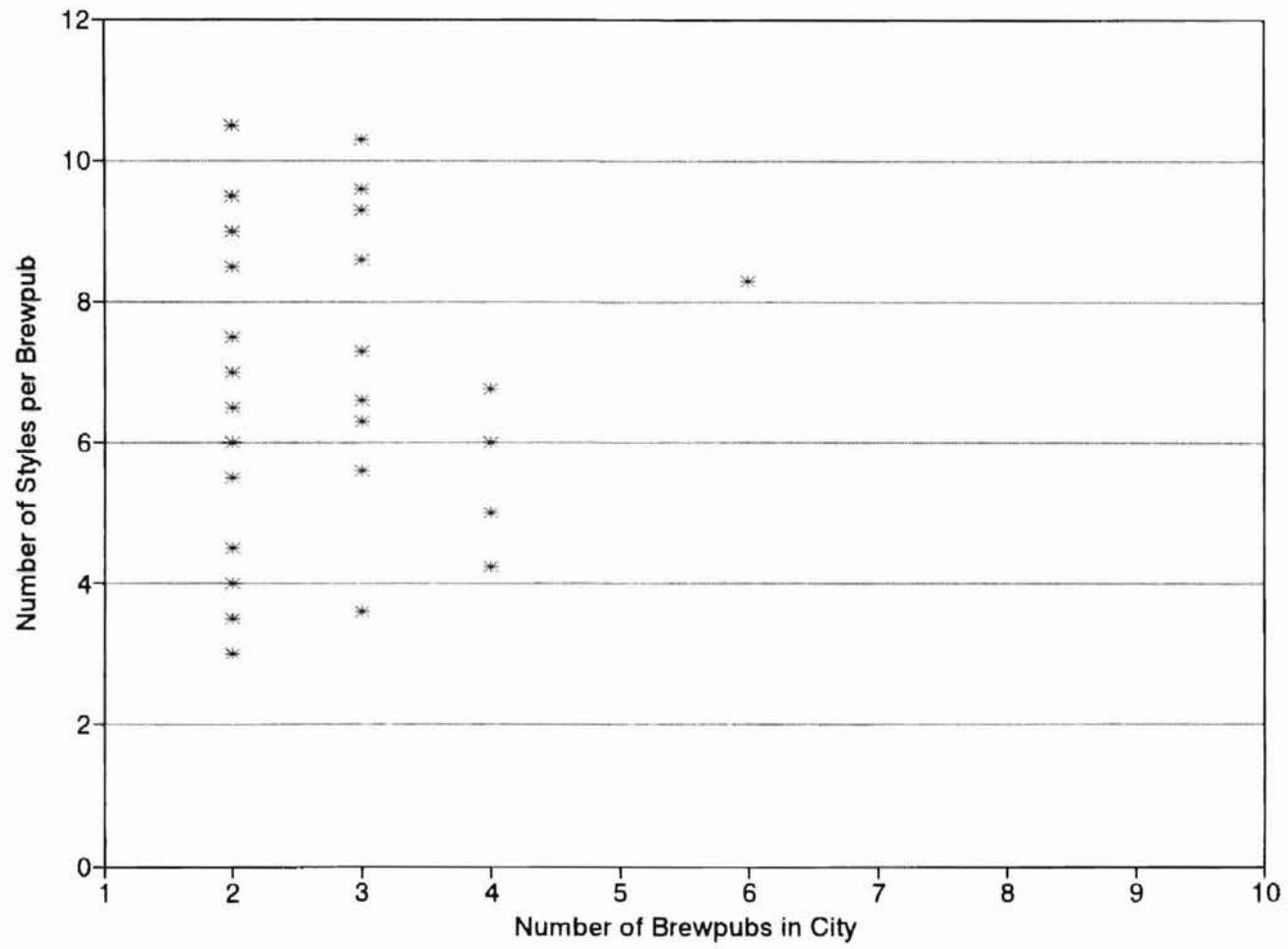


Figure 35. Intracity Beer Style Variety Among Brewpubs

was possible brewmasters made the same styles as their competition in order to allow the consumer to select the one which best suits his/her taste.

Thirty-one microbreweries in 12 different cities were studied for increased variety, and the results were similar to brewpubs. Cities with two micros had anywhere from one point five to eight styles per brewery (Figure 36). Competition did not result in a wider variety of beer styles. As with brewpubs, the number of beers a microbrewery made was limited by facilities, but this did not explain why variety did not increase with competition.

#### Craft Brewery Beer Styles

To study the styles made by each brewery type during the years 1986 to 1994, a percentage was calculated by dividing the number of places making a particular style by the number of establishments for a given year. For example, in 1994, 161 of 282 brewpubs, or 57.1%, brewed a stout. Once the percentage of brewpubs or microbreweries making a particular style was known, differences and changes through time became apparent.

The 1994 Resource Directory, survey data, and the latest edition of On Tap provided the name and style of each beer made by a particular craft brewery. Limitations from variety analysis still applied. Accuracy was compromised if a brewery had not consistently brewed the same styles during the study years. However, brewpubs and

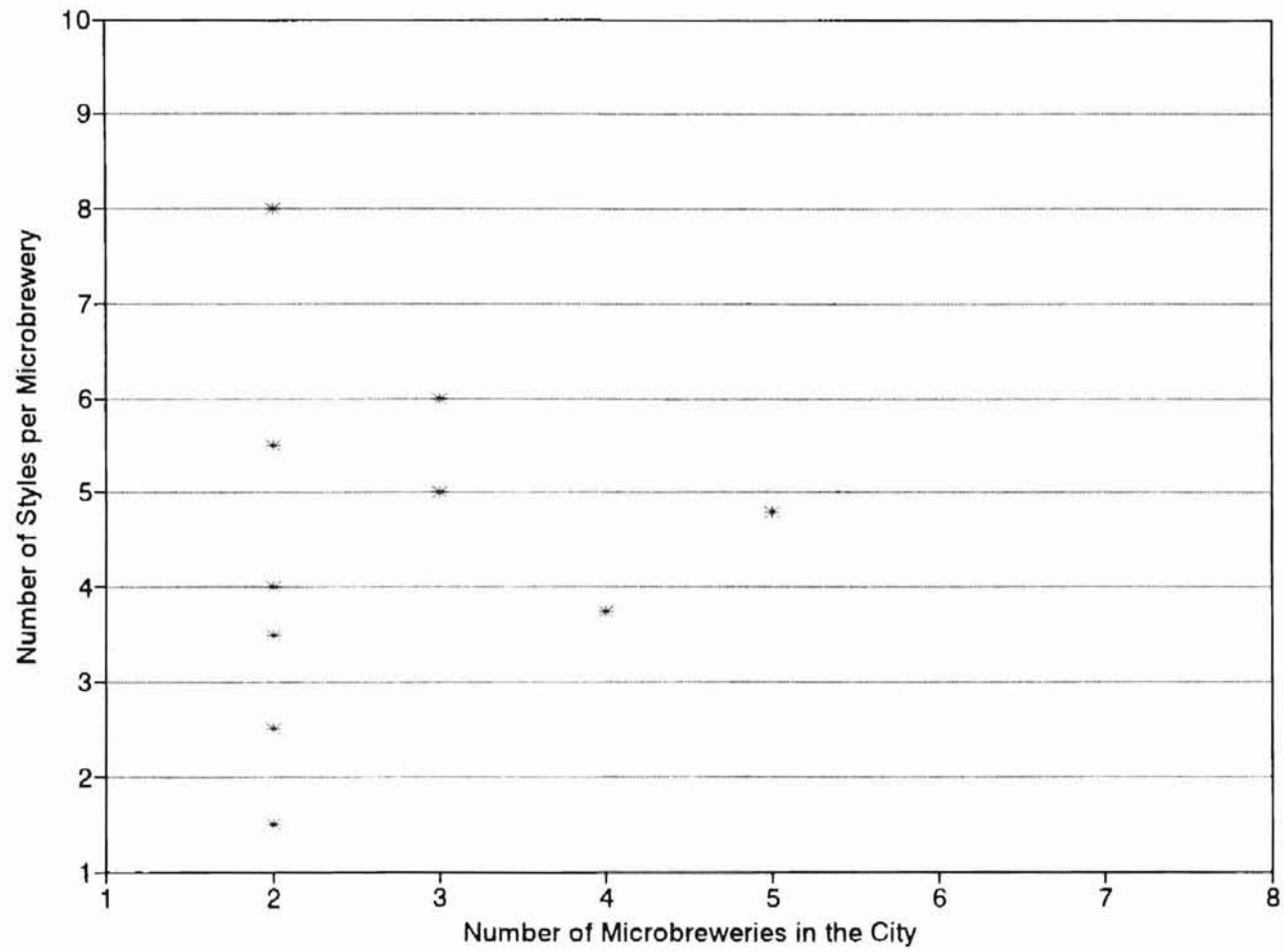


Figure 36. Intracity Beer Style Variety Among Microbreweries



microbreweries usually made the same beers since money was invested in signs, pump taps, and t-shirts advertising a specific beer.

An overall ranking of beer styles was created by calculating a percentage brewing of all 48 beer styles from 1986 to 1994 for brewpubs and microbreweries. Once calculated, the data for each year were ranked from highest percentage to lowest. Any styles with the same percentage were given an average ranking to maintain mathematic integrity. The ranks for a beer style for the years 1986, 1988, 1990, 1992, and 1994 were then added. The resulting number was divided by the number of years a style had been brewed. For example, the sum of ranks for Weizen was divided by four since it was not brewed in 1986. All 48 beer styles were processed in the same manner. The resulting numbers were then ranked from highest to lowest, creating a list of beer styles from the most popular to least popular during the study years.

Beer styles follow three patterns. First, as the number of craft breweries increased, several beer styles gained in popularity. Second, many styles retained nearly the same percentage throughout the study years. Finally, as more breweries opened and the number of styles brewed increased, several styles declined in popularity. By far, the majority of beer style percentages remained the same or fell in popularity.

Beginning with brewpubs, Brown Ale and Pilsner were

the only styles which clearly increased in popularity (Table XI). A number of styles in the top ten remained at relatively the same percentage. Examples were Bitter, American Wheat, Marzen, and Blond Ale. Three styles in the top ten decreased in popularity. Stout had fallen from 78% to 57% but retained its dominance among styles brewed in brewpubs. Pale Ale declined from 61% to 48% and Porter dropped from 61% to 42%. Though these beers decreased in percentage, they continued as very popular styles. For the bottom ranked 24 styles, from the time they appeared until 1994, their popularity remained the same. For example, little variation was detected in the percentages of Alt, Amber Lager, Vegetable beer, and California Common Beer.

When microbrewery beer styles were analyzed, it became apparent their popularity or ranks differed from brewpubs. For instance, Stout was ranked first in brewpubs, whereas second with microbreweries. This was not significant until the actual percentages were compared. Stout was brewed by 57% of all brewpubs, while only 44% of all microbreweries (Table XII). This disparity increased for the year 1986 when the percentages were 77 and 40, respectively.

Many of the same styles were in the top ten and bottom ten for both brewery types. However, the remaining styles varied among the brewery types. Golden Lager was ranked 14th for microbreweries contrasted to 23rd for brewpubs. Fruit beer was ranked 19th for microbreweries compared to 23rd for brewpubs.

TABLE XI  
 BEER STYLE PERCENTAGES FOR BREWPUBS  
 AND OVERALL RANKING

<u>RANK</u>	<u>STYLE</u>	<u>1994</u>	<u>1992</u>	<u>1990</u>	<u>1988</u>	<u>1986</u>
1	Stout	57.1	65.5	68.1	78.0	77.0
2	Amber Ale	53.5	58.3	56.4	61.0	46.2
3	Pale Ale	48.2	47.6	43.6	48.8	61.5
4	Porter	42.9	42.9	42.6	41.5	61.5
5	Bitter	25.2	28.0	29.8	34.1	30.8
6	American Wheat	30.5	29.2	26.6	26.8	30.8
7	Marzen	22.3	33.9	33.0	31.7	23.1
8	Blond Ale	28.4	28.0	27.7	26.8	23.1
9	Fruit Beer	27.0	29.8	25.5	31.7	15.4
10	Brown Ale	29.8	32.1	24.5	19.5	0
11	Strong Ale	14.2	19.6	22.3	34.1	30.8
12	Spiced Beer	18.4	27.4	25.5	26.8	23.1
13	Light Ale	16.0	21.4	19.1	29.3	23.1
14	India Pale Ale	19.5	19.6	20.2	26.8	15.4
15	Pilsner	21.3	26.8	26.6	19.5	7.6
16	Bock	13.1	17.9	19.1	14.6	23.1
17	Weizen	10.9	11.1	18.1	22.0	0
18	ESB	12.4	15.4	17.0	22.0	0
19	Barley Wine	10.2	14.8	17.0	22.0	15.4
20	Dark Lager	7.8	11.9	14.8	17.1	30.8
21	Dark Ale	7.4	10.7	13.8	9.7	23.1
22	Scotch Ale	9.2	11.3	11.7	17.1	7.6
23	Golden Lager	7.1	8.9	12.7	14.6	15.4

TABLE XI CONTINUED

<u>RANK</u>	<u>STYLE</u>	<u>1994</u>	<u>1992</u>	<u>1990</u>	<u>1988</u>	<u>1986</u>
24	Hefeweizen	10.2	12.5	10.6	7.3	7.6
25	Hellebock	8.1	13.0	9.5	7.3	0
26	Munich Helles	4.2	6.5	7.4	9.7	23.1
27	Doppelbock	6.0	9.5	10.6	9.7	0
28	Dunkel Weizen	5.6	9.5	9.5	9.7	0
29	Light Lager	8.8	11.9	10.6	2.4	0
30	Alt	6.0	6.5	4.2	7.3	0
31	Amber Lager	4.6	4.7	6.3	4.8	7.6
32	Mild Ale	3.1	4.1	6.3	14.6	0
33	Weizenbock	3.5	5.9	6.3	4.8	0
34	Vegetable Beer	4.9	5.3	4.2	4.8	0
35	Vienna	4.6	5.9	3.1	4.8	0
36	Kolsch	5.6	4.7	4.2	2.4	0
37	Belgian Special	2.4	4.1	5.3	7.3	0
38	Red Ale	3.9	0	0	0	0
39	Cream Ale	3.9	3.5	4.2	2.4	0
40	Dortmunder	2.4	3.5	4.2	4.8	0
41	California Comm	2.8	3.5	3.1	4.8	0
42	American Lager	3.9	3.5	2.1	2.4	0
43	Smoked Beer	3.1	4.7	4.2	4.8	0
44	Rye Beer	1.0	1.1	1.0	0	0
45	German Wheat	.7	0	0	0	0
46	American Ale	.3	0	0	0	0
47	German Ale		Never Brewed			
48	American Lite Lager		Never Brewed			

TABLE XII  
 BEER STYLE PERCENTAGES FOR MICROBREWERIES  
 AND OVERALL RANKING

<u>RANK</u>	<u>STYLE</u>	<u>1994</u>	<u>1992</u>	<u>1990</u>	<u>1988</u>	<u>1986</u>
1	Pale Ale	44.7	47.4	44.3	48.6	40.0
2	Stout	33.6	36.8	41.0	37.1	40.0
3	Porter	30.9	37.9	34.4	34.3	26.7
4	Bock	15.8	24.2	32.8	42.6	33.3
5	Amber Ale	35.5	40.0	31.1	31.4	20.0
6	American Wheat	19.7	23.2	23.0	22.9	33.3
7	Spiced Beer	16.4	23.2	24.6	25.7	26.7
8	Marzen	17.1	22.1	31.1	31.4	20.0
9	IPA	15.8	20.0	16.4	20.0	13.3
10	Weizen	12.5	14.7	23.0	25.7	26.7
10	Blond Ale	20.4	25.3	24.6	20.0	13.3
12	Brown Ale	17.8	18.9	18.0	22.9	20.0
13	Pilsner	15.1	20.0	29.5	31.4	13.3
14	Golden Lager	8.6	12.6	16.4	20.0	33.3
15	Strong Ale	11.2	15.8	18.0	17.1	20.0
16	Dark Lager	10.5	12.6	16.4	20.0	20.0
17	Amber Lager	7.9	9.4	14.8	20.0	20.0
18	Hellebock	6.6	10.5	14.8	11.4	20.0
19	Fruit Beer	12.5	13.7	14.8	14.3	6.7
20	Alt	8.6	11.6	11.5	18.5	13.3
21	Light Lager	6.6	9.4	13.1	11.4	0
22	Munich Helles	5.9	7.3	11.5	11.4	13.3
22	Doppelbock	4.6	6.3	9.8	14.3	20.0

TABLE XII CONTINUED

<u>RANK</u>	<u>STYLE</u>	<u>1994</u>	<u>1992</u>	<u>1990</u>	<u>1988</u>	<u>1986</u>
24	Hefeweizen	6.6	6.3	9.8	8.5	13.3
25	Dark Ale	6.6	6.3	8.2	8.5	0
26	Light Ale	4.6	7.3	8.2	5.7	3.3
27	Bitter	7.2	6.3	6.5	8.5	6.7
28	Dortmunder	3.9	5.2	4.9	2.8	0
29	Barley Wine	5.2	8.4	8.2	5.7	6.7
30	Mild Ale	3.3	5.2	6.5	8.5	13.3
31	Vienna	3.9	4.2	4.9	8.5	13.3
32	Dunkelweizen	5.2	6.3	6.5	12.8	6.7
33	ESB	4.6	6.3	4.9	5.7	0
34	Red Ale	3.9	2.1	3.3	2.8	6.7
35	Scotch Ale	5.2	1.0	1.6	2.8	6.7
36	California Comm	1.9	3.1	4.9	2.8	0
37	Smoked Beer	1.3	2.1	3.3	2.8	6.7
38	American Lager	2.6	3.1	3.3	0	0
39	Cream Ale	3.3	2.1	3.3	0	0
40	Vegetable Beer	2.6	3.1	1.6	2.8	0
41	Weizenbock	1.3	2.1	3.3	2.8	0
42	Belgian Special	2.6	2.1	0	0	0
43	Rye Beer	1.9	3.1	1.6	0	0
44	Kolsch	1.3	1.0	1.6	0	0
45	American Lite Lag	.65	1.0	0	0	0
46	German Wheat	.65	0	0	0	0
	German Ale				Never Brewed	
	American Ale				Never Brewed	

Several styles were more popular among microbreweries than brewpubs. Weizen moved from a rank of 17th to 10th and Bock moved from 16th to 4th comparing brewpubs to micros. As with brewpubs, the top and bottom ranked microbrewery styles retained a fairly constant percentage. Only Amber Ale showed a clear increase in popularity. It rose from 20% to 35% of all microbreweries brewing the style. Several styles in the top ten fell in popularity as more microbreweries opened across America. Examples were Bock, American Wheat, and Spiced Beer.

When comparing beer styles, it was clear microbreweries and brewpubs made the same 48 styles but emphasized or concentrated on different beers. Notable differences were seen regarding Bock and Bitter. Bock was ranked 4th among microbreweries compared to 16th among brewpubs. Bitter was ranked 5th among brewpubs but fell to 27th when contrasted with microbreweries.

### Regional Patterns

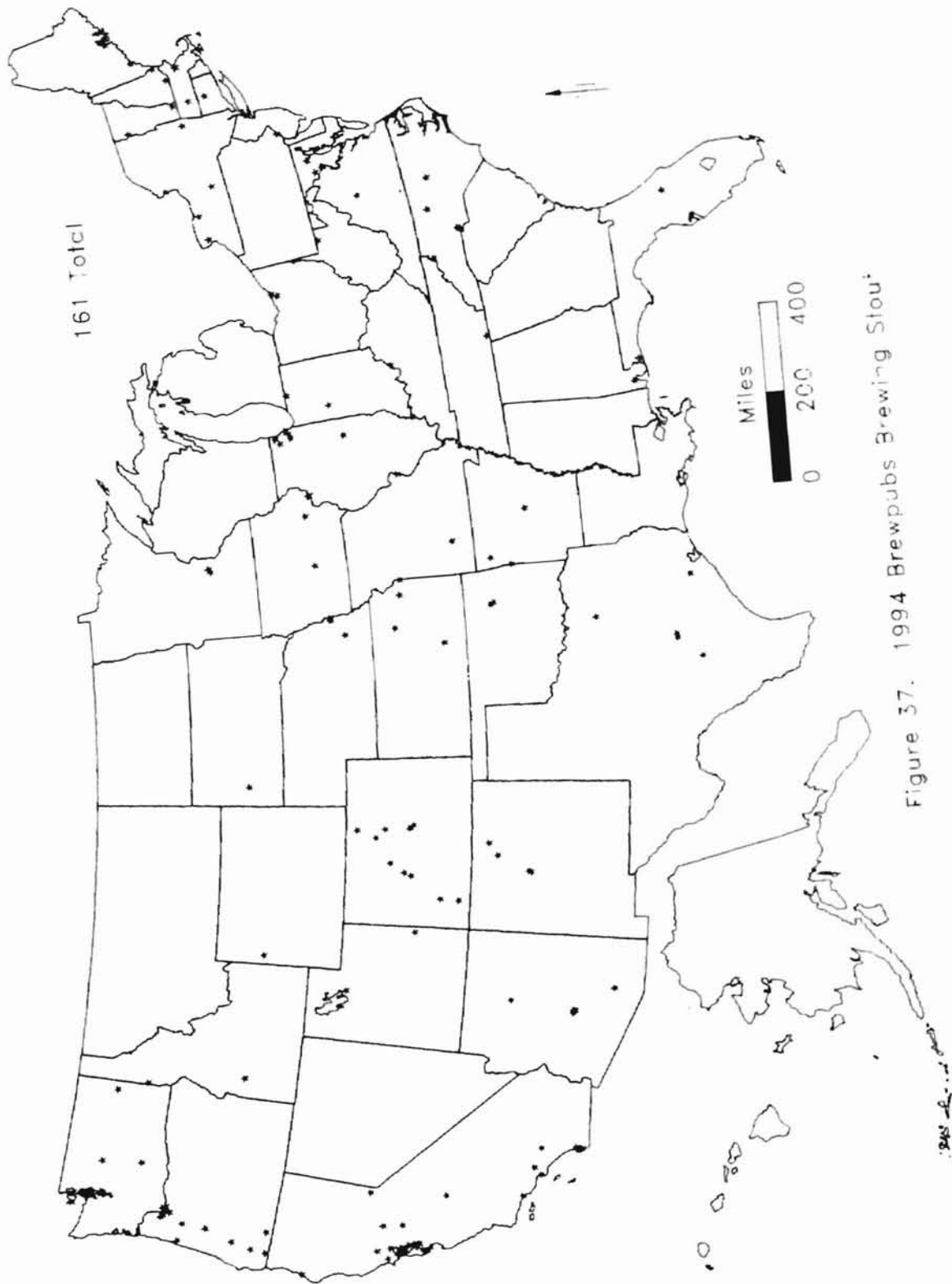
To attempt to detect regionality among where beer styles were brewed in 1994, each craft brewery database was queried in a GIS. The location of each brewery type which made a given beer style was mapped by zip code centroid. The resulting maps were then analyzed to see if a particular style was ubiquitous across America or if the style was only brewed in specific areas. The beers ranked

first, fifth, tenth, fifteenth, twentieth, twenty-fifth, thirtieth and fortieth were mapped. These numbers were picked because they represented a cross section of ranks. It was expected those in the higher ranks would be ubiquitous, while those lower in ranking would indicate regionality. Regional analysis was limited because brewery types were studied individually. Regional patterns would be easier to define if both microbrewery and brewpub beer styles were analyzed together.

In attempting to determine if beer styles had regionality, analysis was purely qualitative. Demographic data regarding ethnicity were not studied quantitatively. Therefore, all findings linking a certain style to an ethnic group was speculative. Instead of regional, many styles could be called place-specific since so few places brewed them. However, conclusions were based on general knowledge regarding where in the United States ethnic groups dominate a local population. Discussion with owners and brewers during fieldwork hinted that styles available in a region were catered to local taste and demand. Though not studied quantitatively, the beers available in a given locale may have been picked because of the ethnic heritage of the owner or brewmaster.

As expected, the number one ranked beer for brewpubs, Stout, was found throughout the United States (Figure 37). The same was true of Bitter (5th), Brown Ale (10th), and Pilsner (15th), each style was located across America.





Only by the 20th rank can regionality be detected. Dark Lager was located in the San Francisco Bay area, the Great Lakes, and the Northeast, with outliers in Louisiana and Nevada (Figure 38). Brewers catered to local tastes in Ohio, Illinois, and Wisconsin as a concentration of Germans live in these states. Dark Lager was brought to America by German brewers in the 19th Century but abandoned as national chains favored Light Lager.

Hellebock was again a German style displayed around the Great Lakes and in the Northeast. The style ranged to the east from California to Colorado, Kansas, Missouri, Illinois, Kentucky, and Virginia (Figure 39). It was absent from the great craft brewery concentrations in the Pacific Northwest.

Ranked 30th, Alt, a German style ale, was detected in the Pacific Northwest, California, and the Northeast. Several outliers were seen in Nebraska, Missouri, Tennessee, and Kentucky. Alt production in these states was an attempt to offer a unique beer to the consumer, as only 17 brewpubs made the beer.

The last brewpub beer analyzed was Dortmunder, a beer style specific to the German industrial city of Dortmund. Only seven brewpubs made the style, but they ranged from Colorado to California, Washington, and Oregon (Figure 40). Four brewpubs brewed Dortmunder in California, three around San Francisco. It was possible an original innovator introduced the style, then other brewpubs realized it sold

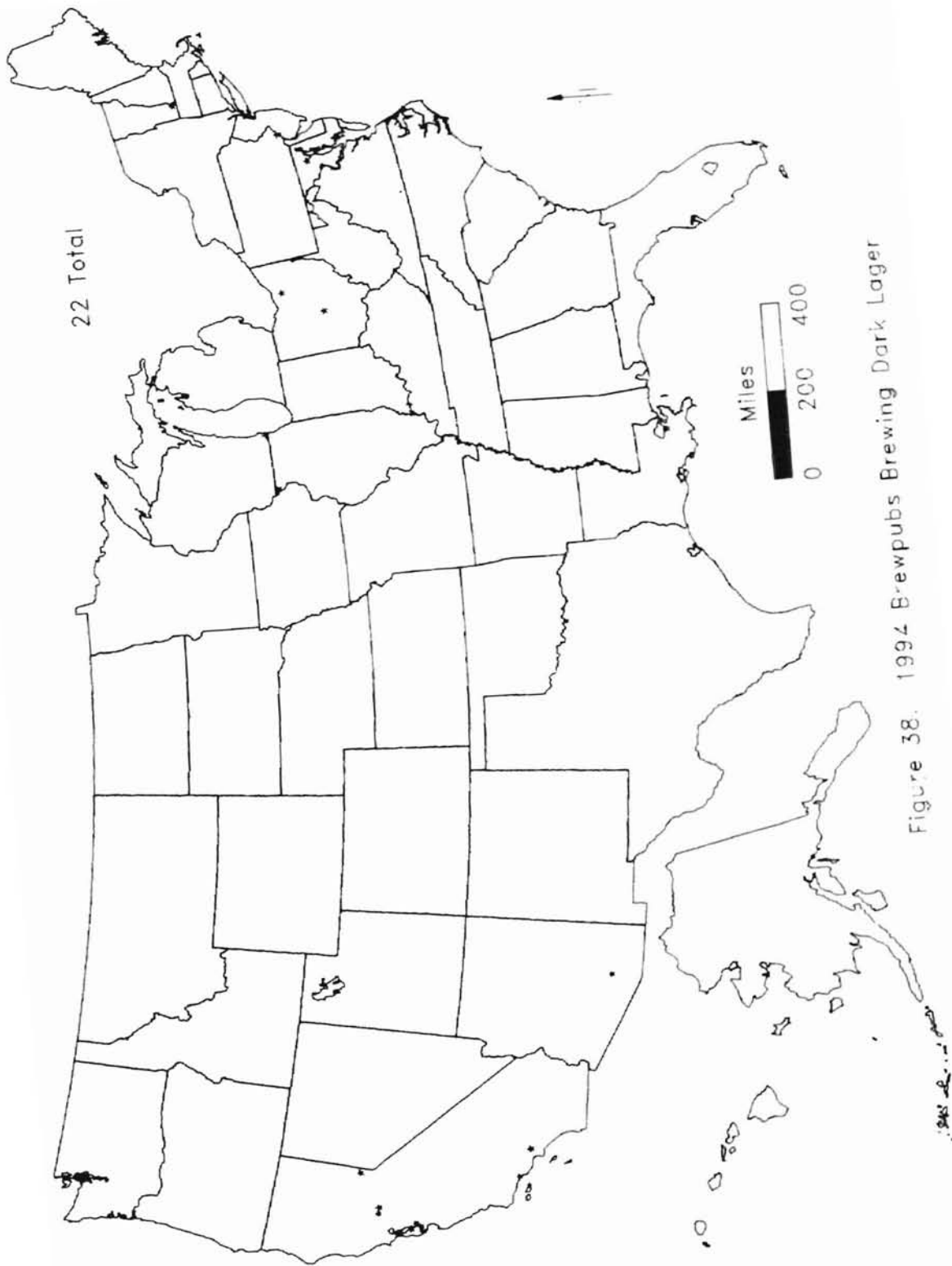


Figure 38. 1994 Brewpubs Brewing Dark Lager

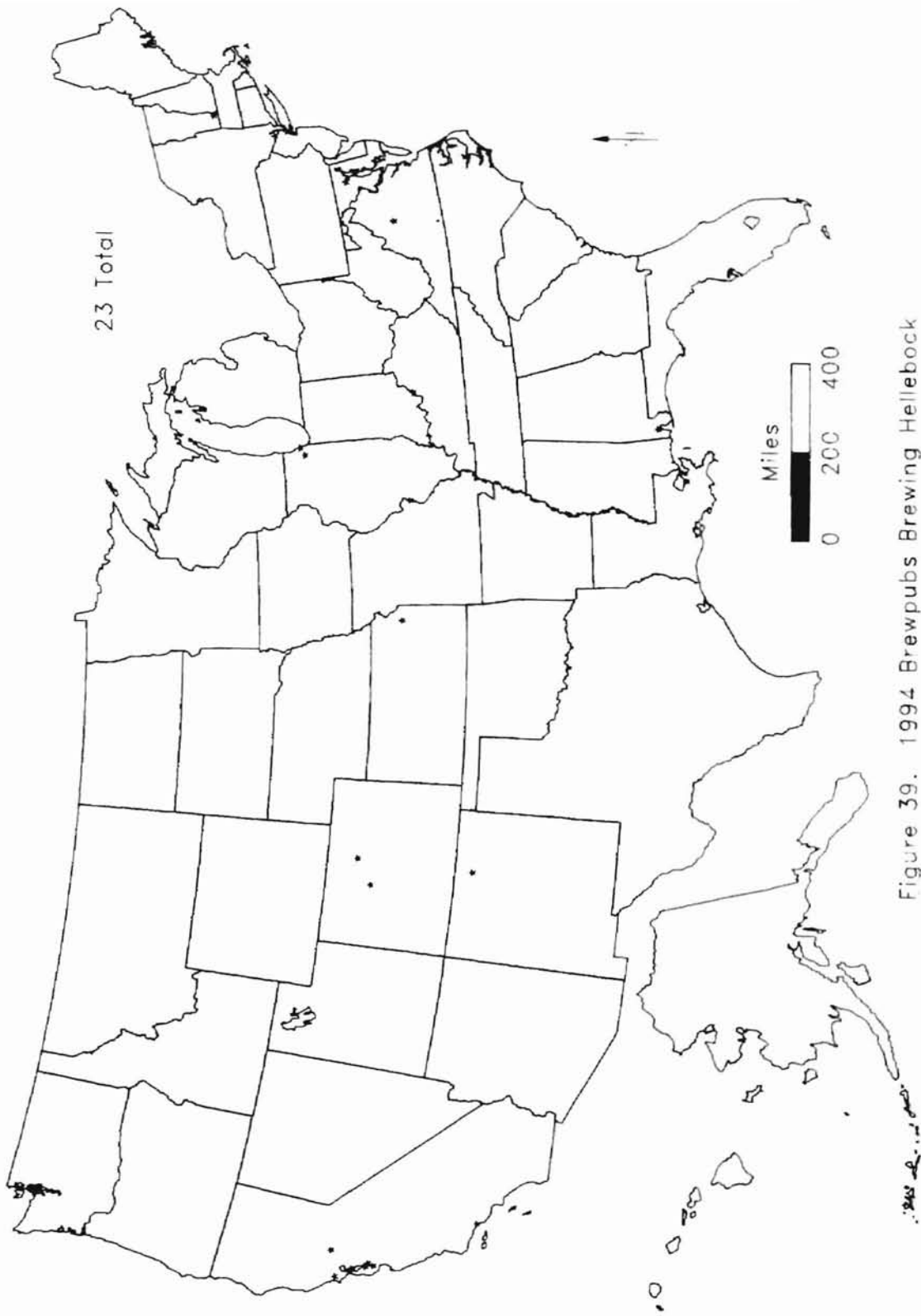


Figure 39. 1994 Brewpubs Brewing Hellebock

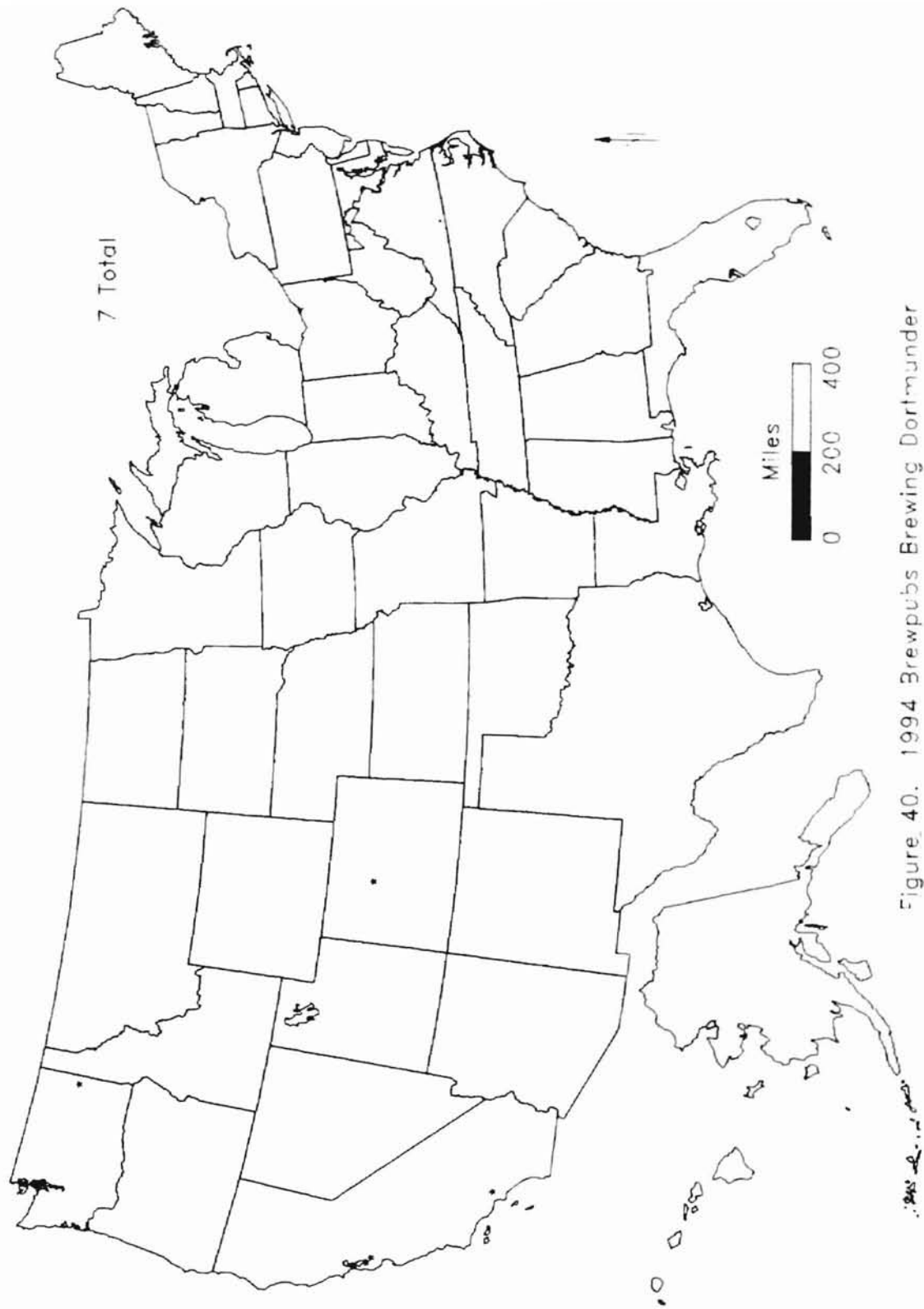


Figure 40. 1994 Brewpubs Brewing Dortmunder

successfully and decided to offer the same style to compete with the innovator. This was an example of why cities with more than one brewpub did not have a significant amount of variety among beer styles.

The top ranked microbrewery beer, Pale Ale, was located throughout America (Figure 41). Surprisingly, both micros in Alaska made this style, showing direct competition among local breweries. Heavy concentrations of Pale Ale were highlighted in northern California, Colorado, and the Northeast. Amber Ale, ranked 10th, was also ubiquitous.

Ranked 15th, Weizen, a German wheat beer (Appendix A), had a very distinctive regional pattern. Regions containing Weizen were detected in the Pacific Northwest and the Great Lakes regions (Figure, 42). Here was an example of microbreweries deciding on what style to produce based on population characteristics. The light summer beer was produced in an area of high German ethnicity around Madison and Milwaukee, Wisconsin.

Both Strong Ale and Dark Ale were located in California, the Pacific Northwest, and along the East Coast. To account for bias, it was important to consider the possibility that regional patterns were influenced by states with a high number of establishments. The Pacific Northwest and California were described in Chapter IV as places of high microbrewery concentration. States with a high number of microbreweries may or may not have a greater

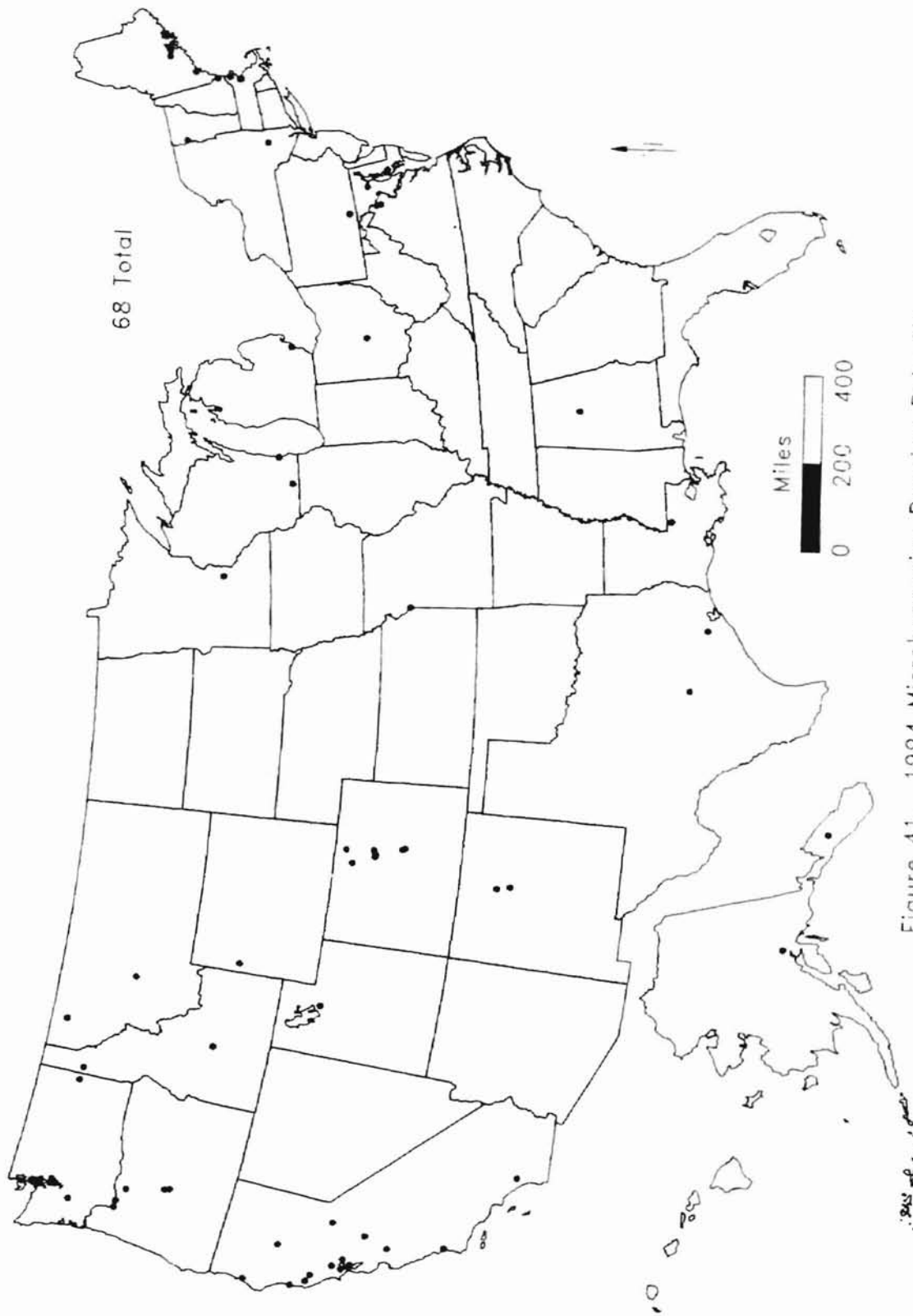


Figure 41. 1994 Microbreweries Brewing Pale Ale

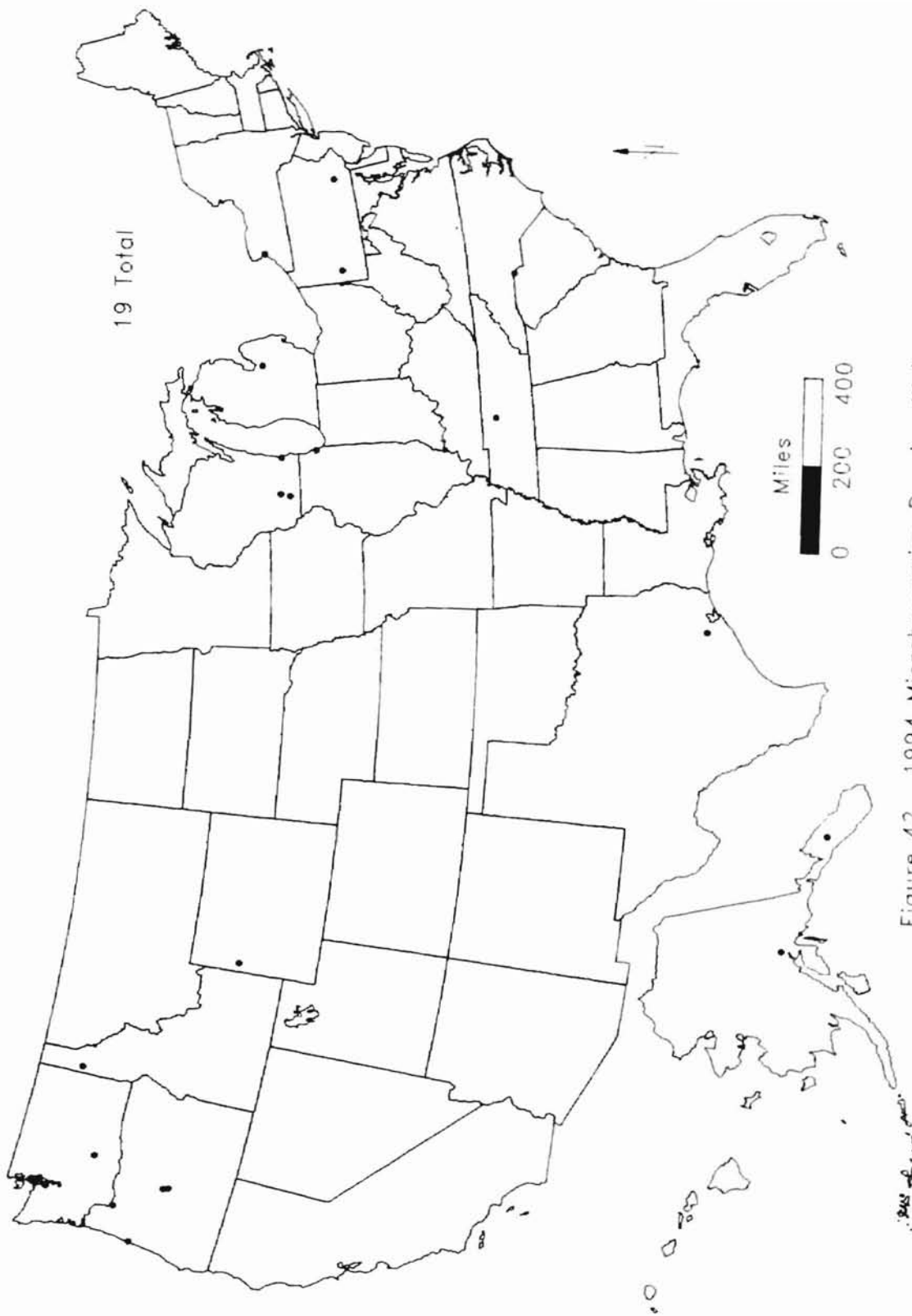


Figure 42. 1994 Microbreweries Brewing Weizen



selection of beer styles. This remained unknown as the problem was not addressed by this thesis.

Ranked 30th, Mild Ale, a popular beer in the south of England, was only brewed by five microbreweries. Three micros in Washington state produced the style (Figure 43). They may cater to local tastes or follow an original innovator's lead in brewing those beers which sell. Rhode Island, alone on the East coast, displayed a micro which brewed a Mild; again possibly due to strong local preference for "things English."

The final microbrewery beer studied was Vegetable Beer. This beer, similar to the Belgian fruit beers, is brewed using malt and various vegetables as sources of fermentable sugars. Across the country, only four microbreweries made this beer type. They were located in California, Washington, and Florida (Figure 44). Absent from containing a Vegetable Beer were the Mountain West, Great Plains, Great Lakes, and East Coast. This particular style may only appeal to a select group of consumers. Other microbreweries in America may not be willing to risk market share over offering unusual beers.

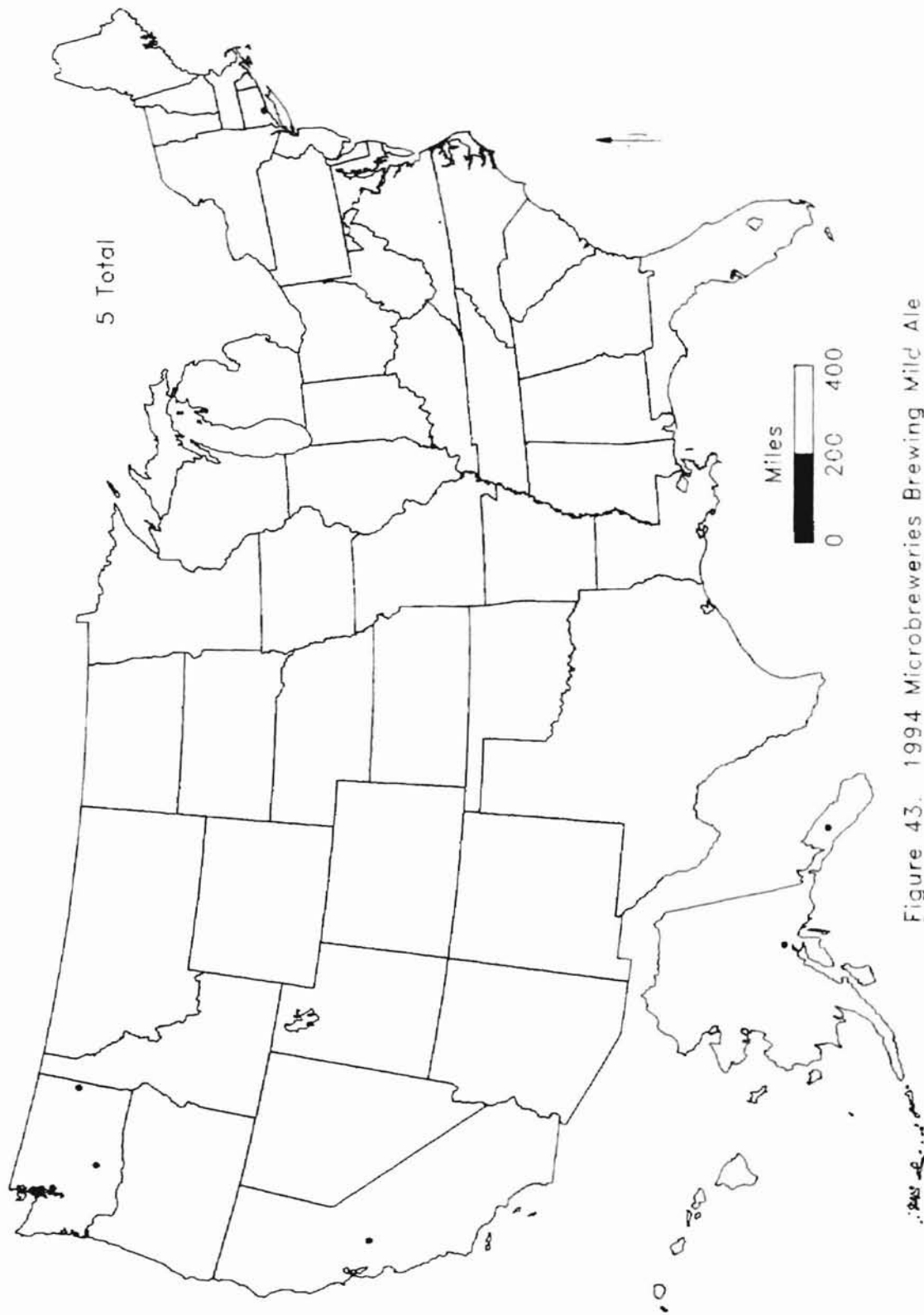


Figure 43. 1994 Microbreweries Brewing Mild Ale

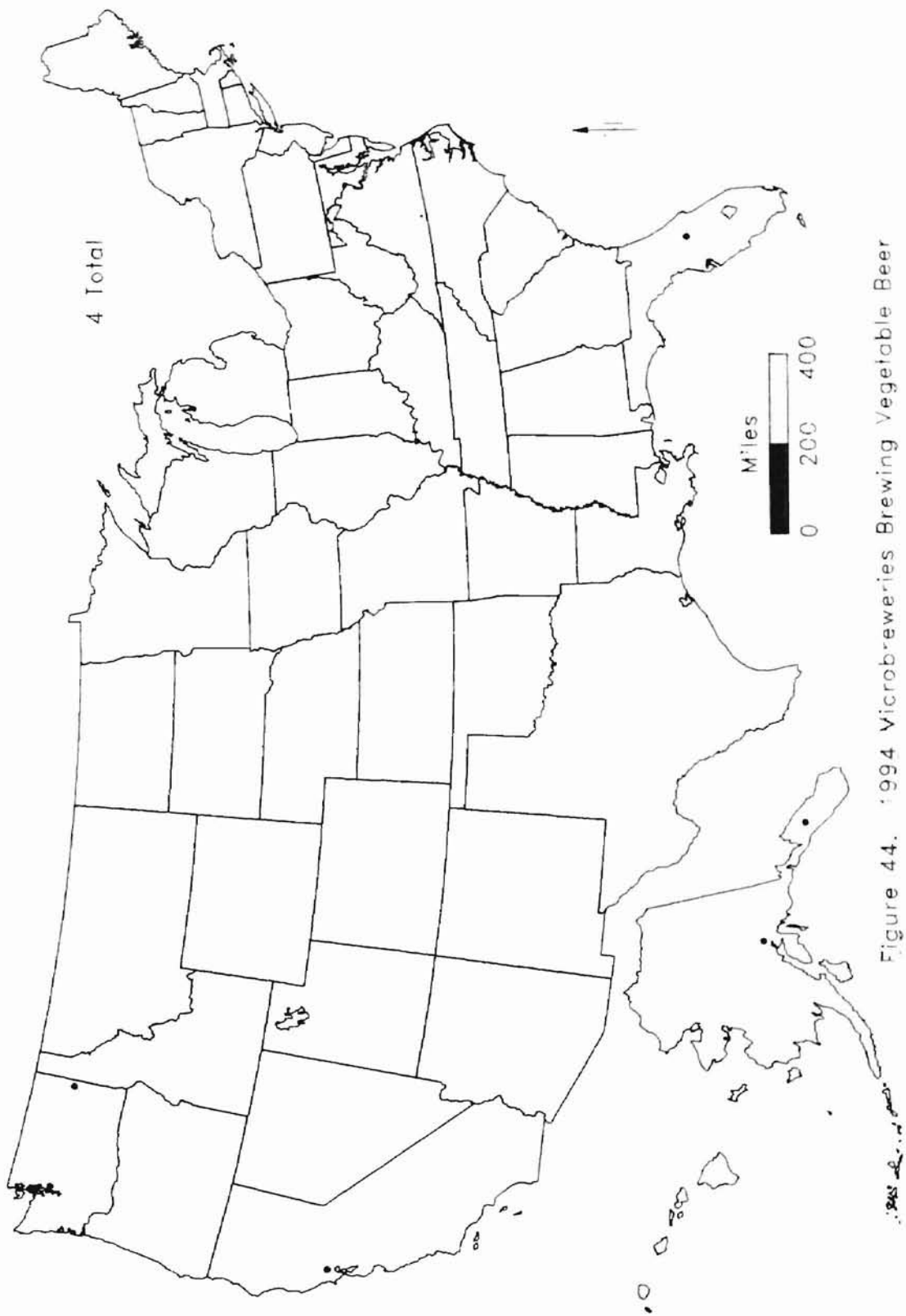


Figure 44. 1994 Microbreweries Brewing Vegetable Beer

## CHAPTER VI

### CONCLUSIONS

#### Summary

The first hypothesis was craft breweries initially follow the contagion diffusion process and then reflect a hierarchical diffusion pattern. The diffusion patterns experienced by craft breweries were contagion, relocation, and hierarchical. Craft breweries originated in California; however, their acceptance and rise in American popular culture can be traced to Yakima, Washington. Once established in California and Washington, contagion diffusion through personal contact attracted many innovators to visit the region of origin. As a result, craft breweries located across the country via the process of relocation diffusion. Brewpubs and microbreweries differed in their paths of diffusion. Brewpubs originated on the West coast; then diffused to the East coast and, only later, toward the central sections of America. Brewpub diffusion lagged behind micros due to the barriers of religion and legislation. Once legislative barriers were removed, brewpubs quickly expanded to more states than microbreweries. In the South, restrictive legislation and the discouragement of alcohol consumption resulted in what has been described as a "Dixie Drought Belt."

Microbreweries originated on the West coast, but

diffused first to Montana, Iowa, and Michigan before appearing on the East coast. Microbreweries arrived in more states than brewpubs because legislation did not strictly forbid them. Initially, microbrewery diffusion increased faster than brewpubs. After 1989, the expansion of micros slowed and as a result no new states received their first brewery for several years.

The second hypothesis was craft breweries are clustered into regions. By using location quotients for 1990 and 1994, regional analysis indicated high craft brewery concentrations as compared to population as the Pacific Northwest, Mountain West, and Upper New England. In contrast, the Great Plains and the South lacked brewery activity. Therefore, craft breweries were clustered into regions of high and low densities.

The third hypothesis was brewpubs are primarily located in resort and university towns. State level analysis suggested resort and university town locations were favored by brewpubs during the initial stage of diffusion. Though the dominance of these towns decreased, by 1994, 114 brewpubs were located in 97 towns, revealing they remained favored locations. Large urban areas became prominent locations for brewpubs after 1990. Rapid adoption of brewpubs in Upper New England and the Mountain West can be explained by the presence of ski resorts and other types of outdoor recreation activities.

The fourth hypothesis, brewpubs are secondarily

located within the central city, was proved correct. The location of brewpubs at the intracity scale was predominantly in the central city. Numerous programs of downtown urban renewal offered prime locations for brewpub establishment. Brewpubs were a centralizing factor in America's central cities, contrary to the trend of retail shops fleeing to the suburbs.

The fifth hypothesis was the popularity and variety of beer styles produced by craft breweries have changed through time. With the rise in the number of craft breweries, beer style variety did indeed increase. By 1994, 47 of 48 styles were brewed in America. Cities with more than one of the same craft brewery type were analyzed to determine if competition increased variety. Surprisingly, an increase in the number of breweries did not affect variety.

The sixth hypothesis was brewpubs and microbreweries differ in the types of beers they brew. Beer styles were analyzed based on the percentage of breweries producing a given style in a given year. Results demonstrated brewpubs and microbreweries selected from the same 48 basic beer styles, but differed in the styles they emphasized. Microbreweries and brewpubs did not brew the same styles with the same regularity.

The last hypothesis was craft brewery beer styles have a regional pattern. Those styles frequently brewed by craft breweries were observed to be ubiquitous in America.

However, as a style declined in the percentage of establishments brewing it, regional patterns were detected. Concentrations of German style beers were possibly linked to areas of high German population. This indicated brewers may have catered to local population characteristics to increase the opportunity for success.

### Validity

The validity of this thesis, as an expansion of knowledge in geographic studies of popular culture and, more specifically, in the areas of food and drink, is justified by the reason of adding to the academic literature regarding patterns of alcoholic production and consumption. Moreover, it provides real world applications.

First, the literature available in popular culture regarding the subject of alcohol varies from identifying regional differences in consumption to describing the physical structures in which consumption takes place. Viticultural studies show that climatic and topographic factors influence grape production. Analysis of craft breweries provides an opportunity to reveal where consumption or adoption of craft beer is high while simultaneously revealing locations of production. Alcohol studies historically do not address the importance of identifying places of alcohol production in the United States. This study combines both factors of consumption

and production.

The inclusion of craft breweries in popular culture continues to reveal regional differences exist in what people drink. The cultural convergence hypothesis explains that the adoption of popular culture will result in placelessness (Jordan et al. 1994). With increased mobility and the electronic media, American culture is said to be more homogenized; the cultural composition of the U.S. is becoming more alike.

In contrast, though more places adopt the idea of craft beer, regional differences still occur. Craft breweries are becoming ubiquitous across the country but the styles of beer available, food sold, location type, and target market retain regional variation. The cultural fabric continues to change, as the new popular culture trait of craft brewing is accepted and then evolves. People have various preferences which are expressed spatially.

The American character, an expression of individualism, results in the adoption of places to drink craft beer but different styles are consumed in different places. Cultural geographer, Zelinsky, incorporates the necessity of understanding individualism before attempting to undertake either a historic or geographic study of the United States (1973).

Second, in explaining why the geographic study of craft breweries is valid, results from the thesis have a



direct, real world application. In addition to a better understanding of popular culture, identifying the locations of successful craft breweries across the states is useful and potentially valuable knowledge to people interested in joining the myriad of brewing entrepreneurs. When entering the new and exciting opportunity of producing craft beer, the background information and research done in this study provides a better chance of business success.

For any industry, a multitude of companies in the United States make considerable sums of money providing market research information. As yet, the number of market researchers in the brewing industry is minimal and expensive. Thesis information on diffusion paths, regionality, university and resort town typologies, intracity retail location decision factors, and ubiquitous or regional variation among beer styles, is provided free of charge to the public.

Use of the information in this thesis is an extra outlet for craft brewery owners and brewmasters to consult and identify places to successfully locate. Additionally, knowing which styles are accepted or unavailable in different regions allows informed decisions to be made on which styles to brew depending on location. Published material directed specifically to craft brewers from such sources as the Institute of Brewing Studies, while containing extremely useful data, does not place this information in a spatial context.

## Future Research

This initial study of the craft brewing industry and the changes it experienced through both space and time is intended to offer descriptive information which can next be used as a baseline for future research in geography, history, sociology, business, or any other academic field. In doing the first analysis of the industry, many shortcomings and ideas for research in the thesis are recognized.

In order to fully account for the diffusion of craft breweries and their location types, data regarding brewery closings must be studied; then compared and contrasted to this thesis. Completeness will result if contract breweries are also studied.

The influence of legislation on the beer industry and specifically craft breweries is not yet fully explored. The types of federal or state legislation regarding taxes as well as maximum alcohol content and maximum capacity may reveal a more detailed understanding of craft brewery locations. Many states regulate that craft beer must contain no more than 3.2% alcohol by volume. This influences which beer styles can be brewed in a location and still accurately convey their characteristic color, smell, and taste. State capacity restrictions of 2,000 or 5,000 barrels per year and tax rates per barrel influence

where microbreweries locate.

Correlating state variations in alcohol consumption with craft brewery locations may serve as an indicator as to why certain locations are quick to adopt the innovation. Additionally, correlation with places with high imported beer consumption rates or states which contain large numbers of homebrewers will further reveal the types of people and places which readily accept craft brewed beer. Analysis of demographic variables such as age, per capita income, and ethnicity should be included in further studies.

The fact that microbreweries are not studied at the state or intracity scale should quickly be remedied. Further analysis at the intracity scale incorporating the locations of downtown historic districts or renewal projects will bolster the theory that these places are the reason brewpubs congregate in the central city. Finally, detailed analysis of where a specific beer style originates and its diffusion path will certainly reveal regional patterns and the impact of ethnic migration in the United States.

#### Trends

Intimate association with the craft brewing industry and its products through personal interviews, visits to breweries, attendance at beer festivals, and writing a thesis allows the knowledge of the author to expand

exponentially. As such he takes the liberty of predicting future trends in the exciting and everchanging subculture of craft beer.

Due to unavailable data, the scope of this study is terminated at 1994. Since then, craft breweries remain in the second stage of diffusion with rapid adoption resulting in more than 600 breweries by 1995. In 1996, this trend continues as the total brewery count proliferates.

In addition to more breweries, the craft brewing industry has experienced a recent stimulus from new establishments called BOP's, or Brew On Premises. These facilities contain all the latest technology and equipment which is used by homebrewers to make beer. The ability to brew with modern equipment will undoubtedly lead more and more people to enjoy a wider variety of beers. As consumer education and participation expands, the availability and enjoyment of craft beer will spread.

Craft brewers must continue to emphasize producing and marketing a quality product, above all other considerations, in order to surpass over 2,000 breweries in America. Interest from mass media will certainly wane as it does with all additions to popular culture, but beer consumption remains a constant in American society. The possibility that public interest will wane in the numerous beers now available is very slight indeed.

One factor unaccounted for that may affect small breweries throughout the states is the reaction of the

national brewers. Already, breweries such as Miller, Anheuser-Busch, and Coors have released new products to compete with craft breweries. Miller Brewing Company now produces beers from a brewery called The Plank Road Brewery and markets these beers as coming from a true "microbrewery" (do they really limit capacity to less than 15,000 barrels?). Coors, the first national to release a "red beer," George Killian's Irish Ale, recently began a large anti-variety advertisement campaign. Television commercials depict a man saying "give me a beer" to the bartender who replies by reciting a litany of beer styles, to which the buyer sarcastically says "just give me a beer."

Appealing to the common denominator and hurting small breweries is counterproductive to the health of all breweries no matter the size. National brewers should encourage and introduce more people to drink a wider variety of beer responsibly; whereby, everyone in the industry benefits. They should not only encourage people to drink light bodied beers, for which there is a time and a place as any honest beer lover will say, but also to sample unique styles which originate all over the world. American breweries adopt and adapt new styles and now produce the widest variety of beers available anywhere in the world!

Craft breweries will continue to open and, as the market changes, some will unavoidably close. However,

while overall beer consumption in the United States continues to decline, as Moeller said, people are drinking less, but they are drinking better.

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## APPENDIX A

### GLOSSARY

Ale: A beer brewed with top-fermenting yeast which allows fermentation at a warmer temperature. Ales ferment faster and have a more pronounced palate of fruitiness than lagers.

Barrel: One U.S. Barrel equals 31.5 gallons.

Bitter: A style of ale first brewed in England characterized by low carbonation, medium maltiness and ending Specific Gravity of 1.008-1.0012.

Brewpub: According to the Institute of Brewing Studies, a brewpub is a restaurant-brewery that sells a majority (over 50%) of its beer on site. The beer is brewed for consumption in the restaurant or bar.

Contract Brewery: A business that hires another company to produce its beer. Brewing and packaging is left to a brewery which has enough excess capacity to handle production. The contract brewery handles marketing and sales.

Craft Brewery: Includes both microbreweries and brewpubs with a capacity less than 15,000 barrels per year.

Dating bars: Label used by Jim Hathaway to characterize drinking establishments geared towards male/female interaction. AKA singles bar.

Fern bars: Label used by Jim Hathaway to characterize a bar style begun in San Francisco. Well-lighted, large windows allowing light for plants, associated with an upscale clientele.

Homebrewing: Non-professional and non-profit hobby of crafting full-flavored beer. Usually limited to 200 gallons per head of household per year.

Lager: A beer produced with a bottom-fermenting strain of yeast. Fermentation occurs at low temperatures and consequently lagers are usually less cloudy than ales.

Light lager: A yellowish beer with low alcohol content due to a lack of malt.

Microbrewery: A brewery that produces less than 15,000 barrels of beer per year. Beer is sold to the public

through a wholesaler, retailer or both. The brewery may also sell directly to consumers depending on state legislation. When on site sales pass 50% the microbrewery is reclassified as a brewpub.

National Brewery: A company with sales exceeding 500,000 barrels.

Regional Brewery: A brewery with the capacity to make between 15,000 and 500,000 barrels. Regional designation does not mean products are only available on a regional level.

Seasonal beer: Any infrequently brewed beer, usually with a combination of spices and fruit. Characterized by high alcohol content and production during a holiday season.

Stout: Irish/Scottish beer characterized by a high malt content that produces a beer color near black.

Weizen: German for wheat. A German style of beer that relies on wheat not malt for fermentable sugars. Hefeweizen is an unfiltered wheat beer.

APPENDIX B

DATABASE FIELD NAMES

NAME: BREWERY NAME  
 TYPE: MICRO=1 BREWPUB=0 REGIONAL=3  
 ADDRESS:  
 CITY:  
 STATE:  
 ZIPCODE:  
 POPULATION: URBAN AREA POPULATION  
 YROPENED: YEAR BUSINESS OPENED  
 CENTRAL: LOCATED IN THE CENTRAL CITY YES=1 NO=0  
 SUBURBAN: NOT LOCATED IN THE CENTRAL CITY YES=1 NO=0  
 UNIVERSITY: IS THIS A UNIVERSITY TOWN YES=1 NO=0  
 RESORT: IS THIS A VACATION/RESORT TOWN YES=1 NO=0  
 URBAN AREA: YES=1 NO=0  
 UNIVPOP: NUMBER OF PEOPLE ENROLLED IN COLLEGE  
 CAPACITY: BEER PRODUCTION CAPACITY OF BREWERY  
 PRODUCTION: AMOUNT OF BEER PRODUCED IN 1994  
 STATECAP: MAXIMUM ALLOWED PRODUCTION BY STATE LAW  
 MAXPERCENT: MAXIMUM ALCOHOL CONTENT BY VOLUME

BEER STYLES PRESENT YES=1 NO=0

STOUT	BITTER
PORTER	EXTRA SPECIAL BITTER
BROWN ALE	LIGHT LAGER
PALE ALE	GOLDEN LAGER
SCOTCH ALE	AMERICAN LAGER
MILD ALE	AMERICAN LIGHT LAGER
STRONG ALE	DARK LAGER
BLOND ALE	AMBER LAGER
AMBER ALE	MARZEN
LIGHT ALE	ALT
DARK ALE	MUNICHHELLES
RED ALE	KOLSCH
CREAM ALE	VIENNA
GERMAN ALE	DORTMUND
AMERICAN ALE	CALIFORNIA COMMON
VEGETABLE BEER	RYE BEER
INDIA PALE ALE	FRUIT BEER
PILSNER	SMOKED BEER
WEIZEN	BARLEY WINE
HEFEWEIZEN	BELGIAN SPECIALTY
DUNKELWEIZEN	SPICED BEER
AMERICAN WHEAT	WEIZENBOCK
GERMAN WHEAT	BOCK
DOPPELBOCK	HELLEBOCK

APPENDIX C  
SURVEY AND COVER LETTER



College of Arts and Sciences  
 Department of Geography  
 308 Geography Building  
 Stillwater, Oklahoma 74078-4073  
 405-744-6250, FAX 405-744-5620

Dear Breweries,

Geography is an all encompassing discipline which attempts to explain both cultural and physical patterns around the world. The geography of alcohol, and more specifically "Good Beer," is a captivating and natural topic for me (having been a homebrewer for five years). The reawakening of traditional, full-flavored beer styles in American breweries is cause for celebration. Studying good beer for a Masters degree in Geography makes school much easier (not to mention the fun of doing "intensive" fieldwork!).

The survey I am distributing will be used by me to compete a Thesis. All information gathered will be used for academic purposes only. The data will be aggregated by state and region. In other words, you won't be mentioned by name. It is my intention to find those factors that have shaped the pattern of craft brewery locations in America. In addition, I hope to find when and where different European beer styles became available in the States. Please help my research by completing the attached survey. Postage is already paid for your convenience.

Sincerely,

Duncan Maeer  
 308 Geography Building  
 Oklahoma State University  
 Stillwater, Ok  
 74078  
 e-mail: maeer@okstate.edu







APPENDIX D

LIST OF BREWING INDUSTRY PUBLICATIONS

- The Journal of American Society of Brewing Chemists  
3340 Pilo Nob Rd. St. Paul, MN 55121
- Beer Marketer's Insights  
51 Virginia Ave. West Nyack, NY 10994
- Beer Statistics News  
51 Virginia Ave. West Nyack, NY 10994
- Beer Wholesaler  
11460 W. 44th Ave., Suite 4 Wheatridge, CO 80033
- Beverage Communicator  
5 Barker Ave., Suite 104 White Plains, NY 10601
- Beverage World  
150 Great Neck Rd. Great Neck, NY 10021
- Biere Magazine  
262 Dorpstraat 3061 BERTEM, Belgium
- Brauindustrie  
D8948 Mindelheim, Germany
- Brauwelt  
Postfach 9110, 500 Nurnberg 11, Germany
- The Brewers Bulletin  
PO Box 677 Thiensville, WI 53092
- Brewer's Digest  
4049 W. Peterson Ave. Chicago, IL 60646
- Brewer's Guardian  
10 Belgrade Rd. Hampton, Middlesex, London TW12 2AZ
- The Brewing Industry News  
PO Box 27037 Riverdale, IL 60627
- Journal for the Institute of Brewing  
33 Clarges St. London WIY 8EE England
- The Master Brewers Association of the Americas  
4513 Vernon Blvd. Madison, WI 53705
- Modern Brewery Age  
50 Day St. Norwalk, CT 06854

APPENDIX E

LIST OF RESORT TOWNS

Cave Creek, Arizona	Yakima, Washington
Prescott, Arizona	Leavenworth, Washington
Tahoe City, California	Winthrop, Washington
Lake Tahoe, California	Appleton, Wisconsin
Palm Springs, California	Sturgeon Bay, Wisconsin
Napa, California	Whitewater, Wisconsin
Calistoga, California	Chilton, Wisconsin
Redding, California	Jackson, Wyoming
Truckee, California	
Telluride, Colorado	
Durango, Colorado	
Aspen, Colorado	
Steamboat Springs, Colorado	
Vail, Colorado	
Crested Butte, Colorado	
Cripple Creek, Colorado	
Key West, Florida	
Pensacola, Florida	
Atlantic Beach, Florida	
Fort Walton Beach, Florida	
Rock Island, Illinois	
Galena, Illinois	
Davenport, Iowa	
Portland, Maine	
Kennebunk, Maine	
Auburn, Maine	
Camden, Maine	
Carrabasset Valley, Maine	
Bethel, Maine	
Carson City, Nevada	
Las Vegas, Nevada	
Virginia City, Nevada	
West Lebanon, New Hampshire	
Embudo, New Mexico	
Taos, New Mexico	
Manteo, North Carolina	
Grants Pass, Oregon	
Lincoln City, Oregon	
Cave Junction, Oregon	
Roseburg, Oregon	
Rapid City, South Dakota	
Fredericksburg, Texas	
Riverdale, Utah	
Moab, Utah	
Norwich, Vermont	
Brattleboro, Vermont	
Friday Harbour, Washington	

APPENDIX F

LIST OF UNIVERSITY TOWNS

Tempe, Arizona  
Flagstaff, Arizona  
Tucson, Arizona  
Fayetteville, Arkansas  
Berkeley, California  
Hayward, California  
Fresno, California  
Fullerton, California  
Santa Cruz, California  
Eureka, California  
San Luis Obispo, California  
Davis, California  
Fort Collins, Colorado  
Boulder, Colorado  
Gainesville, Florida  
Moscow, Idaho  
De Kalb, Illinois  
Champaign, Illinois  
Lafayette, Indiana  
Iowa City, Iowa  
Lawrence, Kansas  
Manhattan, Kansas  
Cambridge, Massachusetts  
Ann Arbor, Michigan  
Columbia, Missouri  
Springfield, Missouri  
Lincoln, Nebraska  
Williamsville, New York  
Ithaca, New York  
Port Jefferson, New York  
Syracuse, New York  
Greensboro, North Carolina  
Boone, North Carolina  
Norman, Oklahoma  
Hillsboro, Oregon  
Eugene, Oregon  
Ashland, Oregon  
Burlington, Vermont  
Charlottesville, Virginia  
Seattle, Washington  
Spokane, Washington  
Morgantown, West Virginia

VITA

Duncan Maeer

Candidate for the Degree of  
Master of Science

Thesis: SPATIAL CHANGES IN THE U.S. BREWING LANDSCAPE: A  
FOCUS ON THE GEOGRAPHY OF CRAFT BREWERIES FROM  
1982 TO 1994

Major Field: Geography

Biographical:

Personal Data: Born in Bournemouth, England, On  
December 13, 1971, the son of Capt. Derek and Anne  
Maeer.

Education: Graduated from Broken Arrow Senior High  
School, Broken Arrow, Oklahoma in May 1989; received  
Bachelor of Arts degree in Geography from  
Northeastern State University, Tahlequah, Oklahoma  
in May 1994. Completed the requirements for the  
Master of Science degree with a major in Geography  
at Oklahoma State University in July 1996.

Experience: Employed as Teaching Assistant, Department  
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Employed as Research Assistant, Department of  
Geography, Oklahoma State University, 1995-present.

OKLAHOMA STATE UNIVERSITY  
INSTITUTIONAL REVIEW BOARD  
HUMAN SUBJECTS REVIEW

Date: 12-06-95

IRB#: AS-96-031

**Proposal Title:** SPATIAL CHANGES IN THE U.S. BREWING LANDSCAPE:  
FOCUSING ON THE GEOGRAPHY OF MICRO-BREWERIES AND BREWPUBS  
FROM 1980-1994

**Principal Investigator(s):** George Carney, Duncan Maer

**Reviewed and Processed as:** Exempt

**Approval Status Recommended by Reviewer(s):** Approved

ALL APPROVALS MAY BE SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD  
AT NEXT MEETING.

APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A  
CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD  
APPROVAL.

ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR  
APPROVAL.

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Comments, Modifications/Conditions for Approval or Reasons for Deferral or Disapproval  
are as follows:

Signature:



Chair of Institutional Review Board

Date: December 13, 1995