

Under the (Ancestral) Influence: Demographic Drivers of Diverging Demands in the U.S. Alcohol Market

Jarrett Hart and Julian M. Alston

In contrast with global trends over the past 20 years and more, during the 21st century, U.S. states have been diverging in terms of total per capita consumption of alcohol and the mix of alcoholic beverages. Socioeconomic and demographic variables appear to play significant roles in accounting for the large and persistent differences in per capita alcoholic beverage consumption among U.S. states and regions.

The United States is one of the world’s largest consumers of alcoholic beverages. However, within the country, alcohol consumption rates vary considerably among individuals, states, and regions. More than one-third of American adults do not drink any alcohol at all, and those who do drink vary considerably in what they prefer to drink, how often, and how much. Hence, we see large and persistent differences among U.S. states in terms of per capita consumption of alcohol, and the mix of alcoholic beverages consumed.

The average rates of per capita consumption of alcohol and the mix of beer, wine, and spirits also vary considerably among countries (Table 1). The United States is one of the “beer-drinking” nations and by global average standards, Americans are relatively heavy drinkers.

In recent decades, alcohol consumption patterns have become more similar among countries; both rates of per capita consumption and the shares of beer, wine, and spirits have converged to some extent. But recent trends among U.S. states do not match the global pattern among countries. From the early 1970s through the mid-1990s, U.S. states became more

similar in terms of both their total per capita consumption of alcohol, and the shares of beer, wine, and spirits in the mix. However, since the mid-1990s, the trend has reversed, with increasing differences among states in both per capita consumption of alcohol, and the mix.

These persistent spatial differences in consumption patterns among states appear to reflect differences in preferences among populations, which we explore by examining their links with socioeconomic and demographic variables. We estimate econometric models of demand for beer and wine using scanner data from supermarkets for 2006–2016. We observe diverging trends within product categories. Market shares of higher-priced wine and (craft) beer are growing, whereas shares of lower-priced (macro) beer are diminishing.

An Overview of U.S. National and State-Level Alcohol Consumption

Total U.S. per capita alcohol consumption has ranged between 1.75 and 2.75 gallons per capita for most years

apart from the period of Prohibition (1920–1933) and the years following (Figure 1). After repeal in 1933, total per capita alcohol consumption trended upwards for half a century, to reach a peak at 2.76 gallons of alcohol per capita in 1981. From that peak, per capita consumption of alcohol declined to 2.15 gallons per year for 1995–1998, after which it grew to a new plateau of around 2.33 gallons per year for 2012–2016.

Along with the changes in total consumption, the mix of beverages has evolved. Up through the decade of the 1880s, the United States might well have been best described as a whiskey-drinking nation, with spirits accounting for more than half of the total. But ever since then, at least one-half of the nation’s alcohol consumption has been in the form of beer. The per capita quantities of beer, wine, and spirits have drifted along with longer-term shifts in total alcohol consumption, and the share of wine has trended upwards slowly, at the expense of both beer and spirits.

Still, unlike the world as a whole, the relative shares of national alcohol

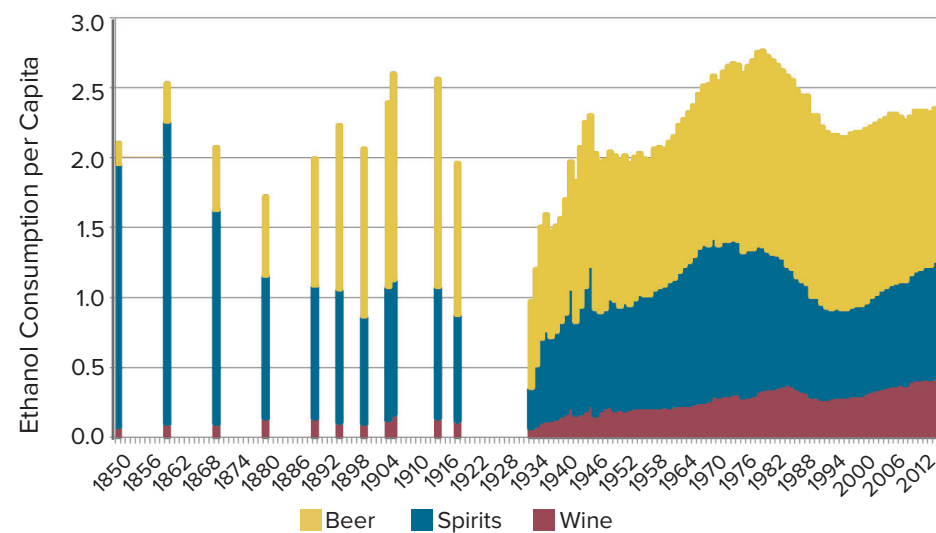
Table 1. Total Consumption of Alcohol Per Adult and Shares, Selected Countries, 2010–2014

Country/Region	Total Alcohol gallons/adult	Wine Share -----percent-----	Beer Share	Spirits Share
India	0.2	0	15	85
China	0.9	4	44	52
Russia	2.4	11	39	49
Italy	1.7	65	23	11
France	2.4	59	19	23
U.K.	2.1	41	37	22
Germany	2.5	28	53	19
U.S.A.	1.8	18	49	34
Mexico	1.0	3	75	22
World	0.7	15	43	42

Source: Holmes and Anderson (2017, pp. 129–30)

Figure 1. Consumption of Alcohol Per Adult, United States, 1850–2016

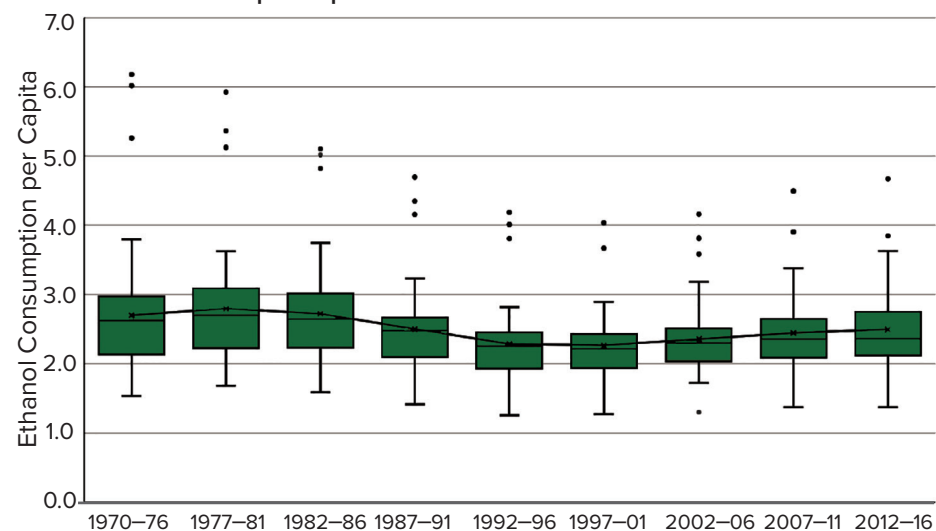
Gallons of alcohol per adult (as beer, spirits, wine, and in total)



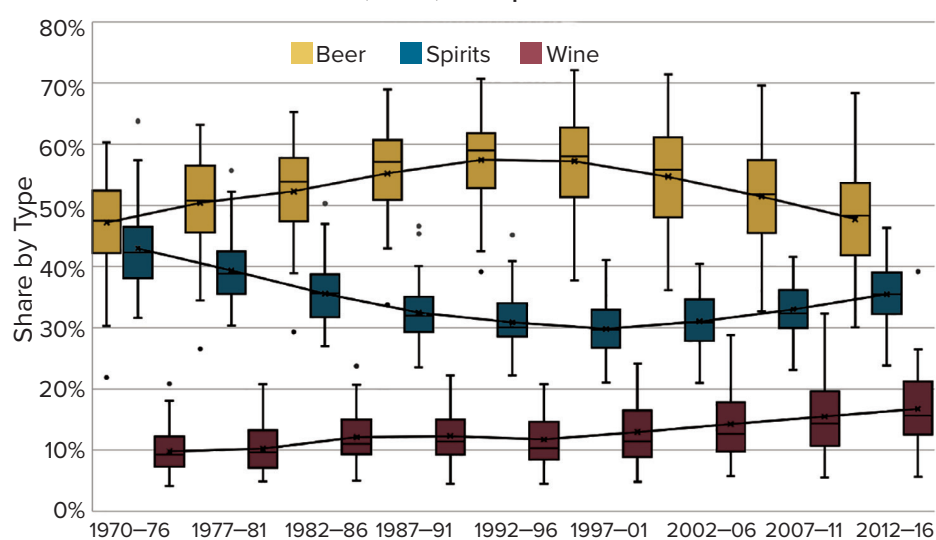
Notes: Based on population aged above 14 years prior to 1970 and above 13 thereafter

Figure 2. Consumption of Alcohol in U.S. States, Five-Year Averages, 1970–2016

a. Gallons of ethanol per capita



b. Shares of ethanol from beer, wine, and spirits



Notes: Based on population aged above 13 years. Boxes represent quartiles, whiskers 95% confidence intervals, and dots are outliers.

consumption have been comparatively stable over five decades. U.S. per capita alcohol consumption is now more than 2.5 times the global average, with larger shares of both beer and spirits and a smaller share of wine. And the U.S. trend is in the opposite direction compared with the global average—with the share of wine rising, and the share of beer falling—such that the United States in this sense is converging towards the rest of the world and somewhat towards more equal shares of the three beverages in the total. This trend in the national aggregate data masks divergent trends among the U.S. states.

Spatial Patterns in Per Capita Alcohol Consumption and the Mix

Reviewing alcohol consumption among the 50 states (and the District of Columbia) reveals differences across states and how those differences have changed. Figure 2 presents box and whisker plots of the state-level data, as five-year averages (seven-year average for 1970–1976), for total per capita consumption (Panel a), as well as per capita consumption coming from beer, spirits, and wine (Panel b) for the period 1970–2016. The boxes represent the middle 50% of states, the whiskers extend to represent 95% of states, and the dots represent any outliers. These data are official statistics, which may reflect errors resulting from unrecorded alcohol consumption—estimated as about 12%—or of border trade in response to differences in prices created by taxes and other policies.

In Panel a, in each five-year interval, average per capita consumption of ethanol varies considerably across the states. Comparing the plots for the 1970s and 1980s to the early 2000s reveals some decrease in the variance of consumption per capita (a shrinking of the box and whiskers) along with a slight decrease in the overall average.

However, the plots in Panel b reveal more than a simple convergence in consumption patterns. Across the 40-year period, the national average share of beer rose and fell symmetrically; in the latter period, shares of both spirits and wine rose at the expense of beer.

These plots also reveal a noticeable increase in the variance of beer and wine shares among states (a lengthening of the box and whiskers). Hence, although national shares among types of alcohol have become more equal, on average, the states appear to be diverging in terms of the extent to which they specialize in consuming beer, spirits, or wine. Our formal analysis of these data confirms what these plots suggest: since the early 1990s, per capita alcohol consumption patterns have diverged among the states.

Table 2 lists total alcohol consumption per capita and consumption mixes for selected states for the years 1970 and 2016. In 2016, total alcohol consumption per person (over age 14) ranged from less than 1.8 gallons in Utah and West Virginia up to well over 2.8 gallons in 13 states and more than 3.7 gallons in Delaware, the District of Columbia, and New Hampshire (at 4.8 gallons, perhaps reflecting border trade with consumers from higher-taxed neighboring states and Canada). The mix also varies considerably among the states. Beer’s share of total alcohol in 2016 ranged from 29% in the District of Columbia to 68% in West Virginia; spirits’ share ranged from 24% in Vermont to 48% in Delaware; and, wine’s share ranged from 6% in West Virginia to 41% in Idaho.

What might account for these persistent differences among states? Interstate differences in prices and per capita income alone are unlikely to fully account for the large and persistent differences in alcohol consumption we observe. We hypothesize that much may be attributable to cultural differences—we eat and

Table 2. Gallons of Ethanol per Capita, and Shares of Beer, Spirits, and Wine, for Selected U.S. States, 1970 and 2016

State or Region	Total Gal/Capita		1970 Shares			2016 Shares		
	1970	2016	Beer	Spirits	Wine	Beer	Spirits	Wine
California	3.11	2.33	0.36	0.44	0.20	0.41	0.33	0.25
Delaware	3.12	3.72	0.38	0.56	0.07	0.32	0.48	0.20
District of Columbia	6.64	3.85	0.21	0.67	0.12	0.29	0.44	0.27
Florida	2.90	2.65	0.38	0.52	0.10	0.41	0.39	0.20
Idaho	2.04	2.92	0.59	0.37	0.05	0.32	0.28	0.41
Illinois	2.82	2.32	0.43	0.47	0.10	0.48	0.33	0.18
Nebraska	2.43	2.23	0.53	0.42	0.05	0.58	0.32	0.10
New Hampshire	4.82	4.76	0.35	0.59	0.07	0.39	0.42	0.19
New York	3.00	2.22	0.39	0.48	0.13	0.41	0.35	0.24
North Dakota	2.34	3.26	0.52	0.44	0.05	0.50	0.40	0.10
Texas	2.22	2.34	0.59	0.33	0.08	0.56	0.30	0.15
Utah	1.45	1.34	0.52	0.39	0.08	0.47	0.39	0.14
Vermont	3.50	3.08	0.40	0.49	0.11	0.51	0.24	0.26
West Virginia	1.64	1.76	0.53	0.42	0.05	0.68	0.26	0.06
Wyoming	2.59	2.67	0.50	0.44	0.06	0.44	0.44	0.12
Midwest	2.31	2.37	0.51	0.42	0.07	0.48	0.37	0.15
Northeast	3.04	2.42	0.43	0.47	0.10	0.43	0.36	0.22
South	2.33	2.27	0.45	0.47	0.08	0.49	0.35	0.16
West	2.82	2.42	0.46	0.43	0.11	0.43	0.35	0.23
United States	2.57	2.35	0.46	0.45	0.09	0.46	0.35	0.19

Notes: Based on population aged above 13 years.

drink in ways that our grandparents, parents, friends, and neighbors did because that is what they taught us to do; although some tastes are acquired, some habits are persistent if not addictive, and we identify to some extent with the culture from which we came. If these aspects are important, in general and on average, we might expect to observe Americans of, say, German descent drinking significantly more beer and less wine per capita, compared with other Americans of, say, Italian descent.

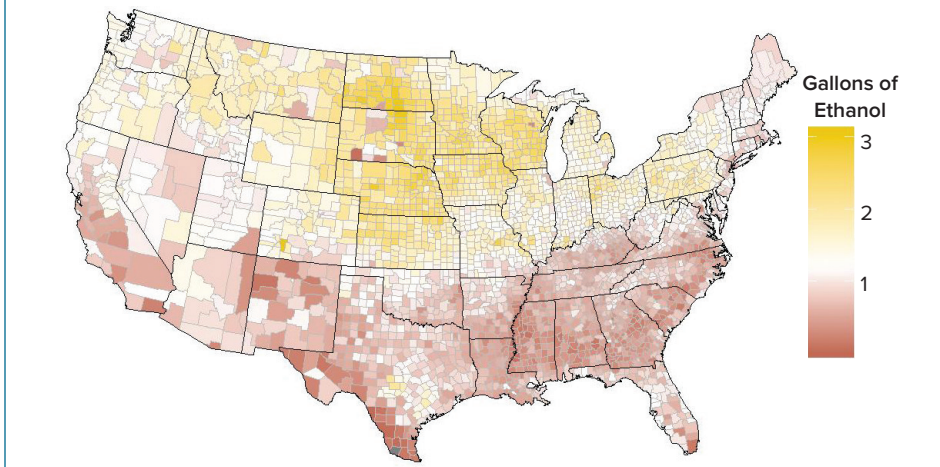
Demographic Influences on Demand for Alcohol

We compiled detailed data on per capita consumption of beer and wine disaggregated spatially, temporally, and across product spaces. Using these data, we modeled the demand for three categories of beer (craft, macro,

and imported) as well as three categories of wine (low-priced dry, high-priced dry, and other, where “dry” includes sparkling as well as still wine, and “other” includes sweet and fortified wine) across 181 U.S. designated market areas (DMA) for 2006–2015. We found statistically and economically significant relationships between the demand for individual categories of beer and wine and socioeconomic and demographic characteristics. We highlight a few of our findings pertaining to measures of ancestry, political affiliation, population density, and income.

We created a measure of ancestral predicted beer (and wine) consumption per capita in a county by weighting the shares of the population of the county claiming ancestry from specific countries, as reported in the U.S.

Figure 3. Ancestral Beer Consumption, County Data, 2005–2009 Population and 1961–1964 Weights



Census, by the corresponding rates of per capita beer (and wine) consumption in those countries (Figure 3). We found that an increase in the ancestral preference for beer is associated with a decrease or no change in demand for all categories of wine and an increase in demand for macro and craft beer, but a decrease in demand for imported beer. An increase in the ancestral preference for wine is associated with an increase in demand for low-priced wine and a decrease in demand for macro beer, but also increases in demand for craft and imported beer and a decrease in demand for high-priced wine.

Political affiliation is another cultural indicator associated with alcohol consumption; political analysts sometimes refer to candidates as appealing to beer-track or wine-track voters. Our results were not so simple. Consumers in areas where Trump had greater voter support in the 2016 national election demand more macro beer and less wine, but also less craft and imported beer.

Population density and income per capita are two of the more standard demographic variables included in our analysis. Our results indicated that consumers in more urban areas drink less overall, and prefer a different mix: they demand more high-priced wine and imported beer, less craft beer,

and less low-priced wine; there was no meaningful relationship between population density and demand for macro beer. The income elasticities are greater for premium categories (high-priced wine, craft beer, and import beer) than for the lower-end categories (low-priced wine and macro beer); that is, consumption of premium categories increases with income, whereas consumption of lower-end categories is less sensitive to income changes.

Conclusion

Persistent patterns of per capita alcohol consumption in the United States are associated with enduring socioeconomic and demographic characteristics of the population. Total per capita alcohol consumption and shares among sub-categories of beer and wine differ significantly and persistently among populations and regions across the country. Drinking is often tied to culture and tradition. Our findings suggest that even after people immigrate to the United States, their ancestral beverage preferences persist and are passed on to their descendants to some extent.

Our analysis shows that, compared with state-level data on aggregate categories, using spatially less-aggregated data on subcategories of beer and wine yields more informative results. Our data are still highly

aggregative across people, places, and products. Data at the level of individual households could help resolve some remaining puzzles.

Suggested Citation:

Hart, Jarrett, and Julian M. Alston. "Under the (Ancestral) Influence: Demographic Drivers of Diverging Demands in the U.S. Alcohol Market." *ARE Update* 23(2) (2019): 5–8. University of California Giannini Foundation of Agricultural Economics.

Authors' Bios

Jarrett Hart is a post-doctoral researcher and Julian Alston is a distinguished professor, both in the ARE Department at UC Davis. They can be reached at jdhart@ucdavis.edu and julian@primal.ucdavis.edu, respectively.

For additional information, the authors recommend:

Hart, J., and Alston, J. M. (2019). Persistent Patterns in the U.S. Alcohol Market: Looking at the Link Between Demographics and Drinking. *Journal of Wine Economics* 14(4): forthcoming.

Hart, J., and Alston, J. M. (2020). Evolving Consumption Patterns in the U.S. Alcohol Market: Disaggregated spatial analysis. *Journal of Wine Economics* 15(1): forthcoming.

Holmes, A. J., and Anderson, K. (2017). Convergence in National Alcohol Consumption Patterns: New Global Indicators. *Journal of Wine Economics* 12(2): 117–148.