

# ***The Economic and Fiscal Impacts of the Distilling Industry in Kentucky, 2021***

Prepared for the  
***Kentucky Distillers' Association***



by  
Paul Coomes, Ph.D.  
Economic Consultant, and  
Emeritus Professor of Economics  
University of Louisville

and

Barry Kornstein  
Economic Consultants  
with assistance from Rob Monsma

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## Executive Summary

**D**istilling in Kentucky continues its incredible two-decade growth wave. Almost every important economic measure is up over our prior studies – facilities, production, employment, payroll, investment, inventory, taxes generated.

There have been two headwinds for the industry since our last study, and both are now receding. The decline in Bourbon exports is set to rebound now that the European Union has suspended its retaliatory tariffs for three years – in sync with the United States’ reduction in tariffs on steel and aluminum imports. And the Covid-19 pandemic hit the Bourbon tourism industry hard in 2020; but 2021 saw a strong recovery at Kentucky Bourbon Trail® visitor centers across the Commonwealth.

Kentucky produces and ages 95 percent of the Bourbon sold and consumed in the world. Kentucky companies are also involved in distilling, bottling, packaging and shipping many different kinds of distilled spirits (sometimes distilled elsewhere and brought to Kentucky facilities for final processing). Nearly all distillers market their products outside of Kentucky and the United States, making distilled spirits a major export industry for the Commonwealth.

The sales of distilled spirits support the wages, salaries and benefits of workers in the state’s distilling industry, as well as those employed by suppliers. The dollars circulate further, as employees spend their income in the regional economy, generating jobs and income in other industries.

This is the sixth statewide economic study of the distilling industry that we have conducted for the Kentucky Distillers’ Association (KDA) since 2009<sup>1</sup>. Our first report identified 19 distilling establishments in eight counties, directly supporting about 3,000 jobs. In 2021, we were able to identify 95 establishments in 40 counties, employing approximately 6,000 people.

Those direct distilling jobs support many other jobs around Kentucky, due to supplier linkages with other industries and to the spending and re-spending of employee payrolls in communities around the state. We estimate that the total annual economic impact of the distilling industry is 22,540 jobs, with annual payroll of \$1.23 billion, producing \$8.94 billion of economic output. This is an estimate of what would happen in the state in the event the distilling industry disappeared from Kentucky.

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<sup>1</sup> This study, finalized in 2021, primarily refers to economic and fiscal activity in 2020. Some of the data used are on a calendar year basis, and other data are on a July to June fiscal year basis. In all cases, we use the latest data available. The first study, released in and titled ‘2009’, primarily refers to activity in 2008.



Meanwhile, other states are taking notice of the distilling industry with now more than 2,200 distilleries operating in the other 49 states. Those states offer a variety of incentives and privileges making it attractive to lure what was once a Kentucky dominated industry.

The current study updates and expands our five previous studies, offering an examination of distilling industry growth, impact on other industries in Kentucky, and contribution to state and local government tax revenues.

Among the most important and interesting findings are:



The state database on licensed distillers reveals 95 distilling locations operated by 75 companies in Kentucky as of 2021, with several more license applications in the pipeline. This is five times the number of distilleries documented in our original 2009 study, with most of the growth due to the emergence of craft distilleries. There are distilleries now in 40 counties. While craft distilleries are distributed throughout the state, large “heritage” distilleries remain concentrated in the “amber triangle” region of Central Kentucky between Lexington, Bardstown and Louisville, but also as far away as Owensboro.



Kentucky distillers produced 2.4 million barrels of Bourbon in 2020, and now have a record 10.3 million barrels stored in warehouses. Adding in brandy and other aging spirits brings the total barrel inventory to nearly 11 million.



In 2020 there were approximately 6,000 people working directly in Kentucky’s distilled spirits industry, with annual wages and salaries of \$602 million. Federal economic statistics indicate that over the last two decades, the number of distilling establishments in Kentucky tripled, with an 83 percent growth in employment, and a 250 percent growth in wages and salaries. For the first time, average annual pay per job surpassed \$100,000.



The full economic impact of the distilling industry includes the linked activity of suppliers and new household spending. In our original study, focused on 2008 activity, we estimated the total economic impact in Kentucky to be 9,848 jobs and \$442 million in payroll. For 2020, we estimate that the total economic impact has grown to 22,540 jobs and \$1.23 billion in payroll – more than double that of 12 years prior.



The distilling industry in Kentucky has been rapidly adding jobs over the past two decades, while on net, the remainder of the state’s manufacturing industry has shed employment. However, due to the enormous rise of craft distilleries in other states, Kentucky’s national share of distilling jobs has slipped from 43 percent to 30 percent from 2001 to 2020. Likewise, the state’s share of distilling jobs has slipped from 24 percent to 6

percent in the last 20 years. Kentucky's share of national distilling payroll has remained in the 45 to 50 percent range, due to the location of several major industry headquarters in the state.



Kentucky distillers shipped \$391 million of products abroad in 2020. The industry's exports are dominated by whiskies, with Bourbon the main component. The noticeable decline in 2020 was due to the heavy retaliatory tariffs imposed on whiskey by the European Union and China, reducing Kentucky whiskey exports by \$170 million. Other products exported by Kentucky distillers include brandy, liqueurs, cordials, vodka, rum, and gin.



Our IMPLAN model shows the distilling industry stands out from others in terms of the unusually high tax burden as it relates to the portion of output, with taxes accounting for 21 cents per dollar of output. Only three other industries generate a higher tax share – wholesale petroleum, commercial fishing, and tobacco manufacturing – and all are much smaller than distilling in terms of Kentucky employment and payroll. The wine industry is taxed at 3.2 cents per dollar of output; breweries are taxed at 8.2 cents per dollar output. For most manufacturing sectors, the portion of each dollar of output that goes to taxes is less than a penny.



The distilling industry is estimated to directly or indirectly be responsible for about \$286 million in state and local tax payments in Kentucky annually. The total includes local and state property, taxes, local occupational taxes, and Kentucky state individual income and sales taxes. State government accounts for 80 percent of the total tax revenues, with 20 percent going to local government entities.



Kentucky remains the only jurisdiction in the world that taxes aging spirits in the barrel, largely because in other states and countries it is viewed as a part of the production process. For 2021, the Kentucky Department of Revenue estimates local and state governments would collect \$33.2 million in taxes on barrels aging in inventory, and that inventory is assessed at \$4.4 billion. Another \$10.4 million in property taxes were paid last year on distillers' real estate and equipment.



Kentucky distillers paid more than \$1.8 billion in federal excise tax on alcohol production in 2020. That means the Commonwealth's signature industry accounted for 22 percent of alcohol excise tax paid nationally, by far the largest share by any state.



The value of real and tangible property owned by Kentucky distillers has quadrupled in the last decade, while the value of the distilled spirits inventory aging in barrels has nearly

tripled in that time. These increasing values mean distillers are paying considerably more in more real and tangible property taxes, resulting in a marked increase in impact of the distilling industry over that time.



KDA members reported capital spending of \$1.9 billion over the last five years, almost equally split between construction and other items, such as machinery, equipment, and furnishings. Moreover, they plan to spend \$3.3 billion over the next five years for a total of \$5.2 billion in capital investment over a 10-year period. Every KDA member, whether a large Heritage producer or a small Craft distiller, reported significant investments. This is by far the highest investment spending we have documented over our five studies since 2009. *NOTE: This capital spending number includes only the hard costs of construction and does not include the cost to distill, produce and age product, as some distilleries calculate for promotional purposes.*



Distilling continues to have the second-highest job multiplier across 329 manufacturing industries with activity in Kentucky; the only one with both more jobs and a higher employment multiplier than distilling is light truck and utility vehicle manufacturing. Our IMPLAN custom regional input-output model is used for estimating the economic impact of distilling, the most conventional method available for such analyses. These models can predict the impact of changes in one industry on all other industries in a regional economy. The most common summary measure of an industry's economic impact is called a multiplier, which is the ratio of the change in the total economy to the change in the industry.



A hypothetical \$10 million new distillery construction project, based on the report's economic models, would create 85 direct construction jobs with a \$4.9 million estimated payroll. In total – with direct, indirect and induced effects combined – the project would lead to \$17.5 million in sales increases across Kentucky firms, 130 new jobs, and a \$7.2 million payroll increase statewide.



Corn production grew faster in core distilling counties the past two decades than it did statewide, data indicate. This correlated growth was especially apparent in Nelson, Shelby, Washington, Mercer and Marion – where large, heritage distillers are located. Nelson County is, of course, home to many heritage distilleries. Marion County is home to Maker's Mark distillery, and has seen a tripling of corn production over the past 20 years.

## The Size of the Distilling Industry in Kentucky

**W**e treat the distilling industry here as the collection of firms that earn revenues primarily from distilling and selling spirits. These firms may engage in other revenue-generating activities, such as making brandy, beer, wooden barrels, tourism and hospitality, research, managing and marketing other product lines (including wines and non-spirits products), and selling merchandise in their gift shops.

Economic statisticians attempt to classify industrial activity by business establishment, or location. If a distilling company makes barrels in one location, distills Bourbon in another location, ages it in warehouses at another location, and has corporate offices at yet another location, then the company might have activity listed under four different industrial classifications.

The detailed industrial classification codes relevant to Kentucky's distilling industry are provided in Appendix A. We presume the companies would not be located in Kentucky were it not for their distilling operations, and hence for purposes of this study we attempt to count all of their activity as part of the industry.

### Distilleries by location

A comprehensive list of the current licensed distilling operations in Kentucky is provided in Appendix B. The operations may include only distilling, or the whole range of distilling, bottling and office functions. The license database indicates there are distilleries in 95 distinct locations in 50 cities and 40 counties. About 75 separate companies own these distilling operations. Looking back at our previous studies, we see the number of distillery locations grew from 19 in 2009, to 31 in 2013, to 68 in 2018, and 95 in 2021. All but one of the net new additions to the list since 2018 are small distilleries, licensed to produce less than 50,000 gallons annually.

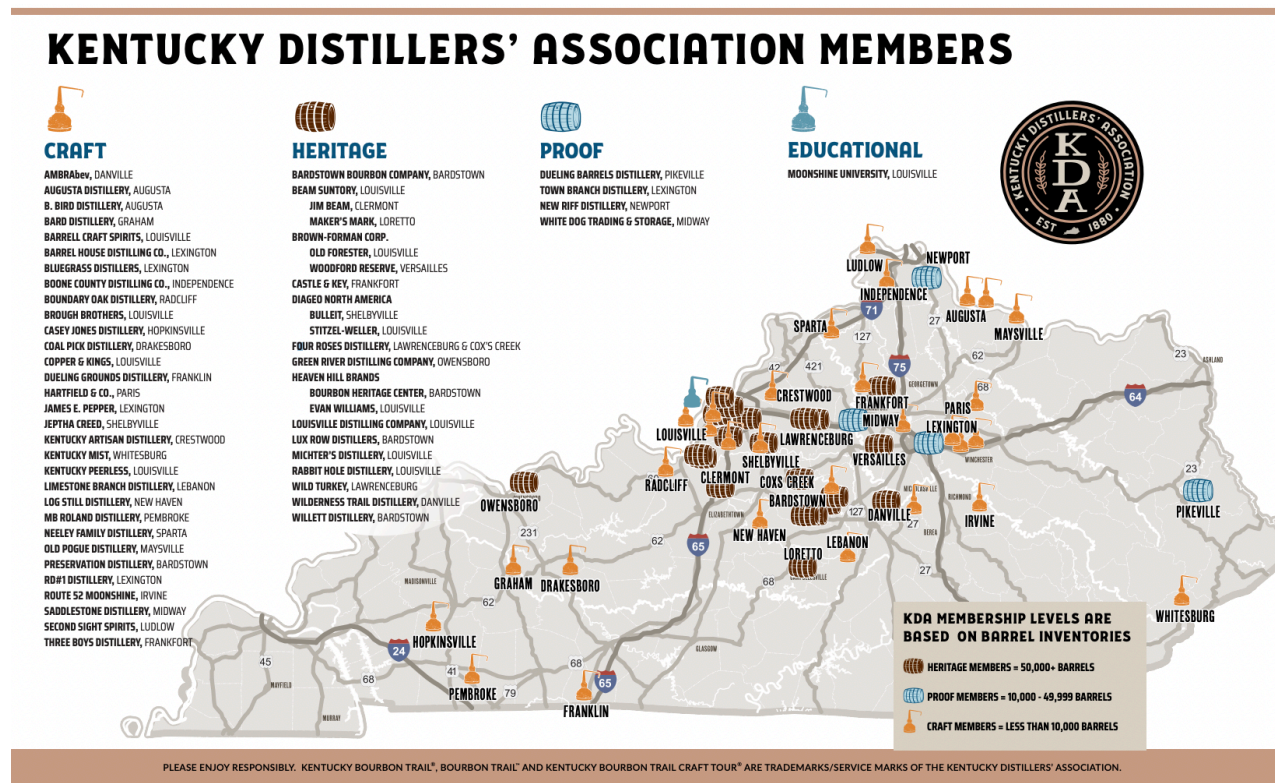
The major producers in the distilling industry in Kentucky are the Bardstown Bourbon Company, Beam Suntory (Jim Beam and Maker's Mark), Brown-Forman, Castle & Key, Diageo, Four Roses, Green River, Heaven Hill, the Louisville Distilling Company, Lux Row, Michter's, Rabbit Hole, Sazerac (Barton 1792, Buffalo Trace, and Glenmore), Wild Turkey, and Wilderness Trail.

With the exception of Owensboro, the larger distilleries are located near Interstates 64, I-65, or the Bluegrass Parkway. Smaller craft distilleries have opened across the state. The map shows locations of KDA members throughout the state by level of membership (not all distillers are KDA members). There are now more than 50 member distilleries, up from only seven in our original study in 2009.

KDA now has four levels of membership: Heritage, Proof, Craft and Educational. Heritage members have an inventory of over 50,000 barrels. Proof members have an inventory of



between 10,000 and 49,999 barrels. And the Craft members have fewer than 10,000 barrels. Moreover, as another sign of growth in the industry, there are 16 new Craft distilleries in the pipeline for membership in the KDA.



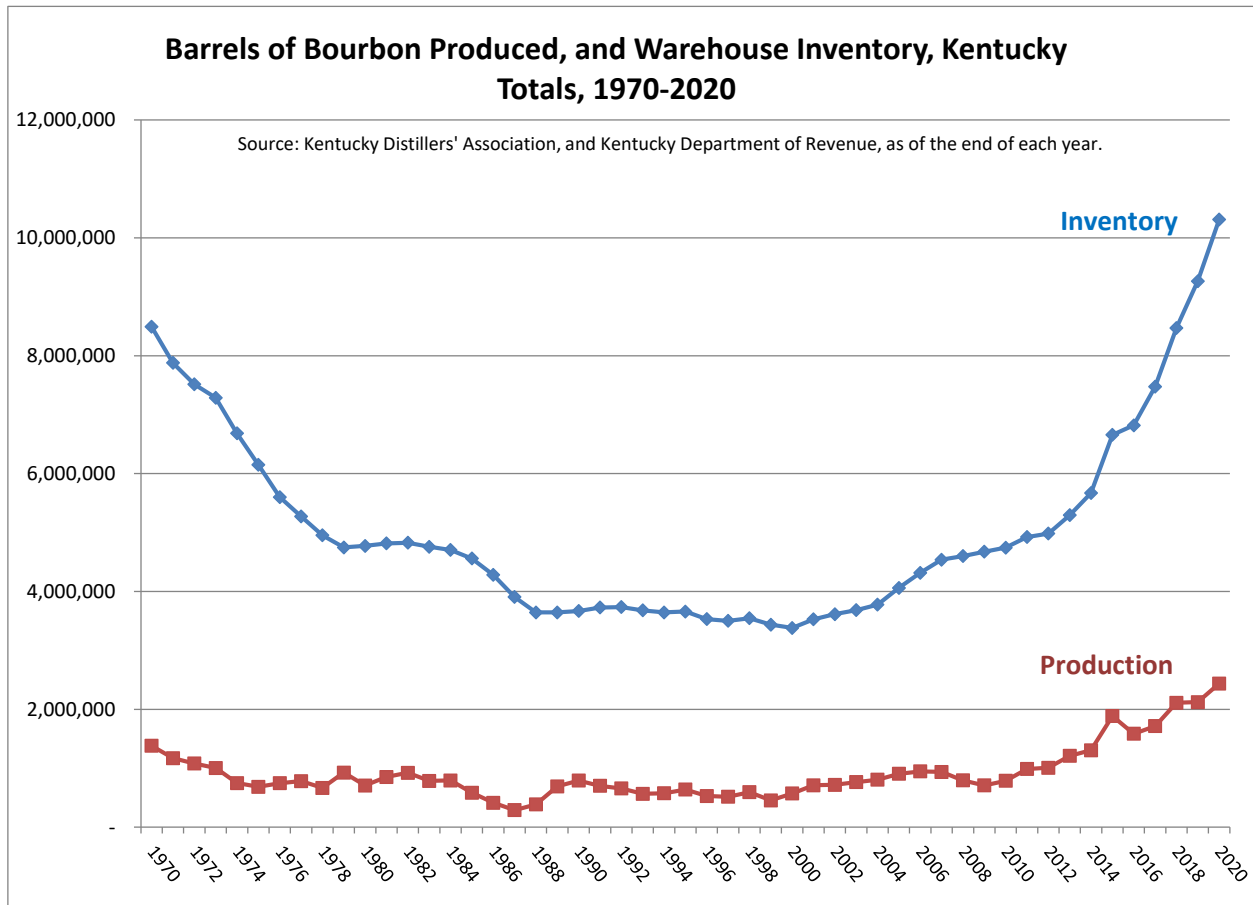
## Bourbon production and inventory

Unlike most other distilled spirits, Kentucky Bourbon is aged in barrels and stored in warehouses for years before being bottled and shipped to customers. State and local governments tax this property while it ages, and therefore we have public data available on the amount placed into barrels annually, as well as the inventory of barrels by age. Data go back decades, and we show the recent history in the charts below, all in terms of 53-gallon containers. One can see the drawdown in barrel inventory through about the year 2000, and then the effects of the recent surge in demand, with subsequent investments in production facilities, new warehouses and barrel inventory. Indeed, annual production last year was double what it was just a decade ago.

About 2.4 million barrels of new Bourbon were produced and added to warehouse inventory in 2020, the most recent year available. There were 10.3 million barrels of Bourbon aging in Kentucky warehouses as of December 31, 2020. Adding brandy and other aging barrels of spirits, there are nearly 11 million barrels aging in Kentucky warehouses. The value of all inventory in bonded warehouses (which includes bulk inventory and cases being held for shipment as well as distilled spirits in barrels) was assessed for tax purposes at a record \$4.4

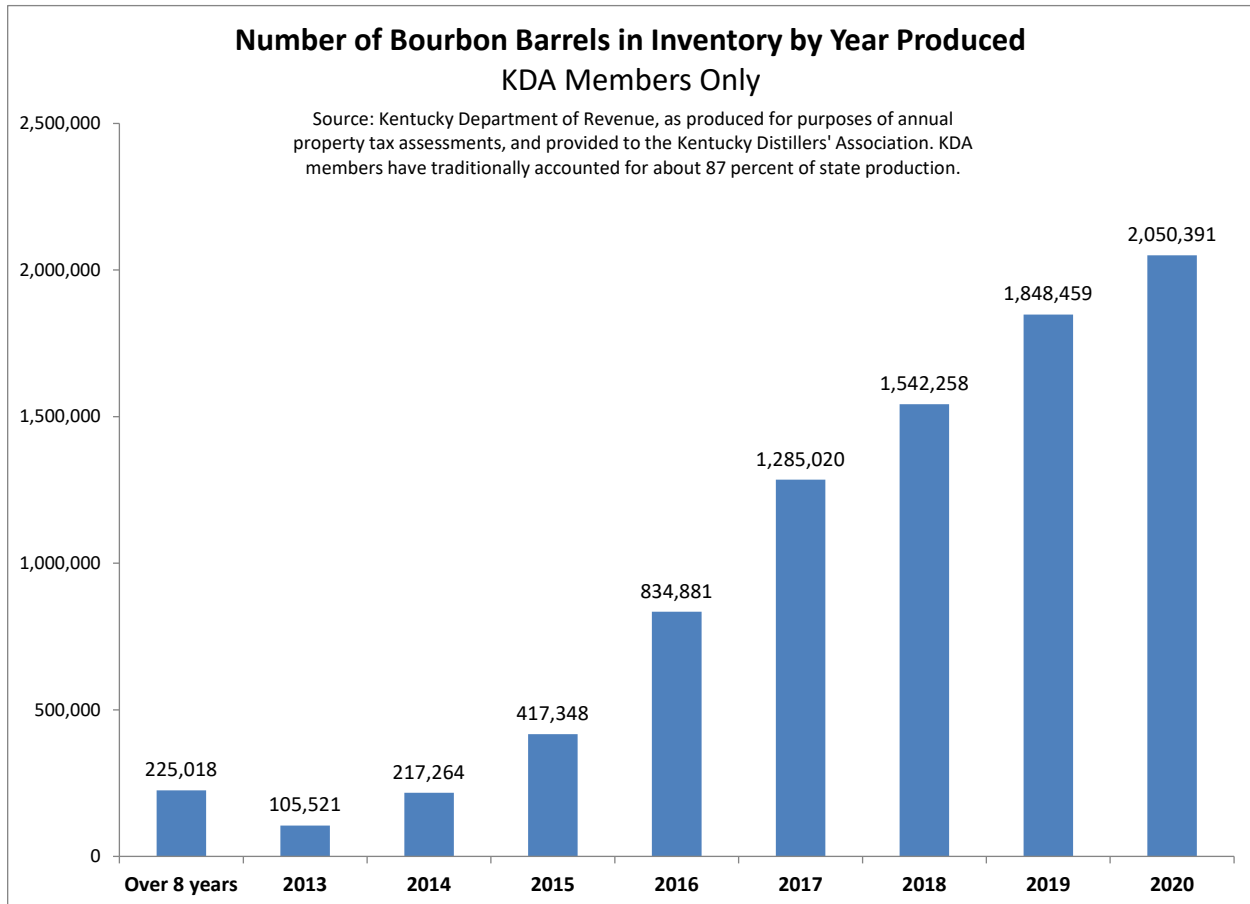


billion in 2021. Inventory subject to county-level property taxes (mostly in barrels) was assessed at \$2.55 billion in 2020, when the total bonded warehouse assessment was \$3.84 billion.



Property tax records also reveal the age distribution of Bourbon barrels in Kentucky warehouses. We have complete data for KDA members only, but members traditionally account for about 85 percent of annual production statewide, and thus the vintage profile is representative of the industry. One can see in the chart below how inventories begin to be drawn down, particularly after four years of aging. However, there remains over 240,000 barrels that have been stored in warehouses for more than eight years.





There are no published official data on the annual value of production, or sales, by distillers of spirits in Kentucky. Annual production volume is obviously different than sales volume for most Kentucky spirits, due to the need to age Bourbon for several years. And the value of products bottled or otherwise sold varies continually with changing market prices around the world. Our IMPLAN input-output model of Kentucky, which we use below to estimate economic impacts, predicts Kentucky distillers produced \$5.8 billion of output in 2019. This is 30 percent of the \$19.5 billion IMPLAN predicts for the U.S. distilling industry as a whole, and is the same as Kentucky's share of national distilling employment.

### Employment and payrolls

In 2020 there were approximately 6,000 people working directly in Kentucky's distilled spirits industry, with annual wages and salaries of \$602 million. Over the last two decades, the number of distilling establishments more than tripled in Kentucky. Distilling employment grew by 83 percent, and wages and salaries grew by 249 percent. For the first time, average annual pay per job has passed \$100,000. There are actually several different sources of employment and payroll data, and we discuss these at some length in Appendix C. The primary estimates of



jobs and payroll we use for our modeling of economic impacts are derived from required employer filings for state unemployment insurance premiums, which we consider to be the most comprehensive and accurate of available estimates. This is supplemented by information obtained from a recent survey of KDA members, and from the Kentucky Directory of Manufacturers.

### **Exports of Bourbon and other distilled products**

Kentucky distillers shipped over \$391 million of products abroad in 2020, with whiskey accounting for 82 percent of the total. Other products exported by Kentucky distillers include grape brandy, liqueurs, cordials, vodka, rum, and gin. High retaliatory tariffs by the European Union and China on U.S. whiskey caused Kentucky exports to fall from its historical peak of \$488.6 million in 2019 to \$319.0 million in 2020 – a drop of about \$170 million – which pulled down the total spirits category. Even so, the value of Kentucky whiskey exports is now triple what it was in 2000, reflecting growth in both volume and price. The leading importers of Kentucky whiskey last year were Japan, Spain, Australia, United Kingdom, Canada, and Germany. The Distilled Spirits Council of the United States (DISCUS) digs deeper into federal export data and breaks out Bourbon from the whiskey category. The group shows \$304 million in Bourbon exports in 2020, on 19.7 million proof gallons of volume. Note, 82 percent of Bourbon is exported in bulk, rather than form. See Appendix E for more detail on exports.

### **Distilling's share of Kentucky and national economic activity**

It is well known that we are amid a national boom in small, local distilling operations. These are sometimes called craft distillers, or micro-distillers. We examine the growth over the past decade of distillery establishments nationally in some detail in Appendix D, and reveal the recently occurred wide geographic spread.

Nationally, distillers employing fewer than 10 people grew from 78 to 716 establishments. Small distillers were in 58 U.S. counties in 2006, but a decade later they were in 400 counties across the country.

However, there has been little change in the location of large distilling operations. Among the large employers, most are in Kentucky or adjacent states. Several Kentucky counties have distillery operations employing more than 400 people – Bullitt, Franklin, Jefferson, and Nelson.

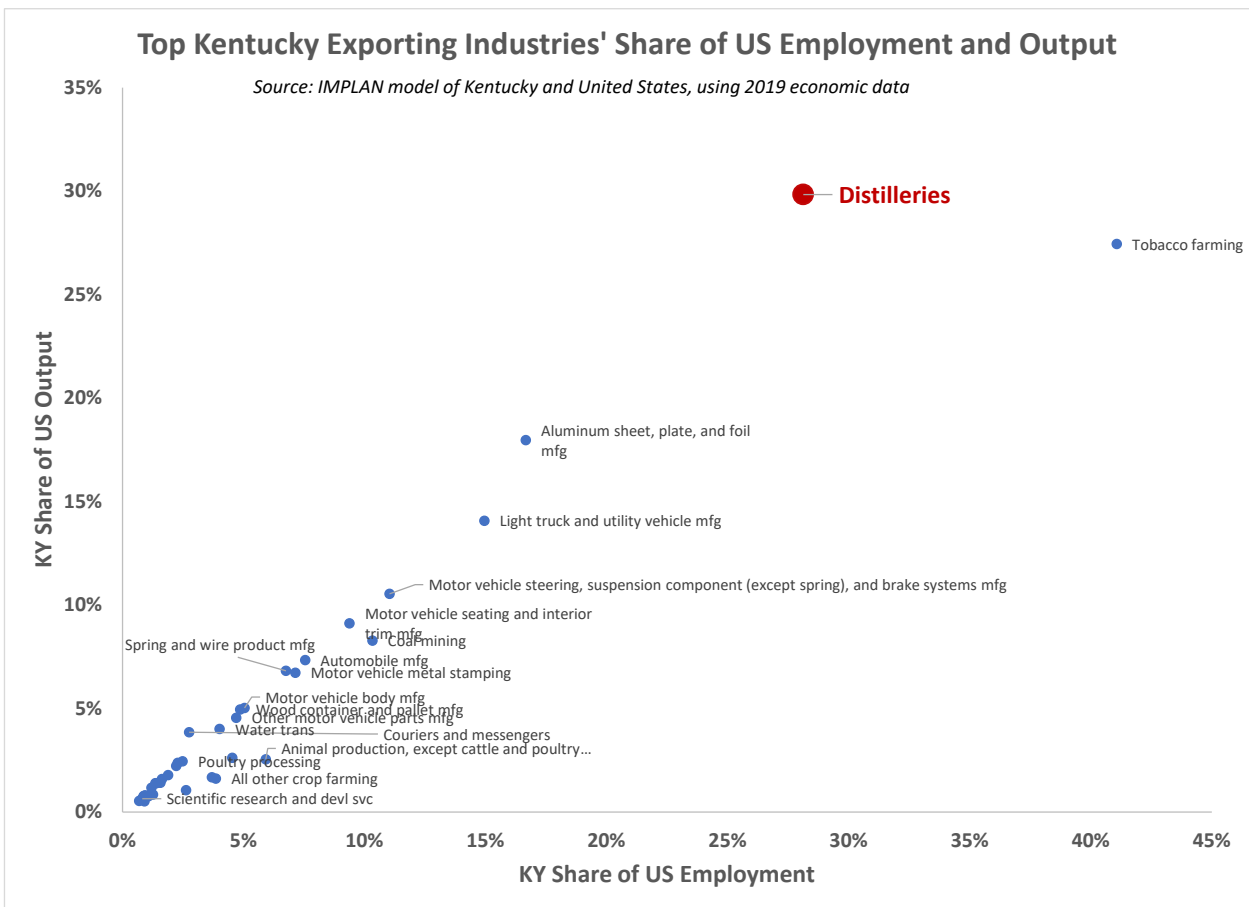
As we document in Appendix C, Kentucky's share of distilling establishments fell from 24 to 6 percent over the 2001-20 period, while its share of employment fell from 43 to 30 percent. Kentucky's share of distilling payroll rose from 40 to 45 percent of the U.S. total, due largely to the presence of high paying professional jobs at headquarters here. So, while the industry has expanded greatly in terms of geographic locations, Kentucky remains the main player in terms of overall production, employment, and payroll.





In the chart above, we highlight the 40 export-based industries in Kentucky that rank highest in employment as a share of the state total, using estimates from our IMPLAN model. We also show their relative contributions to total state output. One can see distilling ranks fourth highest in terms of output contribution, reflecting the high value of the distilling product, as well as the high employee pay, dividend payments and exceptionally high taxes paid. In terms of contribution to state output, the light truck and auto manufacturing industries lead the way, followed by insurance carriers, then distilling. Not shown are the rankings in terms of employee compensation, where distilling ranks 14<sup>th</sup> statewide.

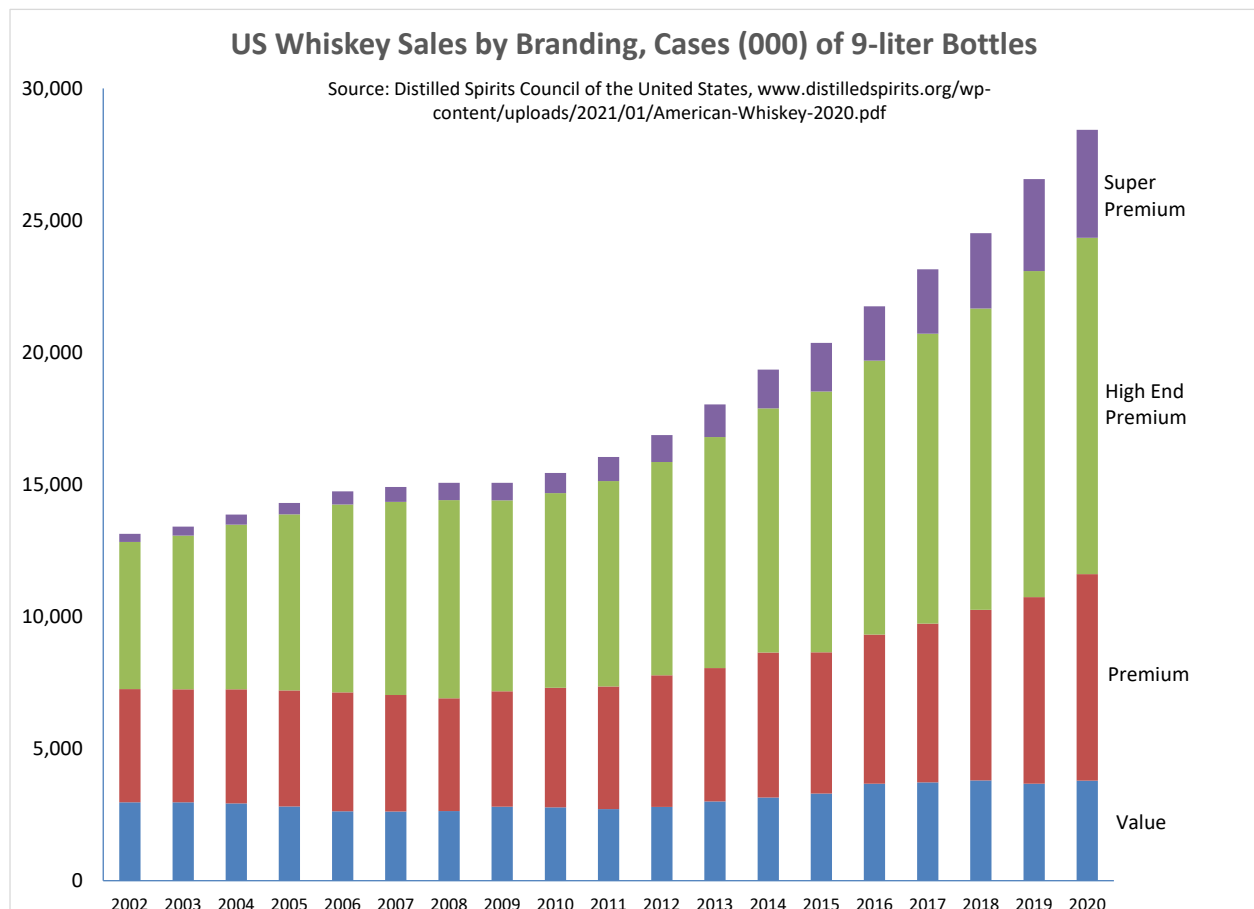
Another way to look at the economic importance of industries in Kentucky is to examine what their share is of the national counterpart industries. This is summarized in the next chart. For 544 detailed industrial sectors, we divided Kentucky’s employment and output by the national totals for each industry. Clearly, distilling stands out by this measure, with 30 percent of national distilling employment, 30 percent of national output, and (not shown) 45 percent of national employee compensation. No other Kentucky industry has higher shares of both national employment and output.



## Impact of Covid-19

The Covid-19 pandemic publicly hit the United States in February 2020, and by March there were widespread business closures due to state government orders or from private decisions to protect employees and customers. As was well-documented, many distilleries shifted production from spirits to hand sanitizer to aid the national effort to slow the spread of the virus. Bourbon-based tourism certainly suffered in Kentucky, as visitor centers closed and people stopped traveling except for essential needs.

However, U.S. sales of domestic whiskey continued to grow in 2020, as consumers shifted more toward home consumption and purchased more premium brands. National data from the Distilled Spirits Council of the United States (DISCUS) show these trends over the past two decades. Below are two charts, first for volume, second for value. The shift to more expensive brands, as well as the strong growth in cases sold, is evident in the charts. Suppliers had revenues of \$4.3 billion in 2020, inclusive of federal excise taxes paid. They sold 28.4 million cases of domestic whiskey last year in the U.S. Super Premium whiskies accounted for only 2.4 percent of volume sold in 2002, but by 2020 its share had grown to 14.4 percent.

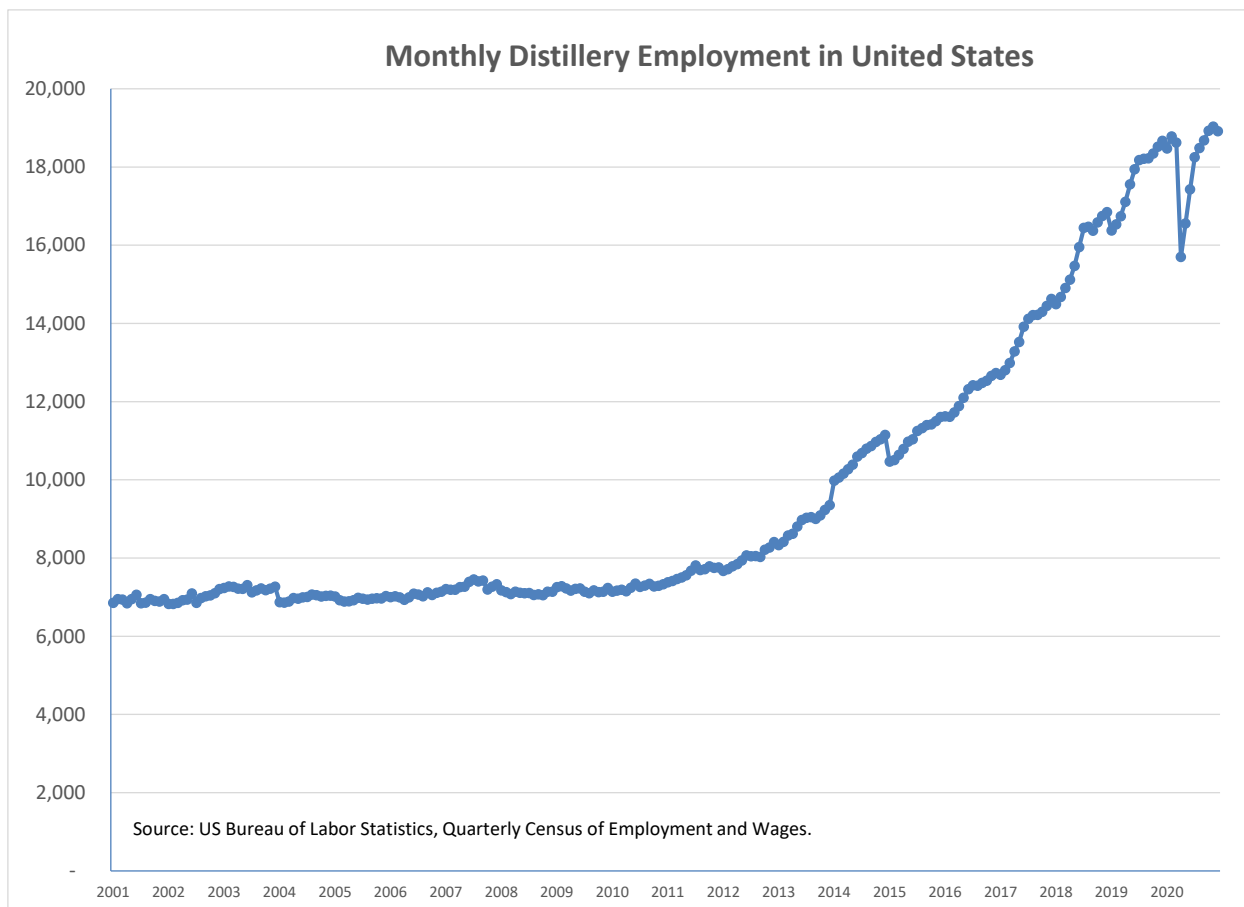




Monthly data on distillery employment are available nationally, but not at the state level. However, as Kentucky accounts for almost a third of the industry employment, we can reasonably use the national data to discern the degree of retrenchment regionally. As one can see, employment declined from 2019 levels in April, May, and June of 2020, but then began to grow again in late summer. April was the hardest hit month, with a decline of 1,400 jobs nationally, or 8.2 percent compared to April 2019. Wages and salaries also declined in the second quarter of 2020, by \$10.7 million compared to the same quarter in 2019, or 3.6 percent. Payrolls returned to robust growth in the third quarter of 2020.

We do have comparable data on the average monthly distilling employment in Kentucky, and they show 2.4 percent growth in 2020 over 2019, almost identical to the 2.6 percent growth nationally. So, the Covid-19 impact pictured here likely applies to Kentucky as well.

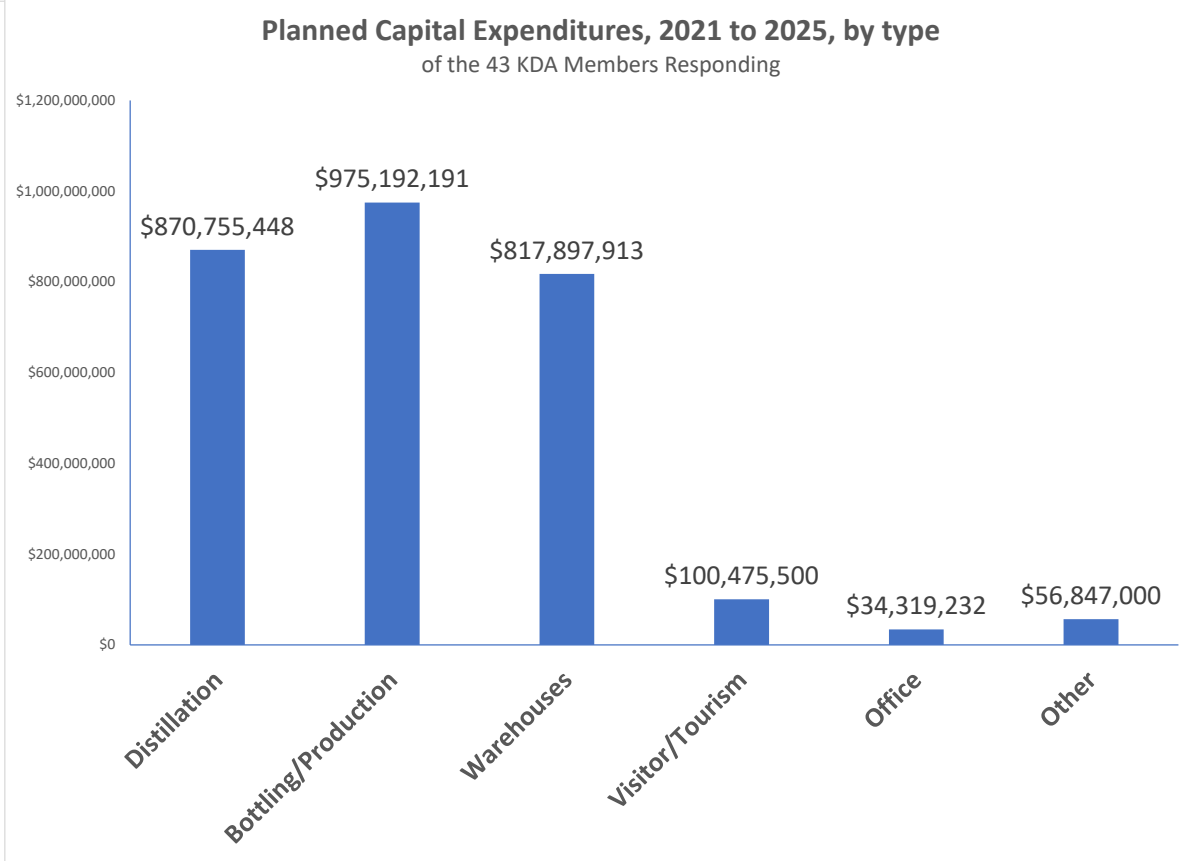
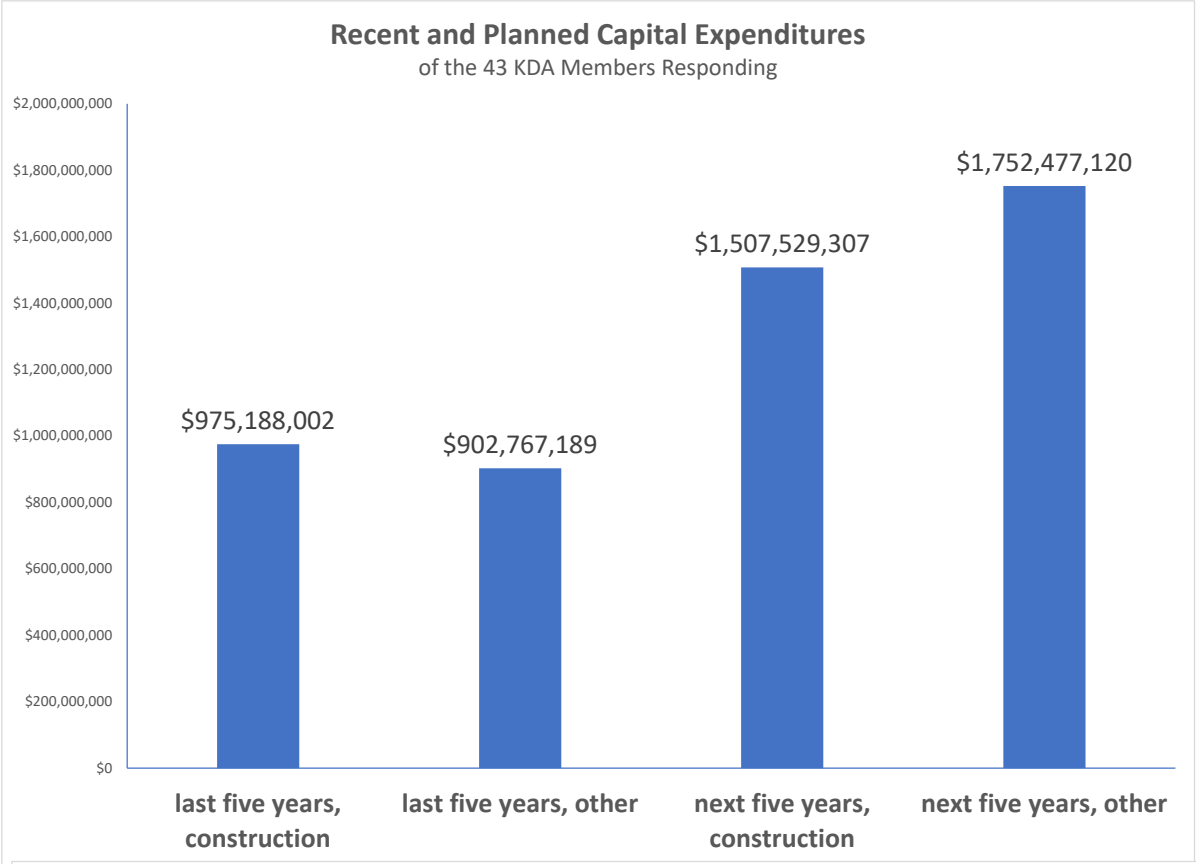




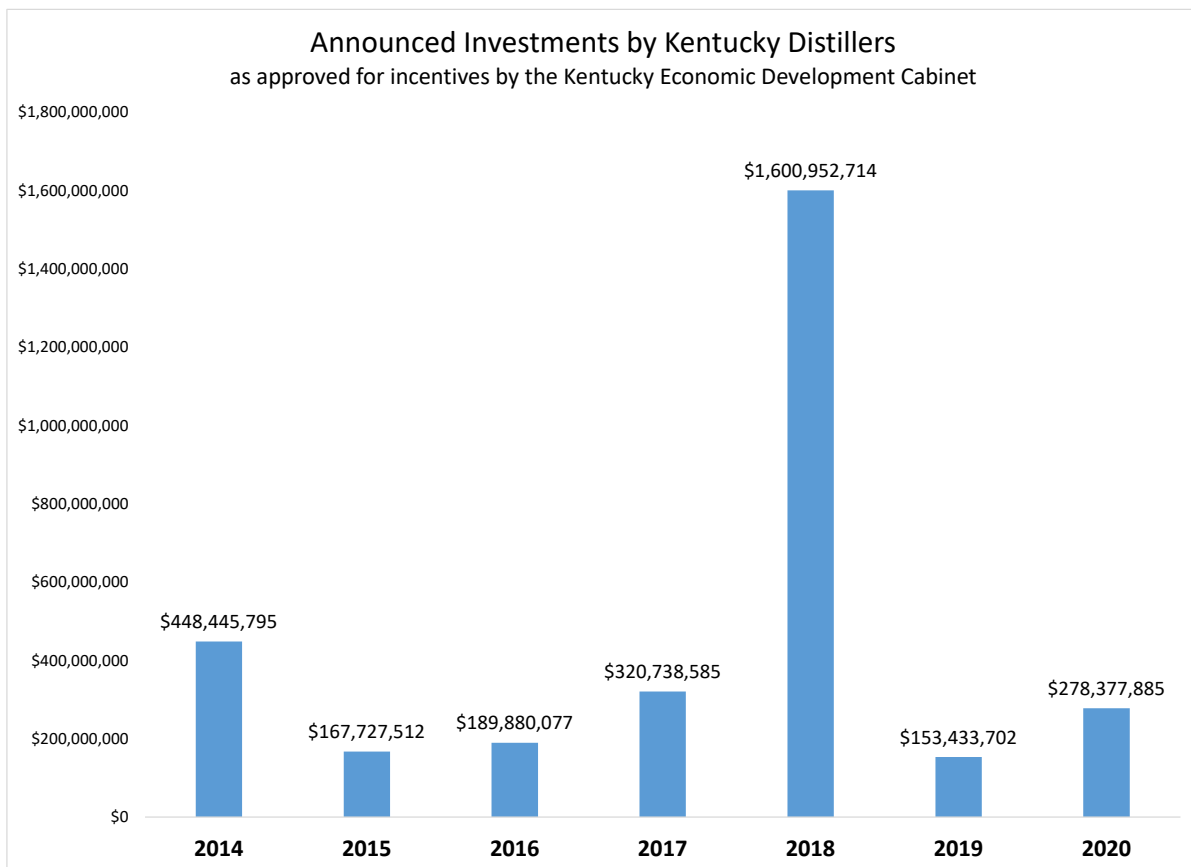
### Recent and planned investments by Kentucky distillers

We surveyed all the KDA members during the Summer 2021, asking them to disclose their spending over the last five years on construction and other capital investments. We also asked them their investment plans for the next five years. Clearly, the industry is in major growth mode, with heavy spending on stills, warehouses, bottling facilities, and visitor centers. Members reported capital spending of \$1.9 billion over the last five years, almost equally split between construction and other items, such as machinery, equipment, and furnishings. Moreover, they plan to spend \$3.3 billion over the next five years. One can see in the chart below that most of the planned investment is towards direct production – distillation, bottling, warehouses. About \$100 million is planned for visitor centers. Every KDA member, whether a large Heritage producer or a small Craft producer, reported significant investments. The Heritage producers, however, accounted for 87 percent of total investments, recent or planned.





A related measure of investment is available from the Kentucky Cabinet for Economic Development. The agency tracks publicly announced projects, and records the planned investment and the projected number of new direct jobs. There were 114 distillery projects announced between 2014 and 2020, totaling \$3.2 billion in value. We have organized the data by year, as shown in the accompanying charts. Two-thirds of the investment was listed solely as production activity – distilling, bottling, warehousing. The other one-third reported a mixture of investments, usually to include production, visitor centers, and offices. Eleven projects mentioned a visitor center, and 12 projects mentioned a headquarters investment.



### Barrel production

Bourbon requires several years of storage in new oak barrels. Because of the concentration of Bourbon distilleries in Kentucky, as well as the state’s large endowment of oak forests, there are many cooperages and related operations here. A recent query of the database maintained by the Kentucky Cabinet for Economic Development revealed 13 barrel producing operations, with total employment of over 1,300. We see operations in eight counties, with two each in Jefferson and Marion counties.



<b>Kentucky Barrel Production Facilities, June 2021</b>			
<b>Company</b>	<b>City</b>	<b>County</b>	<b>Employment</b>
Kentucky Cooperage Inc	Lebanon	Marion	460
Brown-Forman Cooperage	Louisville	Jefferson	205
East Bernstadt Cooperage LLC	East Bernstadt	Laurel	190
Morehead Wood Products Company	Morehead	Rowan	122
Benton Wood Products	Benton	Marshall	91
Robinson Stave LLC	East Bernstadt	Laurel	73
Zak Ltd	Hodgenville	LaRue	50
Canton Wood Products LLC	Lebanon	Marion	41
Speyside Cooperage KY Inc	Shepherdsville	Bullitt	34
SS Stave Co Inc	White Plains	Hopkins	28
Kentucky Bourbon Barrel	Louisville	Jefferson	13
<b>Total</b>			<b>1,307</b>

Source: Kentucky Economic Development Cabinet, Wood Container and Pallet Manufacturing, NAICS 321920, June 2021

### **Grain purchases**

The primary ingredient in Bourbon and other spirits is grain – corn, wheat, rye and barley. We estimate Kentucky distillers purchased about 16.9 million bushels of corn and 8.4 million bushels of other grains in 2020. Corn is much more available from Kentucky farmers than the other grains used in distilling. Using our recent survey of KDA members, we estimate Kentucky distillers likely purchased about 12.5 million of those bushels of corn from Kentucky farmers, which is about five percent of total annual production in the state. The 74 percent rate of local corn purchases is up from our first estimates for 2014, where distillers reported buying only 40 percent of their corn from Kentucky farmers. We estimate distillers purchased about 1.0 million bushels of other grains from in-state producers last year. See Appendix G for more detail.

### **Other physical inputs**

The linkages between distilling, workforce, cooperages, grain production, and warehouses are evident from a distillery tour. What are the other important ingredients in the final product? A partial list includes copper stills, glass bottles, labels and caps. Industry veterans tell us most of these other ingredients are produced outside the state. Our IMPLAN model (see Appendix F for details), predicts a similar pattern of purchasing. The model predicts, for example, about 70 percent or more of needed wood containers and pallets, wholesale distribution services, and transportation services are purchased from Kentucky suppliers, compared to just 1 percent of all needed glass containers and just 10 percent of machinery and other equipment.



## Economic Impact of the Distilling Industry in Kentucky

In this section, we analyze how production, jobs, and payroll in the distilling industry ripple throughout Kentucky, creating even more economic activity. We use a custom input-output model of the state to represent the linkages between distilling and hundreds of other industries, as well as households, and then to predict the total economic impacts.

### Employment, output, payroll

The next table provides our estimates of the distilling industry's total economic contribution to the Kentucky economy in employment, output and payroll. It also presents the three impacts by the type of effect. The direct effect is the economic activity of the distilling industry. The indirect effect measures the interindustry, or supply chain, linkages. And the induced effect measures the household impacts linked to the new personal income. The direct jobs and payroll of distillers and their corporate office activity leads to a total of around 22,540 jobs, with annual payroll of \$1.23 billion, producing \$8.94 billion of economic output. This is an estimate of what would happen in the state in the unlikely event that the distilling industry completely disappeared, or became severely restrained by outside issues that made it impossible or impractical to operate.

<b>Annual Economic Impact of the Distilling Industry in Kentucky</b>			
<b>Impact Type</b>	<b>Employment</b>	<b>Output</b>	<b>Payroll</b>
<b>Production of Distilled Spirits</b>			
Direct Effect	4,170	\$5,435,148,508	\$290,448,513
Indirect Effect	8,672	\$1,769,277,317	\$357,901,861
Induced Effect	4,750	\$701,855,347	\$162,083,296
<b>Total Effect</b>	<b>17,592</b>	<b>\$7,906,281,171</b>	<b>\$810,433,670</b>
<b>Corporate Management Functions</b>			
Direct Effect	1,750	\$535,055,328	\$306,046,099
Indirect Effect	1,102	\$184,336,890	\$41,565,409
Induced Effect	2,094	\$309,583,219	\$74,060,448
<b>Total Effect</b>	<b>4,946</b>	<b>\$1,028,975,437</b>	<b>\$421,671,957</b>
<b>Total Distilled Spirits Industry Impact</b>			
Direct Effect	5,920	\$5,970,203,836	\$596,494,612
Indirect Effect	9,774	\$1,953,614,207	\$399,467,270
Induced Effect	6,844	\$1,011,438,566	\$236,143,744
<b>Total Effect</b>	<b>22,538</b>	<b>\$8,935,256,608</b>	<b>\$1,232,105,626</b>

Source: Customized IMPLAN (IMpacts for PLANing), version 3.1, model of Kentucky, using 2019 economic data.

Note: Indirect impact refers to business-to-business spin-off spending; Induced impact refers to household spending that is a result of increased earnings.



Our economic impact analysis is based on approximately 6,000 distilling industry jobs across the state – 4,250 production-related jobs and 1,750 corporate management-related jobs<sup>1</sup>. Our IMPLAN models have been customized to reflect the particular structure of the industry in Kentucky and all the functions of the production process, from distilling to barreling to bottling, shipping and marketing. Appendix F provides a more detailed explanation of the industrial linkages in the model.

Production activities supported about 17,590 jobs with a payroll of \$810.4 million. The contribution to Kentucky’s economic output was about \$7.91 billion. Corporate activities supported about 4,950 jobs with a payroll of \$422 million. The contribution to Kentucky’s economic output of the management jobs was about \$1 billion.

#### **Industries Most Affected by the Distilling Industry**

<b>Industry Sector</b>	<b>Employment</b>	<b>Labor Income</b>
Distilleries	4,250	\$403,611,119
Management of companies and enterprises	2,027	\$378,811,840
Wood container and pallet manufacturing	1,146	\$77,247,962
Truck transportation	1,101	\$70,623,261
Employment services	716	\$25,211,863
Wholesale - Other nondurable goods merchant who	663	\$44,963,137
Other real estate	610	\$13,134,380
Full-service restaurants	569	\$14,253,454
Grain farming	517	\$14,211,409
Limited-service restaurants	451	\$9,871,958
Hospitals	449	\$33,754,984

Source: Customized IMPLAN (IMpacts for PLANing), version 3.1, model of Kentucky, using 2019 economic data.

Note: Labor income includes employee compensation and proprietors income.

Aside from the core distilleries and management sector, the industries most affected by distilling in Kentucky are wood container and pallet manufacturing, truck transportation, wholesale trade, employment services, real estate, restaurants and bars, and grain farming. According to the Kentucky Cabinet for Economic Development, there are at least 1,300 employees working in cooperages, stave manufacturing plants, and used barrel refurbishers (all

<sup>1</sup> The direct effect in the production section of the table is less than 4,250 because the activities of the distilling industry have an effect on itself, essentially spin-off into its own industrial sector. We do not want to double count this own-industry spin-off in our analysis of the contribution of the industry. What the table shows is that if we eliminated all of the corporate management function jobs and about 4,170 production jobs, one result would be the elimination of all of the remaining production jobs (part of the indirect effect).



in the wood container manufacturing industry) throughout the Commonwealth, mostly in the eastern and south-central counties. All are operating at capacity.

Real estate, restaurants, and hospitals are sectors that link to distilling primarily through household spending channels. For example, we estimate if Kentucky's distilling industry did not exist, there would be about 570 fewer jobs in full-service restaurants in the state. Hospitals, because they are huge employers and nearly everyone will need their services at some point, are linked to activity in all other industries. As the distilleries and their suppliers expand, more employees and households are covered by commercial insurance, and thus generate revenues, jobs, and payroll for hospitals.

Appendix H provides an analysis of the economic multipliers behind these estimates.

### **Impact of construction**

Distillery companies have invested billions of dollars into their facilities and equipment the decades. This is evident from the large property tax payments they make to government jurisdictions each year, a topic we examine in the next section.

We already noted Kentucky distillers invested roughly \$1.9 billion in improvement projects since 2016, which is more than that projected in our 2016 and 2018 studies. In addition, the distillers are planning another \$3.3 billion in projects over the next five years, with all the distillers expanding capacity, erecting new warehouses for barrel aging and putting more focus on the visitor experience, particularly among the KDA's Kentucky Bourbon Trail® and Kentucky Bourbon Trail Craft Tour® distilleries. Here we analyze the one-time economic impacts of a hypothetical \$10 million distillery construction project. Our estimates can be scaled up or down according to the size of the investment under consideration.

We use our IMPLAN model of Kentucky to perform the analysis. The model has a sector entitled "Construction of new manufacturing structures" that fits this question. We simulated a \$10 million increase in demand for that sector, and the model predicted the impacts on business output, jobs, and payrolls. The results are shown in the next table.

The first row indicates the investment is associated with 85 direct construction jobs, with estimated payroll of \$4.9 million. The indirect impacts refer to inter-industry linkages, wherein the construction project requires purchases from other companies in Kentucky. The induced impacts refer to the cumulative rounds of household spending caused by the increased income flowing to employees. The last row summarizes the total impacts. The \$10 million project leads to an increase in sales of about \$17.5 million for all Kentucky firms, an increase in jobs of 130, and an increase in payroll statewide of \$7.2 million. Value added measures the amount of



output that is generated in the regional economy, as opposed to the total sales value<sup>2</sup>. These results are similar to our previous studies.

<b>Estimated Economic Impact of \$10 million Construction Investment by the Distilling Industry in Kentucky</b>				
<b>Impact Type</b>	<b>Employment</b>	<b>Labor Income</b>	<b>Value Added</b>	<b>Output</b>
Direct Effect	85	\$4,911,755	\$5,048,175	\$10,000,000
Indirect Effect	15	\$874,197	\$1,483,819	\$3,034,693
Induced Effect	30	\$1,404,390	\$2,488,593	\$4,492,868
<b>Total Effect</b>	<b>130</b>	<b>\$7,190,341</b>	<b>\$9,020,587</b>	<b>\$17,527,560</b>

Source: IMPLAN model of Kentucky, using 2019 economic data, sector 51 "Construction of New Manufacturing Structures".

We can make an estimate of the amount of additional tax revenues that would be generated, using some of the results developed later in this study. Construction supplies and materials are potentially subject to Kentucky’s 6% sales tax, and could amount to a couple hundred thousand dollars in tax revenues for the project. However, when job growth is involved, companies often qualify for an exemption to the sales tax. Kentucky state government would receive a one-time increase in individual income and sales tax receipts of about \$637,000 at the historical effective tax rates, and local governments (including public school systems) would receive an additional \$86,000 in occupational taxes. Thus, excluding any possible sales tax payments on construction materials and machinery, governments in Kentucky would receive a total one-time increase of \$724,000 in tax revenue.

It is impossible to precisely predict the long-term fiscal impacts of such an investment without specifying where the investment occurs in the state. Property tax rates vary widely among jurisdictions. A rule of thumb is that real estate is subject to property taxation at the rate of 1%, though the rate can be much higher in very urbanized places with intensive public services (schools, fire, police, libraries, streets, garbage pickup, EMS). Assuming that the property was valued at construction cost, this implies that the direct investment leads to annual property tax revenues to local and state governments of \$100,000 per year.

<sup>2</sup> To illustrate the difference between output and value added, consider a car dealership. They may sell a new vehicle for \$30,000 (Kentucky output), but most of those dollars go to an out-of-state manufacturer. Value added in that case measures the several thousand dollars that the dealership adds in vehicle prep, display, financing, and sales support, as well as local taxes. The value added concept is intended to measure the amount of dollars that ‘stick’ to the regional economy.



## Impact of equipment investment

Kentucky's distillery companies are equipped with state-of-the-art stills, bottling machinery, computers and whatever else they need to manufacture and sell their products. Nearly half of the upcoming \$3.3 billion in investment will go toward various kinds of durable machinery. We therefore also simulated a \$10 million equipment investment using IMPLAN's capital investment scenario for the beverage manufacturing sector. Summary results are below.

<b>Estimated Economic Impact of \$10 million Equipment Investment by the Distilling Industry in Kentucky</b>				
<b>Impact Type</b>	<b>Employment</b>	<b>Labor Income</b>	<b>Value Added</b>	<b>Output</b>
Direct Effect	9	\$698,517	\$987,009	\$2,066,296
Indirect Effect	4.6	\$252,809	\$364,764	\$726,043
Induced Effect	4.9	\$228,372	\$404,942	\$731,025
<b>Total Effect</b>	<b>18.6</b>	<b>\$1,179,698</b>	<b>\$1,756,715</b>	<b>\$3,523,365</b>

Source: IMPLAN model of Kentucky, using 2019 economic data, using Acitivity template for Beverage manufacturing.

The direct effects here are felt by Kentucky industries selling equipment to the distilling industry. These direct purchases are expected to amount to about 20 percent of the total capital equipment spending, about \$2 million. That activity supports nine jobs with a payroll of \$699,000. Business-to-business (indirect) and household spending (induced) create more impacts, and the \$10 million of capital spending leads to an increase in sales of about \$3.5 million for all Kentucky firms, an increase of 19 jobs and an increase in payroll statewide of \$1.18 million. The new payroll would be associated with an increase in Kentucky state income and sales tax revenues of \$104,000, plus about \$14,000 in new occupational taxes for local government jurisdictions.

## Average annual impact possible from distilling industry planned investments

KDA members have roughly \$3.3 billion in expansion and improvement projects planned over the next five years. We can use the results of the last two sections to estimate the average annual impact on the state's economy of this activity over the coming five-year period.

In the following table we assume a fairly uniform spending pattern over the five years (\$652 million per year) and follow the reported ratio between construction and capital equipment of 46:54. Results will be different depending on the exact spending mix. Relatively more



construction spending will increase the impact, while relatively more capital equipment spending will decrease the overall impact.

<b>Estimate of Average Annual Impact of Kentucky Distilling Industry's \$3.3 Billion Investment Plans Over the Next Five Years</b>				
<b>Employment</b>	<b>Output</b>	<b>Payroll</b>	<b>Property Taxes</b>	<b>Income, Sales, Occupational Taxes</b>
4,565	\$651,958,539	\$258,140,871	\$4,808,957	\$25,400,896
Source: IMPLAN model of Kentucky, using 2019 economic data.				

We estimate the distilling industry construction and capital improvement projects could support an average of 4,565 additional jobs in Kentucky through 2025. Those jobs would have about \$258.1 million in total payroll and generate about \$25.4 million in combined state and local income and sales taxes each year. The real estate improvements could mean an additional \$4.8 million in property tax revenues each year for local and state governments.

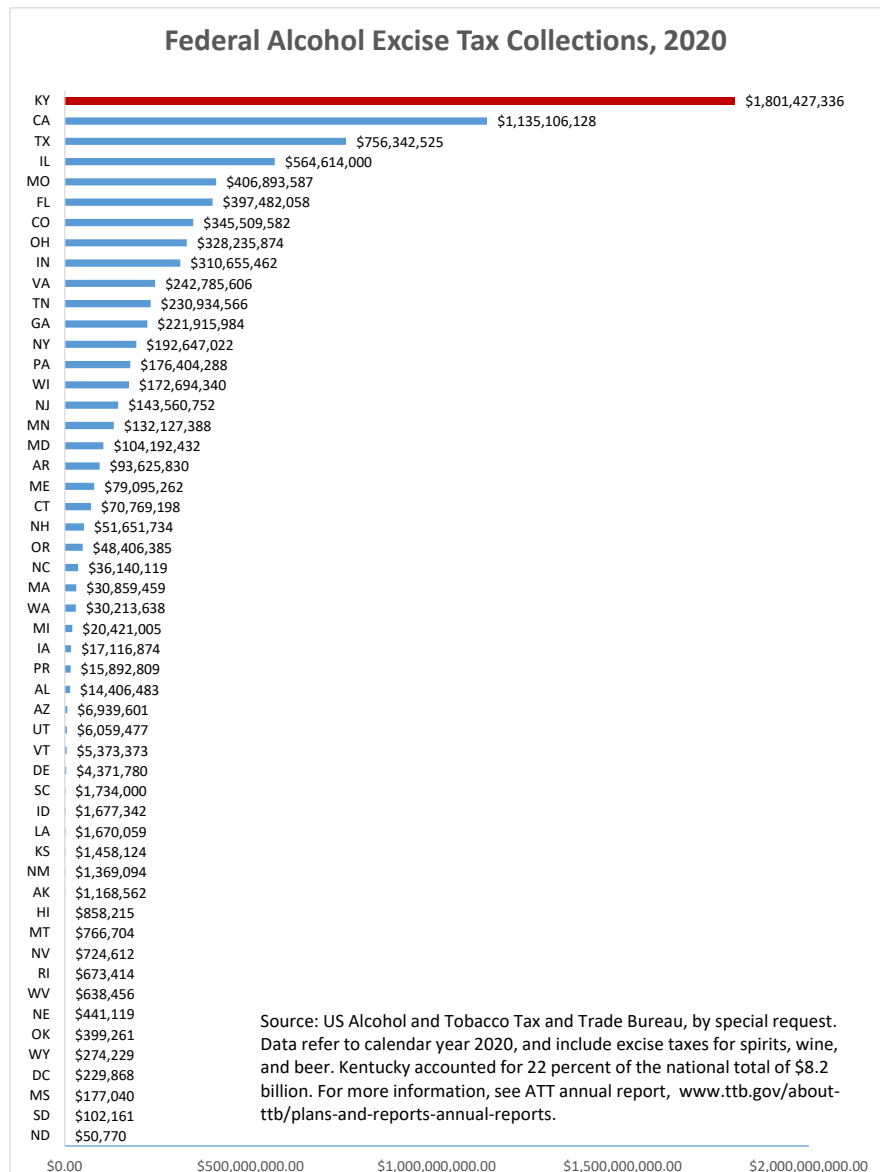


## Taxation and Fiscal Impacts of the Industry

There are many types of taxes that distillers and the consumers of spirits pay, and the taxes go to many different jurisdictions in Kentucky. Indeed, this is the most complicated part of our analysis. Distilleries remain one of the highest taxed of the 544 Kentucky industrial sectors we analyzed using our IMPLAN input-output model of the state. Twenty-one percent of the value of distillery output goes to government taxes – a rate exceeded by only three sectors: wholesale petroleum, commercial fishing, and tobacco manufacturing – sectors with a much smaller economic footprint than distilling. The effective tax rate on distilling is higher than that of breweries (8.2 percent) and wineries (3.1 percent). This calculation includes taxes levied by all levels of government, including federal, state, and local.

Before we look into the details of state and local taxation in Kentucky, it is worth noting how dominant the state is in terms of federal excise taxes on alcohol production.

According to the U.S. Alcohol and Tobacco Tax and Trade Bureau, Kentucky is responsible for 22 percent of all alcohol excise tax collections. See chart. The collections shown cover not only spirits, but beer and wine. However, beer and wine production are small in Kentucky, and distilling clearly is the cause of Kentucky’s first-place rank. In 2020, Kentucky distillers remitted \$1.8 billion in excise taxes to the U.S. Treasury. The tax rate is \$13.50 per proof gallon of production. Thus, for example, one gallon of 100 proof Bourbon (50% alcohol) would generate \$13.50 in federal excise taxes, paid by the distiller.



In the rest of this section, we look into many details of taxation of distilled spirits in Kentucky, not just of distilleries themselves, but through the distribution chain to wholesalers, retail package stores, and restaurants and bars. Like many states, Kentucky has a three tier system of regulation and taxation of alcohol products. Production is taxed at the distillery/bottling/storage sites. Wholesalers are required to remit separate taxes based on both volume and value in the process of supplying retail businesses. Then, restaurants, bars, package stores and other outlets collect a separate state retail sales tax based on value.

We have collected data and made estimates for the most important tax items, including local and state property taxes, state alcohol production and consumption taxes, local occupational taxes, and Kentucky state individual income and sales taxes.

**Estimated Annual Kentucky Taxes on the Production and Consumption of Distilled Spirits, 2020**

	Local Public Schools	City, County, Other Local Governments	Kentucky State Government	Total
<b>Production-related</b>				
Property taxes - real estate and tangible property	\$4,964,881	\$3,038,162	\$2,406,396	\$10,409,439
Property taxes - spirits aging in barrels	\$18,190,508	\$7,872,999	\$1,743,895	\$27,807,402
Individual income taxes from distillery-related payrolls			\$59,440,739	\$59,440,739
General sales taxes from distillery-related payrolls			\$49,137,208	\$49,137,208
Occupational taxes from distillery-related payrolls	\$1,709,977	\$17,772,197		\$19,482,174
Distilled spirits license fees**		\$72,647	\$273,915	\$346,562
Subtotal	\$24,865,366	\$28,756,005	\$113,002,153	\$166,623,524
<b>Consumption-related</b>				
Wholesale case tax*			\$202,034	\$202,034
Wholesale excise tax on volume*			\$17,520,621	\$17,520,621
Wholesale tax on value*			\$62,862,108	\$62,862,108
Retail sales tax, restaurants, bars, other for on-premise consumption			\$11,516,459	\$11,516,459
Retail sales tax, sales for off-premise consumption			\$21,542,989	\$21,542,989
Distilled spirits license fees**		\$3,322,713	\$2,291,125	\$5,613,838
Subtotal		\$3,322,713	\$115,935,336	\$119,258,049
<b>Grand Total</b>	<b>\$24,865,366</b>	<b>\$32,078,718</b>	<b>\$228,937,488</b>	<b>\$285,881,572</b>

\* Wholesale taxes shown are for state fiscal year July 2020 to June 2021.

\*\* Production-related license fees are primarily for distillers and rectifiers licensees; consumption-related license fees are largely for retail and package drink licenses.

A summary of our estimates is provided in the table above. All entries refer to the latest year available for data, primarily calendar 2020 or fiscal 2021. Production-related taxes account for \$166.6 million of the \$285.9 million total. Some of the entries are based on sheriff department records and official government tallies, some on company provided reports, while other entries are estimates based on historical ratios. Clearly, Kentucky state government is the biggest tax recipient, accounting for 80 percent of the total over all levels of government. Public school districts and local governments are the biggest recipients of property taxes paid by the industry.

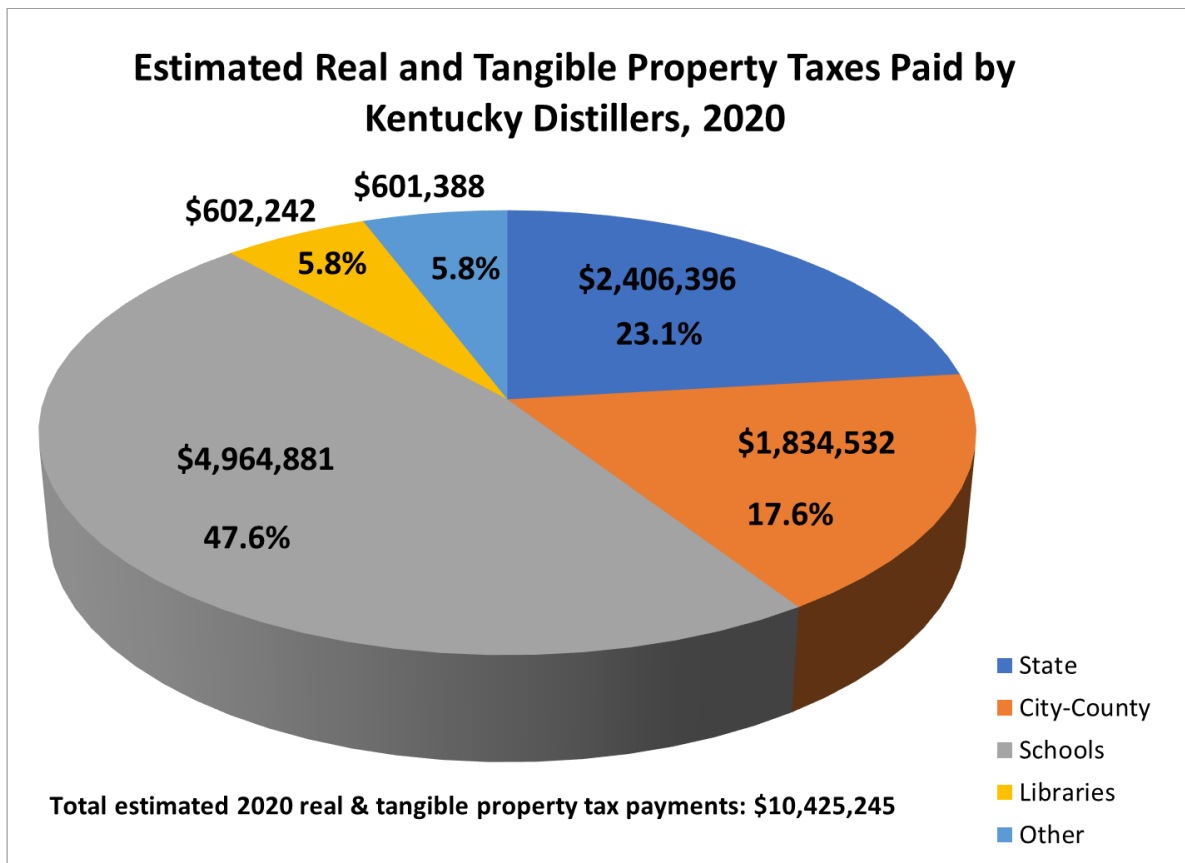
These entries are probably the most important taxes on distilled spirits, but there are many other taxes paid that are harder to quantify. For example, we do not know the amount of taxes



on insurance premiums, motor fuels, and utilities paid to state and local governments. So, \$285.9 million should be considered a lower boundary on the true unknown amount of taxes paid. In the following sections we discuss each type of tax in the table individually and then compare our results with the previous report.

### Property taxes

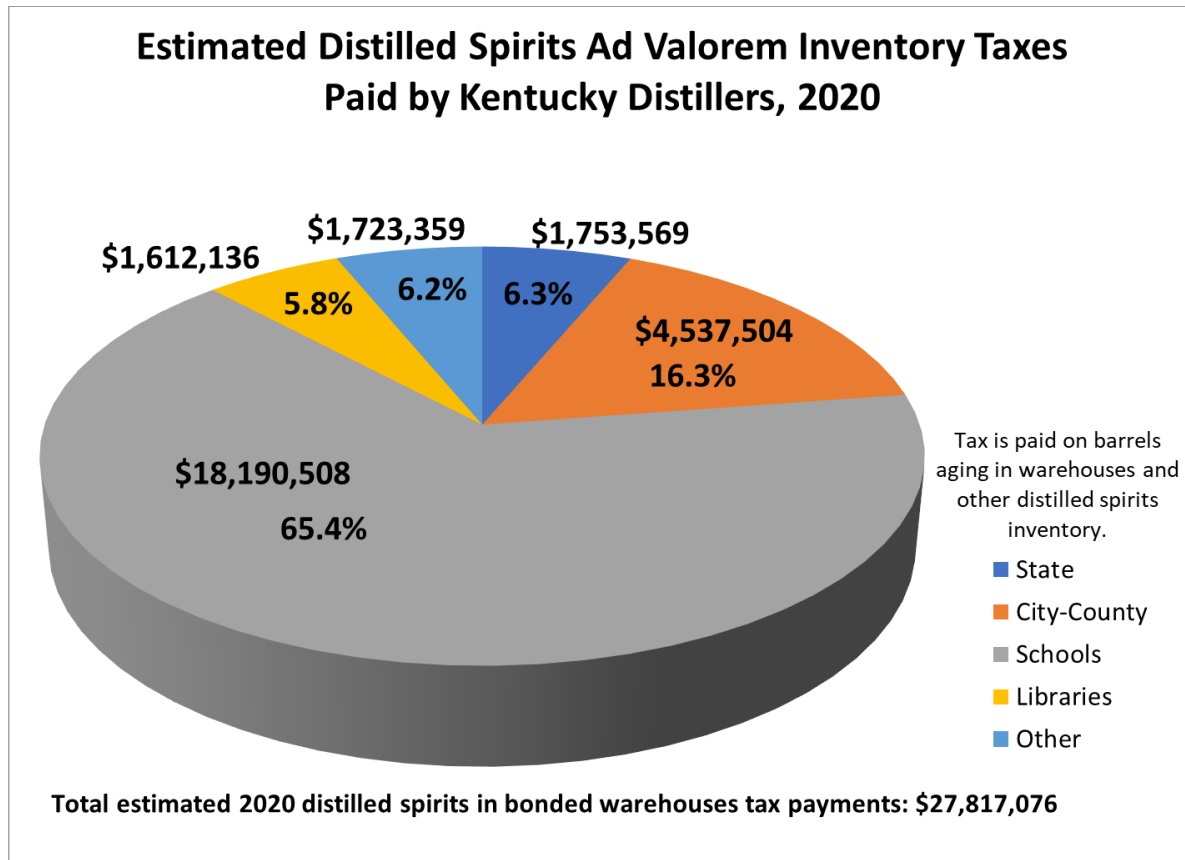
A distillery pays property taxes on its land and buildings to the local school system, the county government, the city government, a fire district, a library, health or agricultural district, and the Commonwealth of Kentucky. Distilleries also pay tangible property taxes to those jurisdictions on the value of machinery, furniture, vehicles, and the distilled spirits aging in warehouses.



We have attempted to track down the various properties owned by the distillery companies, and to organize public information on their tax bills in 2020. Unlike in past years, nearly all Kentucky counties now have their property tax bills and assessments available in online searchable databases. We were able to identify a total of about \$10.4 million paid to local and state governments. The assessed value of land, buildings, equipment, and inventory (ready to sell) was \$1.49 billion, of which \$555.2 million was real estate and \$932.5 million was tangible property. The pie chart above shows the distribution of taxes paid by jurisdiction type. Public schools are the biggest recipient of property tax payments, with revenues of about \$4.96

million or 47.6 percent of the total. Kentucky state government is next, with \$2.4 million (23 percent), followed by city and county governments with \$1.8 million (17.6 percent). Local libraries received \$602,000 (5.8 percent). The ‘Other’ category includes property tax revenues received by local health departments, agricultural extension offices, soil conservation districts, fire districts, and an air board. That total was just over \$601,000 (5.8 percent) in 2020.

The distilling industry also pays ad valorem property taxes on all Bourbon aging in barrels in bonded warehouses and other distilled spirits inventories. The tax payments are substantial, most of it going to local jurisdictions. The industry paid roughly \$27.8 million in distilled spirits ad valorem property taxes on aging barrels to state and local governments in 2020, more than triple that documented in our original 2009 study, and a 46 percent increase over our study of three years ago. The next pie chart shows the distribution of these payments to the state, city and county governments, public schools, libraries and other local government in 2020. The state of Kentucky received \$1.75 million in distilled spirits inventory taxes in 2020<sup>3</sup>, just over 6.3 percent of the total. Schools received over 65 percent of all these tax payments, with revenues of \$18.2 million. City and county governments and library districts collected \$4.5 million (16

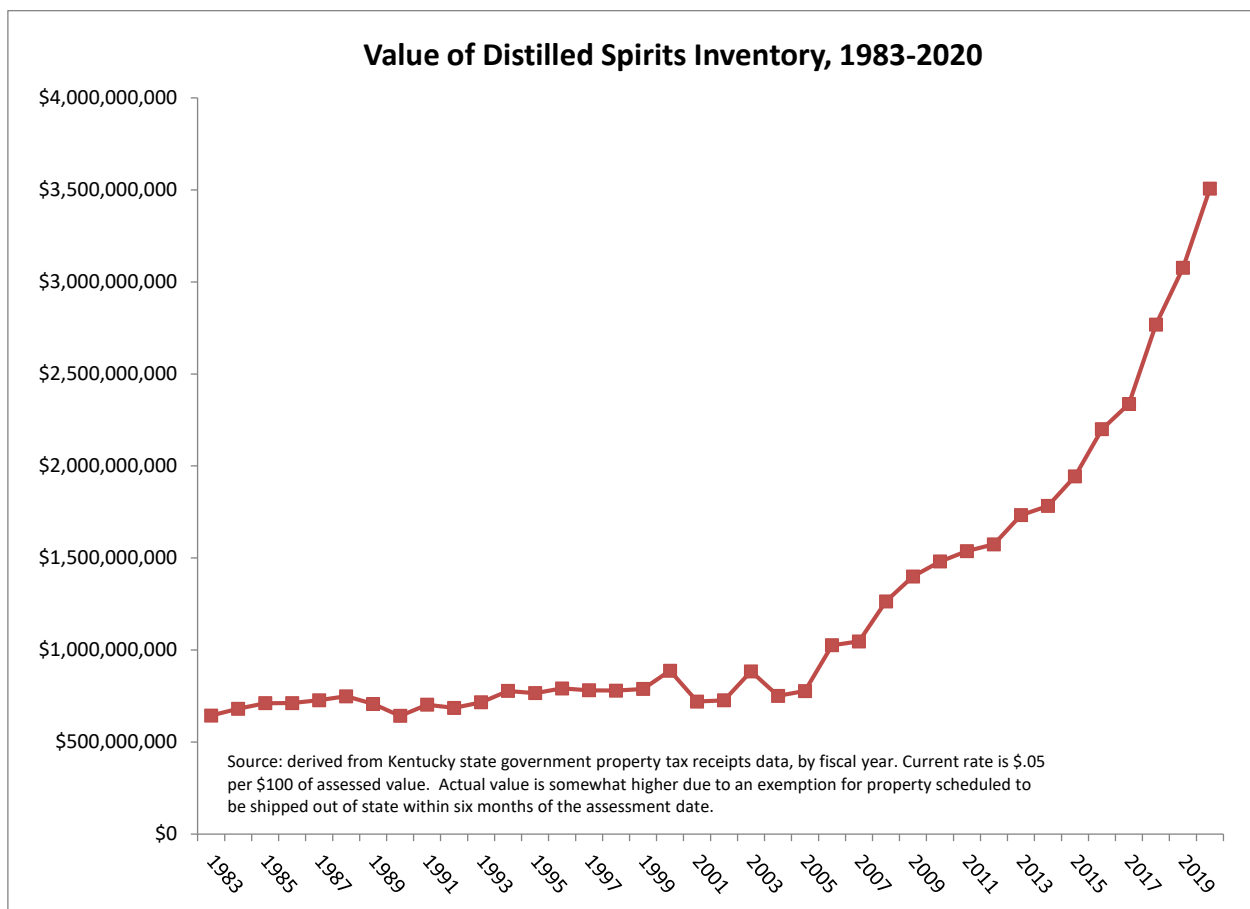


<sup>3</sup> The state portion of the inventory tax was eliminated in a recent tax reform bill.



percent) and \$1.6 million (5.8 percent), respectively. Just over \$1.7 million (6.2 percent) went to various other government entities.

Since the state tangible property tax rate on distilled spirits inventory is a flat \$0.05 per \$100 of valuation, we can use historical data on General Fund receipts from this tax to see the upward trend in inventory values over the past three decades, displayed in the chart below. The chart reflects payments through the 2020 tax year. The collections imply an inventory value of \$3.5 billion last year, but the actual value is higher due to an exemption for property scheduled to be shipped out-of-state within six months of the assessment date. The total value certified by the Kentucky Department of Revenue for 2020 was over \$3.8 billion. And for tax year 2021, the state certified value for all inventories (including those not subject to tax) reached \$4.4 billion.



Most tax collections on these aging barrels occur in just 10 counties, with only Jefferson County having a population of more than 100,000 people, so the taxes collected at the local level have a big impact in those communities, an impact that has grown nearly threefold in the last dozen years. On the other hand, Kentucky is the only place in the world that levies an annual aging barrel ad valorem tax, and the state’s distillers have long argued that it puts them at a



competitive disadvantage and could stunt the growth of craft distillers here because Bourbon and other aged whiskeys are central to most of the fledgling businesses' long-term plans. They must wait out the aging process before they can sell most of that product, yielding no revenues yet incurring ongoing tax payments and overhead.

### **Tax revenues related to payrolls of distilleries**

We now turn to the income and sales tax paid by employees who owe their incomes to distillery operations in Kentucky. The most important categories are the Kentucky individual income tax, the Kentucky general sales tax, and the occupational taxes paid to local governments. In several counties, we suspect that the distillery's employees are the largest direct payer of occupational taxes among all places of employment, but company-specific payroll data are not publicly available.

Kentucky income and sales tax receipts related to distillery payrolls can be estimated using effective tax rates. Effective tax rates are calculated by dividing historical tax revenues by payrolls. We use wage and salary data from the U.S. Bureau of Economic Analysis and tax collection data from the Kentucky Department of Revenue to calculate the average effective tax rates over the 2016-20 period. The effective income tax rate is 4.87 percent and the effective sales tax rate is 4.00 percent.

Multiplying by the \$1.23 billion in total distillery-related payroll yields \$60.0 million in Kentucky individual income tax receipts and \$49.3 million in Kentucky sales tax receipts, for a total of \$109.3 million to state government annually. This represents an estimate of how much less in tax receipts Kentucky state government would receive from these two most important categories were the distillery industry to go to another state.

Next, we turn to occupational taxes received by local governments. We have taken the local government jurisdictions that levy occupational taxes in counties containing Kentucky distilleries and weighted their rates by the distilling payroll in each county. This gives us a weighted average local occupational tax rate to apply to the direct payroll impact of the IMPLAN model. We have also created a weighted average of all occupational taxes across the state using estimates of payrolls within counties (when jurisdictions within counties differ in their occupational tax rates) and county wages and salaries as the weights. We apply this weighted average to the combined indirect and induced payroll impact. We applied the same methods for school district occupational taxes. Most of these jurisdictions also levy a 'net profits tax' on companies, typically at the same rate as the tax on payrolls, but we do not have data on corporate profits subject to the tax.

Applying the appropriate distillery-related payroll impact (either direct or combined indirect and induced) to the weighted local tax rates, we estimate local school districts received about



\$1.71 million in occupational taxes in 2020, and local city or county governments received \$17.77 million.

### **State licenses and fees**

The Kentucky Department of Alcoholic Beverage Control administers a number of license fees applicable to any business producing, storing, transporting, distributing, selling, or serving alcoholic beverages within the state. In fiscal year 2020, the state collected \$7.5 million in fees for these licenses<sup>4</sup>. In our 2018 study, we used a detailed examination of licenses by type to parse out the license and fee revenue to the spirits category. Here we extrapolate the FY18 results using the growth in total ABC regulatory revenues. This results in an estimate for FY20 of \$2.3 million in consumption-related license fees related to spirits. On the production side there are distiller's and rectifier's Class A and B licenses and a storage license, which we estimate brought in \$274,000 from the state's distillers.

### **Local licenses and fees**

On the production side, distillers pay for local licenses as well as their state license. We estimate that city and county governments collected \$73,000 distiller's and bottler's fees. On the consumption side, any business selling alcoholic beverages in Kentucky must pay annual license fees to local governments. This includes restaurants, caterers, hotels, bars, grocery stores, pharmacies, and package stores. The fees vary by type of alcohol sold and by size of city. For example, a restaurant in Louisville offering spirits must pay the City-County government \$1,600 each year, compared to \$500 in Morehead. Moreover, jurisdictions typically assess different fee amounts for different types of establishments (e.g., airport, racetrack, restaurant, package store), and even by time of day (higher fees if establishment is open after midnight). We do not know the total amount of fees paid annually to all the jurisdictions. Some alcohol sales are allowed in 66 counties, many with multiple cities of different sizes and alcohol laws. In our 2018-2019 report, we estimated that local governments received \$3.3 million in consumption-related license fees related to spirits sales for FY17. In Jefferson County, the Metro government handles all licensing throughout the county, and collects about \$2.5 million annually in license fees, which is essentially the same as that collected in FY17<sup>5</sup>. Using Louisville as representative of all the local jurisdictions, we estimate distilled spirits accounts for \$3.3 million in license fees for local governments annually in Kentucky.

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<sup>4</sup> As a reaction to Covid-19 business closures, the state waived renewal fees in FY21 on businesses selling for on-premise consumption. This caused renewal fee revenues to fall by \$1.7 million compared to FY20. We use FY20 figures here, as they reflect more normal operations.

<sup>5</sup> Similar to the state, Louisville waived fees for establishments serving alcohol for the calendar year 2021. Here we use the growth from FY17 to FY20 as representative of fee revenue in a normal year.



## Alcohol consumption taxes

Kentucky state government levies a number of taxes on alcohol sales generally, and distilled spirits in particular. Here we consider taxation at the excise, wholesale and retail levels, i.e., consumption-based taxes. Kentucky taxes alcohol consumption away from home (restaurants, bars, hotels) at a 6 percent rate, and levies the same rate on package sales at liquor stores and other outlets. Kentucky also taxes spirits at the wholesale level, with an 11 percent sales tax collected on transactions from wholesalers to retailers, and an excise tax of \$1.92 per wine-gallon of spirits sold. Kentucky is one of only two states with a tax at the wholesale level in addition to the excise tax; South Dakota's rate is 2 percent. This means Kentucky taxes alcohol

<b>Wholesale Tax Rates per gallon on Alcohol, Kentucky and Twelve Nearby States, January 2021</b>			
	<b>Beer</b>	<b>Wine</b>	<b>Spirits</b>
Alabama**	\$0.53	\$1.70	\$19.11
Arkansas	\$0.34	\$1.47	\$8.33
Georgia	\$0.48	\$1.51	\$3.79
Illinois	\$0.23	\$1.39	\$8.55
Indiana	\$0.12	\$0.47	\$2.68
Kentucky*	\$0.89	\$3.23	\$8.41
Missouri	\$0.06	\$0.42	\$2.00
North Carolina**	\$0.62	\$1.00	\$14.58
Ohio**	\$0.18	\$0.32	\$9.83
South Carolina	\$0.77	\$1.08	\$5.42
Tennessee***	\$1.29	\$1.27	\$4.46
Virginia**	\$0.26	\$1.51	\$19.89
West Virginia**	\$0.18	\$1.00	\$7.62
<b>Kentucky's ranking</b>	<b>2</b>	<b>1</b>	<b>6</b>
Source: Tax Foundation, Facts and Figures 2021: How does your state compare, Tables 28, 29, 30. <a href="https://taxfoundation.org/2021-state-tax-data/">https://taxfoundation.org/2021-state-tax-data/</a>			
* Kentucky's rate includes both the excise tax per gallon plus the wholesale ad valorem taxes, converted to a gallonage basis. The Kentucky ad valorem wholesale tax rates are 10.00% on beer and wine, and 11 percent on spirits.			
** These are 'control states' for spirits, meaning the state government manages the purchasing and retail pricing.			
*** Tennessee rates incorporate the \$0.15 tax per case, <a href="http://www.tn.gov/revenue/taxes/alcoholic-beverages-taxes/due-dates-and-tax-rates.html">www.tn.gov/revenue/taxes/alcoholic-beverages-taxes/due-dates-and-tax-rates.html</a>			

by the volume (excise) and value (wholesale). There is also a 'case tax' of \$0.05 per case levied on wholesalers, though this brought in only around \$202,000 to the state government in fiscal 2021. The wholesale tax on wine and beer is only 10 percent in Kentucky. The preceding chart



calculates an implied tax rate that considers excise and wholesales combined due to Kentucky's unique tax structure on alcohol.

The combined wholesale taxes – \$1.92 per gallon plus 11 percent ad valorem tax – on spirits is among the highest among U.S. states. Nearly all the states with higher wholesale taxes are 'control states', meaning the distribution and pricing is controlled by state government. Only four 'market states' levy higher total wholesale taxes on spirits than Kentucky – Washington, Alaska, Minnesota, and Illinois. Kentucky's wholesale tax is almost twice Tennessee's, the second biggest producer of whiskey. Given Kentucky's prominence in Bourbon production, there is a contrast with the tax treatment in states that are prominent in wine and beer production. For example, California and New York are the largest wine producing states, and their wholesale taxes are among the four lowest states. Similarly, Missouri, Wisconsin and Colorado have among the five lowest wholesale taxes on beer, and these states are the largest beer producers.

See Appendix I for a comparison of Kentucky's alcohol excise tax rates compared to those in all other states. The Appendix also includes a chart showing the wholesale taxes per gallon of alcohol, as opposed to per gallon of product. These calculations were made under the assumption spirits contain on average 40 percent alcohol, wine 12 percent, and beer 5 percent. If alcohol content were taxed consistently across the three categories, all the dots on the graph would line up for a particular state. One can see that alcohol is taxed consistently in only a few jurisdictions, namely Louisiana, Maryland, and Washington D.C. There is a lot of variation among states. Washington State is a clear outlier, with very high taxation of alcohol in spirits. Kentucky puts a high tax burden on alcohol in wine, and beer has the lowest tax burden. By contrast, note Tennessee, the second largest whiskey producing state, taxes alcohol in spirits at half the rate it taxes alcohol in beer. Moreover, Tennessee's wholesale tax on spirits is only \$4.46 per gallon, compared to Kentucky's combined tax of \$8.41 per gallon.

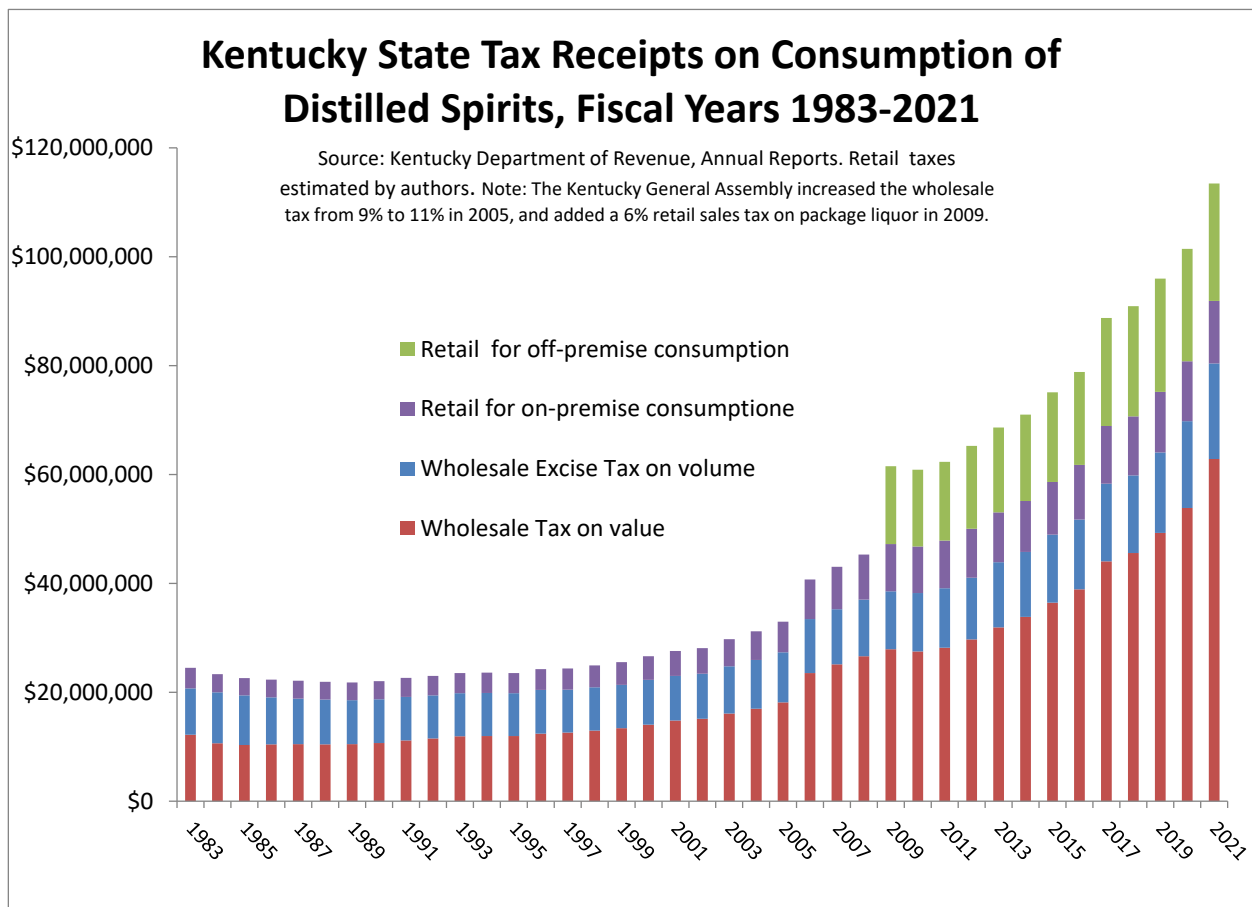
There are no official data available on the amount of Kentucky retail sales taxes from alcohol consumption. We have constructed estimates using detailed product sales data from the 2007, 2012 and 2017 Economic Census. The census provides estimates by industry of both retail sales of alcoholic beverages for off-premise consumption, and sales of alcoholic beverages served for immediate consumption, or on-premise. We further broke out spirits from total alcohol sales using national data that are even more detailed than those available at the state level.

The Census Bureau estimated that 'Alcoholic beverages served for immediate consumption' at restaurants, bars, hotels and other venues in Kentucky totaled \$490 million in 2017. Of that, distilled spirits accounted for just over 36 percent. Thus, sales of distilled spirits for immediate consumption at Kentucky restaurants, bars, and hotels were about \$177 million in 2017. We use historical growth in the average wholesale price per gallon to estimate these retail sales



away from home for other years, and multiply by 6 percent to estimate state tax revenues. In fiscal 2021, we estimate this brought in \$11.5 million to the state.

We similarly estimate carryout retail sales tax receipts using the 2017 Economic Census. “Retail sales of alcoholic beverages” in Kentucky totaled \$1.173 billion in 2017. Details at the federal level show distilled spirits made up 28.2 percent of those sales. This implies carryout spirits sales were \$331 million that year. Thus, assuming carryout retail sales grew by the same rate as the average wholesale price per gallon, the 6 percent retail tax brought in \$21.5 million in 2021. The four consumption-based tax streams are shown in the chart below, with Kentucky state tax revenues hitting \$114 million in 2021.



### Tax impacts over time

There has been a marked increase in the tax impact of the distilling industry over time. Below we show real, tangible, and distilled spirits property tax assessments for 2009, 2013, 2017, and 2020. The value of real and tangible property owned by Kentucky distillers has quadrupled in the last decade, while the value of the distilled spirits inventory aging in barrels has nearly tripled in that time. The next table compares our current estimates of the taxes generated at all levels of government that can be attributed to the impact of the distilling industry with the estimates from three previous studies. In total, we estimate that the industry can be said to be



generating around \$150 million, or 112 percent, more tax revenue throughout the state than it did in 2010.

### Property Related Tax Assessments of Kentucky Distillers, 2009, 2013, 2017, 2020

Tax	Estimated Assessments, Subject to County-level Tax				Percent Change '09-'20
	2009	2013	2017	2020	
Real Property	\$138,725,818	\$232,717,889	\$396,806,745	\$555,244,114	300.2%
Tangible Business Property	\$246,361,726	\$400,823,294	\$691,375,604	\$932,536,745	278.5%
Distilled Spirits in Bonded Warehouses	\$893,432,418	\$1,332,029,432	\$1,752,809,266	\$2,547,423,543	185.1%
<b>Total Property Related Tax Assessment</b>	<b>\$1,278,519,962</b>	<b>\$1,965,570,615</b>	<b>\$2,840,991,615</b>	<b>\$4,035,204,402</b>	<b>215.6%</b>

Sources: County Sheriff tax offices in 38 counties.

The growth in the consumption-related taxes are fairly straightforward. Simply put, Kentucky consumers have been just as much a part of the worldwide Bourbon boom as anybody else. Since the tax rates have all remained the same, it is simply a matter of the number of cases and gallons sold in the state, and the value of sales increasing. That the excise tax per gallon has the lowest percentage increase tells us the average price of spirits Kentuckians have been drinking is going up, which is consistent with premium brand growth.

### Comparison of Estimated Annual Kentucky Taxes on the Production and Consumption of Distilled Spirits, 2010-2017

Revenues Generated at All Levels of Government	2010	2013	2015	2017	2020	Change	Percent
<b>Production-related</b>							
Property taxes - real estate and tangible property	\$2,705,829	\$3,600,882	\$5,455,338	\$6,878,763	\$10,409,439	\$7,703,610	284.7%
Property taxes - spirits aging in barrels	\$11,697,908	\$11,940,044	\$13,412,692	\$19,024,834	\$27,807,402	\$16,109,494	137.7%
Individual income taxes from distillery-related payrolls	\$25,248,351	\$32,792,590	\$37,001,568	\$47,164,694	\$59,440,739	\$34,192,388	135.4%
General sales taxes from distillery-related payrolls	\$21,938,745	\$28,494,070	\$31,798,948	\$39,912,341	\$49,137,208	\$27,198,463	124.0%
Occupational taxes from distillery-related payrolls	\$6,497,408	\$8,424,378	\$12,073,846	\$15,714,466	\$19,482,174	\$12,984,765	199.8%
Distilled spirits license fees**	\$186,790	\$237,190	\$188,590	\$314,235	\$346,562	\$159,772	85.5%
Subtotal	\$68,275,032	\$91,539,153	\$105,980,981	\$135,059,333	\$166,623,524	\$98,348,492	144.0%
<b>Consumption-related</b>							
Case sales tax	\$110,086	\$122,873	\$132,802	\$153,781	\$202,034	\$91,948	83.5%
Excise tax per gallon	\$10,942,531	\$11,962,448	\$12,468,749	\$14,237,920	\$17,520,621	\$6,578,090	60.1%
Wholesale tax	\$28,175,617	\$31,911,903	\$36,471,357	\$44,064,952	\$62,862,108	\$34,686,491	123.1%
General retail sales tax, restaurants and bars	\$8,748,501	\$9,908,614	\$11,324,320	\$13,314,640	\$11,516,459	\$2,767,958	31.6%
Package retail sales tax	\$14,443,509	\$16,358,821	\$18,696,108	\$22,593,905	\$21,542,989	\$7,099,480	49.2%
Distilled spirits license fees**	\$4,301,591	\$4,697,707	\$4,869,387	\$5,497,641	\$5,613,838	\$1,312,247	30.5%
Subtotal	\$66,721,835	\$74,962,366	\$83,962,723	\$99,862,840	\$119,258,049	\$52,536,213	78.7%
<b>Grand Total</b>	<b>\$134,996,867</b>	<b>\$166,501,519</b>	<b>\$189,943,705</b>	<b>\$234,922,172</b>	<b>\$285,881,572</b>	<b>\$150,884,705</b>	<b>111.8%</b>

\* This represents an estimate based on a five year average of Kentucky corporate income tax payments and local net profits tax payments from some, but not all, the major companies compiled for the previous version of this study. Corporate income tax payments tend to vary widely from year to year, making prediction unreliable.

\*\* Production-related license fees are mostly for distillers and rectifiers licenses; consumption-related license fees are largely for retail and package drink licenses.

On the production side, the increases in property taxes and license fees reflect the recent wave of investment made by distillers and growth in the number of distilleries. The increases of the income, sales, and occupational taxes are related to the total payroll effect from our input-



output model, predicting \$1.23 billion in payroll at Kentucky businesses was being directly or indirectly supported by the distilling industry. This is 25 percent more than the previous study.



## Conclusion

The distilling industry in Kentucky continues to expand in response to growing domestic and international demand for its signature Bourbon products. We have studied the industry six times since 2009, and have been able to document steady growth in facilities, jobs, payroll, exports, and tax payments. In our first study, we reported 19 distilling establishments owned by 10 companies, located in 8 counties. There are now distilleries in 95 distinct locations, owned by 75 companies, across 40 counties. This reflects the expansions by large legacy distillers, but also the recent explosion in craft distillers. The boom in craft distillers is nationwide, but Kentucky remains the central state in terms of production, accounting for 30 percent of U.S. employment in the distilling industry.

The industry now directly employs around 6,000 workers in Kentucky, with a payroll of \$600 million annually. But the full economic impact is much larger, due to the many businesses in Kentucky supplying materials and services to distillers, as well as increased household spending related to distillery payrolls. Examples include farmers who provide grain, companies that provide oak barrels and packaging materials, truckers, bankers, insurers, and marketing firms. We estimate that the total statewide economic impact of the distilling industry in 2020 was 22,540 jobs, with annual payroll of \$1.23 billion.

The production and consumption of distilled spirits provides an increasing flow of tax payments to state and local governments. We estimate the distilling industry is directly or indirectly responsible for about \$286 million in state and local tax payments in Kentucky annually. This is more than double the amount we documented in our 2009 study. The total includes local and state property taxes, state alcohol production and consumption taxes, local occupational taxes, and Kentucky state individual income and sales taxes. State government accounts for 80 percent of the total tax revenues, with 20 percent going to local government entities. School districts and local governments are the biggest recipients of property taxes paid by the industry. For 2021, the Kentucky Department of Revenue estimates state and local governments will collect \$33.2 million in taxes on barrels aging in inventory, and that inventory is assessed at \$4 billion.

The industry has also accelerated its investments in new plants and equipment. KDA members reported capital spending of \$1.9 billion over the last five years, almost equally split between construction and other items, such as machinery, equipment, and furnishings. Moreover, they plan to spend \$3.3 billion over the next five years. Every KDA member, whether a large Heritage producer or a small Craft producer, reported significant investments. (It should be noted the KDA reached out to non-member distilleries in Kentucky to provide data for this study; several participated, especially those applying to become members.)



These large investments suggest we will see even more growth in traditional measures of economic activity, such as jobs, payroll, and tax payments. Growing at the rate we have observed over the last 12 years, Kentucky’s distilling industry could support over 24,000 jobs by 2023, with payroll of \$1.3 billion, and total direct and indirect tax payments to state and local governments of more than \$286 million (including taxes from spirits consumption).

<b>Summary of Estimated Growth in Distilling Industry Since 2008</b>					
<b>Reference Year of Studies</b>	<b>Direct Employment by Distilling Industry</b>	<b>Total Estimated Economic and Fiscal Impact in Kentucky</b>			
		<b>Employment</b>	<b>Payroll</b>	<b>Output</b>	<b>Production-related Taxes Paid to State and Local Governments</b>
2008	3,200	9,848	\$441,850,386	\$5,400,000,000	\$61,359,552
2011	3,100	10,311	\$413,031,151	\$5,600,000,000	\$60,639,778
2013	3,594	15,416	\$707,232,584	\$7,586,622,907	\$91,539,153
2015	4,300	15,229	\$796,562,933	\$8,547,398,340	\$105,986,671
2017	4,953	20,124	\$1,003,819,284	\$8,585,971,924	\$135,059,333
2020	6,000	22,538	\$1,232,105,626	\$8,935,256,608	\$166,623,524
potential					
2023	6,323	24,148	\$1,342,030,334	\$9,318,223,763	\$181,088,481

Source: prior studies, using successive versions of IMPLAN regional input-output models of Kentucky. The potential for 2023 is based on a projection using the compound average growth rate from 2008 to 2020 in each category.



## APPENDIX A

### Federal Industrial Classification Codes Relevant to the Distilling Industry

We treat the industry here as the collection of firms that earn revenues primarily from distilling and selling liquor. These firms may engage in other revenue-generating activities, such as making brandy, beer, wooden barrels, managing and marketing other product lines (including wines and non-liquor products), and selling merchandise in their gift shops. Nevertheless, we presume the companies would not be located in Kentucky were it not for their distilling operations, and hence for purposes of this study attempt to count all their activity as part of the industry.

According to the *2021 Kentucky Directory of Manufacturers*, the distilling companies in Kentucky have activities that span eight industrial classifications. These industries are shown in the table, with their official descriptions.

<b>Various Industry Classifications for Activity by Kentucky Distillers</b>		
North American Industrial Classification System (NAICS)		
Code	Title	Description: This industry comprises establishments primarily engaged in...
312120	Breweries	brewing beer, ale, lager, malt liquors, and nonalcoholic beer.
312130	Wineries	one or more of the following: (1) growing grapes and manufacturing wines and brandies; (2) manufacturing wines and brandies from grapes and other fruits grown elsewhere; and (3) blending wines and brandies.
312140	Distilleries	one or more of the following: (1) distilling potable liquors (except brandies); (2) distilling and blending liquors; and (3) blending and mixing liquors and other ingredients.
321920	Wood Container and Pallet Manufacturing	manufacturing wood pallets, wood box shoo, wood boxes, other wood containers, and wood parts for pallets and containers.
493110	General Warehousing and Storage	operating merchandise warehousing and storage facilities. These establishments generally handle goods in containers, such as boxes, barrels, and/or drums, using equipment, such as forklifts, pallets, and racks. They are not specialized in handling bulk products of any particular type, size, or quantity of goods or products.
493190	Other Warehousing and Storage	operating warehousing and storage facilities (except general merchandise, refrigerated, and farm product warehousing and storage).
551114	Corporate, Subsidiary, and Regional Managing Offices	administering, overseeing, and managing other establishments of the company or enterprise. These establishments normally undertake the strategic or organizational planning and decision-making role of the company or enterprise. Establishments in this industry may hold the securities of the company or enterprise.
561591	Convention and Visitors Bureaus	marketing and promoting communities and facilities to businesses and leisure travelers through a range of activities, such as assisting organizations in locating meeting and convention sites; providing travel information on area attractions, lodging accommodations, restaurants; providing maps; and organizing group tours of local historical, recreational, and cultural attractions.

Source: US Census Bureau, North American Industrial Classification System, 2017, [www.census.gov/eos/www/naics/](http://www.census.gov/eos/www/naics/)  
 The codes shown are those listed in entries for distilling companies in the *2017 Kentucky Directory of Manufacturers*, [www.thinkkentucky.com](http://www.thinkkentucky.com)



**APPENDIX B**  
**Licensed Distillers in Kentucky**

<b>Large Volume Distiller Licensees, April 2021</b>			
<b>Distiller Name</b>	<b>Class</b>	<b>City</b>	<b>County</b>
Age International	A	Frankfort	Franklin
Alltech's Lexington Brewing and Distilling Company	A	Lexington	Fayette
Barton 1792 Distillery (Sazerac Distillers LLC)	A	Bardstown	Nelson
Brown-Forman Corporation, 2921 Dixie Highway	A	Louisville	Jefferson
Brown-Forman Corporation, 850 Dixie Highway	A	Louisville	Jefferson
Buffalo Trace Distillery	A	Frankfort	Franklin
Castle & Key (Peristyle LLC)	A	Frankfort	Franklin
Copper & Kings American Brandy Company	A	Louisville	Jefferson
Diageo Americas Supply Inc	A	Shelbyville	Shelby
Diageo Americas Supply Inc (Stitzel Weller)	A	Louisville	Jefferson
Diageo Lebanon Distillery	A	Lebanon	Marion
Evan Williams Bourbon Experience (Heaven Hill Distilleries Inc)	A	Louisville	Jefferson
Four Roses Distillery	A	Lawrenceburg	Anderson
Glenmore Distillery (Sazerac Distillers LLC)	A	Owensboro	Daviess
Green River Distilling Company	A	Owensboro	Daviess
Heaven Hill Distilleries Inc.	A	Louisville	Jefferson
Heaven Hill Distilleries Inc.	A	Bardstown	Nelson
Jim Beam Brands	A	Clermont	Bullitt
Jim Beam Brands	A	Frankfort	Franklin
Jim Beam Brands	A	Louisville	Jefferson
Jim Beam Brands	A	Boston	Nelson
Kentucky Artisan Distillery (Copperhead Distillery Company)	A	Crestwood	Oldham
Kentucky Bourbon Distillers Ltd (The Willett Distillery)	A	Bardstown	Nelson
Kentucky Peerless Distilling Company	A	Louisville	Jefferson
Louisville Spirits Group (Louisville Distilling Company LLC)	A	Louisville	Jefferson
Lux Row Distillers	A	Bardstown	Nelson
Maker's Mark Distillery Inc	A	Loretto	Marion
Michter's Distillery	A	Louisville	Jefferson
New Riff Distilling - 2 locations and licenses in Newport	A	Newport	Campbell
Old Forester Distilling Co (Brown-Forman Corporation)	A	Louisville	Jefferson
Rabbit Hole Distilling	A	Louisville	Jefferson
Six Mile Creek Distillery	A	Pleasureville	Henry
The Bardstown Bourbon Company	A	Bardstown	Nelson
Wild Turkey Distillery (Campari America LLC)	A	Lawrenceburg	Anderson
Wilderness Trail Distillery	A	Danville	Boyle
Woodford Reserve Distillers (Brown-Forman Corporation)	A	Versailles	Woodford

Sources: Kentucky Department of Alcoholic Beverage Control. Class A distillers are licensed to produce more than 50,000 gallons per year; Class B less than 50,000 gallons. Company names in parentheses when they differ substantially from the distillery names.

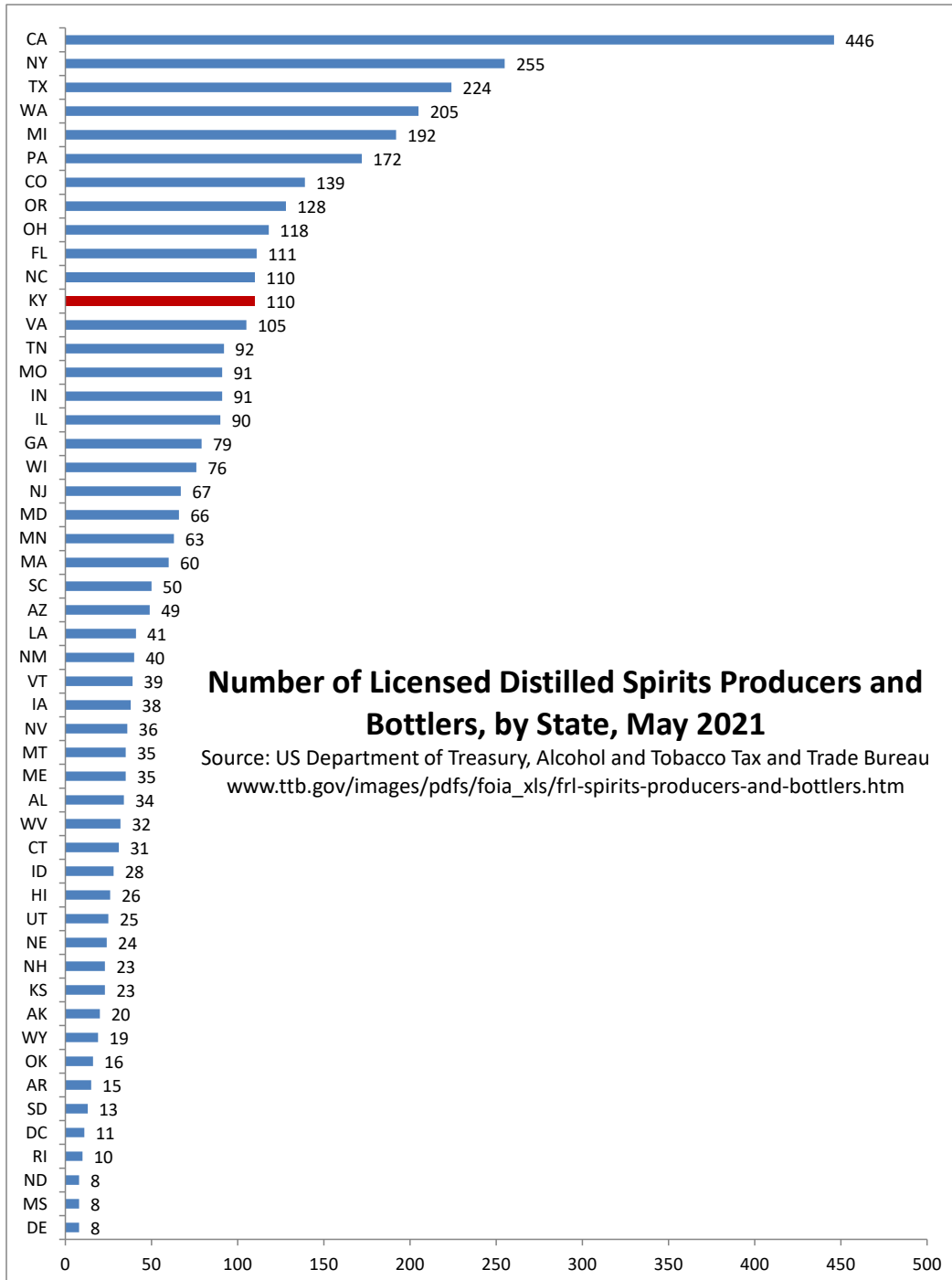


Small Volume Distiller Licensees, April 2021			
Distiller Name	Class	City	County
27 Bar + Kitchen and Pensive Distilling Company	B	Newport	Campbell
Alltech's Lexington Brewing and Distilling Company	B	Lexington	Fayette
Baker-Bird Winery	B	Augusta	Bracken
Barrel House Distilling Company (Woodshed Beverage LLC)	B	Lexington	Fayette
Barrell Craft Spirits Distillery	B	Louisville	Jefferson
Bluegrass Distillers	B	Lexington	Fayette
Boone County Distilling Company	B	Independence	Boone
Boundary Oak Distillery	B	Radcliff	Hardin
Bourbon 30 Spirits	B	Georgetown	Scott
Brough Brothers Distillery	B	Louisville	Jefferson
Casey Jones Distillery	B	Hopkinsville	Christian
Chrisman Mills Vineyards	B	Nicholasville	Jessamine
Coal Pick Distillery (C&K Distillery LLC)	B	Drakesboro	Muhlenberg
Corsair Artisan LLC	B	Bowling Green	Warren
Crooked Tail Distilling Co LLC	B	Princeton	Caldwell
Distilled Spirits Epicenter	B	Louisville	Jefferson
Dueling Barrels Brewing Company	B	Pikeville	Pike
Dueling Grounds Distillery LLC	B	Franklin	Simpson
Four Roses Distillery	B	Cox's Creek	Bullitt
Fulton County Distillery	B	Hickman	Fulton
GBRE	B	Lancaster	Garrard
Glenns Creek Distilling, LLC	B	Frankfort	Franklin
Hartfield & Company	B	Paris	Bourbon
James Pepper Distilling Co	B	Lexington	Fayette
Jeptha Creed Distillery (Rut N'Strut Distillery LLC)	B	Shelbyville	Shelby
Kentucky Mist Moonshine	B	Whitesburg	Letcher
Limestone Branch Distillery	B	Lebanon	Marion
Lodestone Beverages	B	Harrodsburg	Mercer
Log Still Distilling	B	New Haven	Nelson
MB Roland Distillery	B	Pembroke	Christian
Metcalfe Landscaping & Garden	B	Madisonville	Hopkins
Michter's Distillery (West Main St.)	B	Louisville	Jefferson
Neeley Family Distillery	B	Sparta	Gallatin
Old Blue Ribbon Farm	B	Eminence	Henry
Old Pogue	B	Maysville	Mason
Paducah Distilled Spirits	B	Paducah	McCracken
Pauley Hollow Distillery LLC	B	Forest Hills	Jefferson
PCS Distilling Company (R Keith Hazelbaker Ventures LLC)	B	Louisville	Jefferson
Preservation Distillery	B	Bardstown	Nelson
Route 52 Moonshine, LLC	B	Irvine	Estill
Saddlestone Distillery	B	Midway	Woodford
Second Sights Spirits	B	Ludlow	Kenton
Silent Brigade Distillery	B	Paducah	McCracken
Smith Holler	B	Cloverport	Breckinridge
The Bard Distillery	B	Graham	Muhlenberg
The Still (Ambrabev LLC)	B	Danville	Boyle
Tyler Wood White Whiskey	B	Lewisburg	Logan
Wadelyn Ranch Distilling LLC	B	Waynesburg	Lincoln
Washtucky Holdings LLC	B	Frankfort	Franklin
Whiskey Thief Distilling Company	B	Frankfort	Franklin
Whiskeycraft (Preservation Distillery LLC)	B	Bardstown	Nelson
White Dog Trading and Storage	B	Midway	Woodford
Wildcat Willy's Distillery	B	Winchester	Clark
William Tarr Distillery	B	Lexington	Fayette

Sources: Kentucky Department of Alcoholic Beverage Control. Class A distillers are licensed to produce more than 50,000 gallons per year; Class B less than 50,000 gallons. Company names in parentheses when they differ substantially from the distillery names.

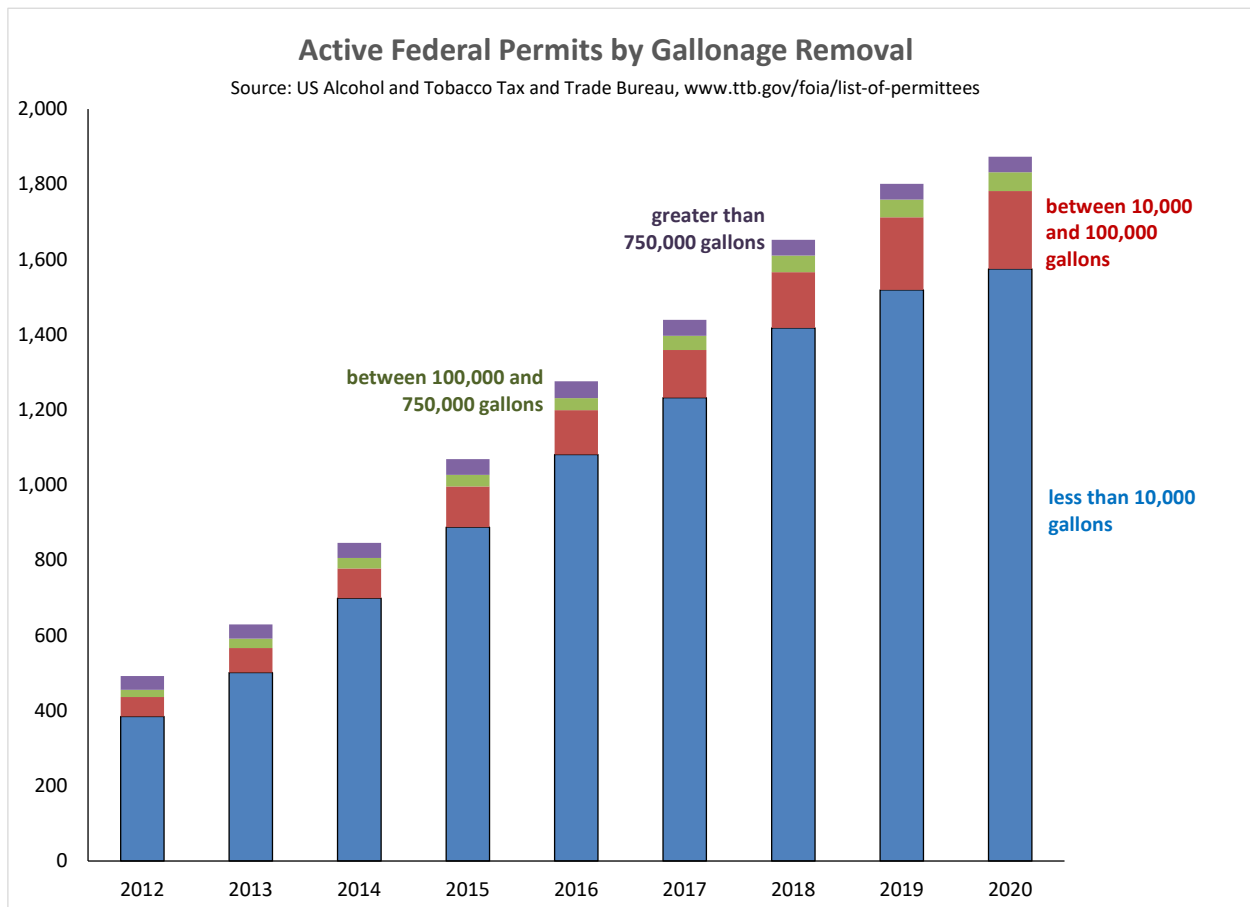


Distillers are also licensed by the federal government, and thus we know how many are operating in each state. This snapshot from December 2020 shows 110 licensed distillers in Kentucky, out of total of 3,830 nationally. Kentucky is tied with North Carolina for 11<sup>th</sup> highest among states, compared to its population ranking of 26<sup>th</sup>. See chart for the numbers by state. The top states – California, New York, and Texas – each has a large population base, and also relatively low wholesale taxes on spirits consumption. Fourth-ranked Washington state, on the



other hand, has the highest wholesale taxes. Kentucky added 26 licenses since 2018, and now accounts for 2.9 percent of national licensees, up slightly from two years ago.

A related federal database on permits reveals the strong recent growth in small distilleries nationally. Since 2012, there has been a net growth in active distillery permits of 1,381, with 86 percent of these to distilleries producing less than 10,000 gallons annually. There has been essentially no change in the number of distilleries producing more than 750,000 gallons, stable over the decade at around 40 to 45 distilleries.



The federal database also provides another measure of the distribution of distillers around Kentucky. One can see the 110 distillers are located in 44 counties. However, over half of the distillers are located in eight of Kentucky’s 120 counties – Jefferson, Fayette, Nelson, Woodford, Franklin, Anderson, McCracken, and Marion.

<b>Number of Federally Licensed Distilled Spirits Producers, by Kentucky County, May 2021</b>				
Jefferson	22		Warren	2
Fayette	9		Ballard	1
Nelson	8		Boone	1
Woodford	6		Breckinridge	1
Franklin	4		Caldwell	1
Anderson	3		Clark	1
Christian	3		Cumberland	1
McCracken	3		Estill	1
Marion	3		Fulton	1
Bourbon	2		Gallatin	1
Boyle	2		Garrard	1
Bracken	2		Hardin	1
Bullitt	2		Hopkins	1
Campbell	2		Knox	1
Daviess	2		Letcher	1
Henry	2		Lincoln	1
Jessamine	2		Mason	1
Kenton	2		Mercer	1
Logan	2		Oldham	1
Muhlenberg	2		Powell	1
Pike	2		Scott	1
Shelby	2		Simpson	1

Source: US Department of Treasury, Alcohol and Tobacco Tax and Trade Bureau, [www.ttb.gov/images/pdfs/foia\\_xls/frl-spirits-producers-and-bottlers.htm](http://www.ttb.gov/images/pdfs/foia_xls/frl-spirits-producers-and-bottlers.htm)



## APPENDIX C

### **Measures of Employment and Payroll for Kentucky's Distilling Industry**

There are several government sources of data on employment and/or payroll for Kentucky's distilling industry, and the estimates differ by statistical program due to different definitions, timeframes, geographic detail, and disclosure rules. In this section, we display the various estimates and discuss their differences. First, we mention some general measurement issues to keep in mind when dealing with official economic data.

All federal statistical programs use an industrial classification scheme based on the primary source of revenues to the business establishment. Thus, if distilling accounts for the largest source of revenue for a company that also sells wine, food, merchandise in gift shops, etc., all the business's economic activity is counted under the distilling industry, NAICS 31214.

Moreover, most employment and payroll measures for the industry simply lump production and management personnel under one industry estimate. So, a Kentucky distiller with a large international headquarters operation is counted the same as a distilling operation that only produces Bourbon. There are obviously large differences in occupations and average pay between a headquarters and an actual distillery. We delve into this subject below in our discussion of the Economic Census, the one federal program that distinguishes production from supervisory personnel.

Finally, the payroll data discussed do not include any fringe benefits. Employee benefits take the form of Social Security and Medicare taxes paid by the employer, contributions to private pensions plans, subsidies of health and life insurance plans, payments into the unemployment insurance systems, and the value of clothing and meals. Employer-provided benefits to employees can range from 20 to 50 percent of actual wages and salaries paid.

#### Quarterly Census of Employment and Wages (QCEW)

The QCEW is produced by the U.S. Bureau of Labor Statistics, and covers nearly all nonagricultural wage and salary employment. The government receives the raw data from employer reports as part of each state's mandatory unemployment insurance program; and thus, the estimates are based on a census, not a survey. Data are published on a monthly basis for employment and a quarterly basis for wages. Data are released with about a six-month lag. Thus, full 2020 data were available in June 2021. Note that QCEW data do not cover business proprietors or otherwise self-employed persons, and hence will not capture some of the business owners involved in craft distilling. BLS publishes QCEW data at the county level, though federal confidentiality laws limit the amount of industry detail that can be released,



particularly for counties with a small population or counties containing one or two very large employers.

In the table below, QCEW data on Kentucky’s distilling industry the last two decades show by 2020, the industry employed 5,381 people, with a \$547 million annual payroll. Average annual wages and salaries increased, eclipsing \$100,000 for the first time in 2020, at \$101,567.

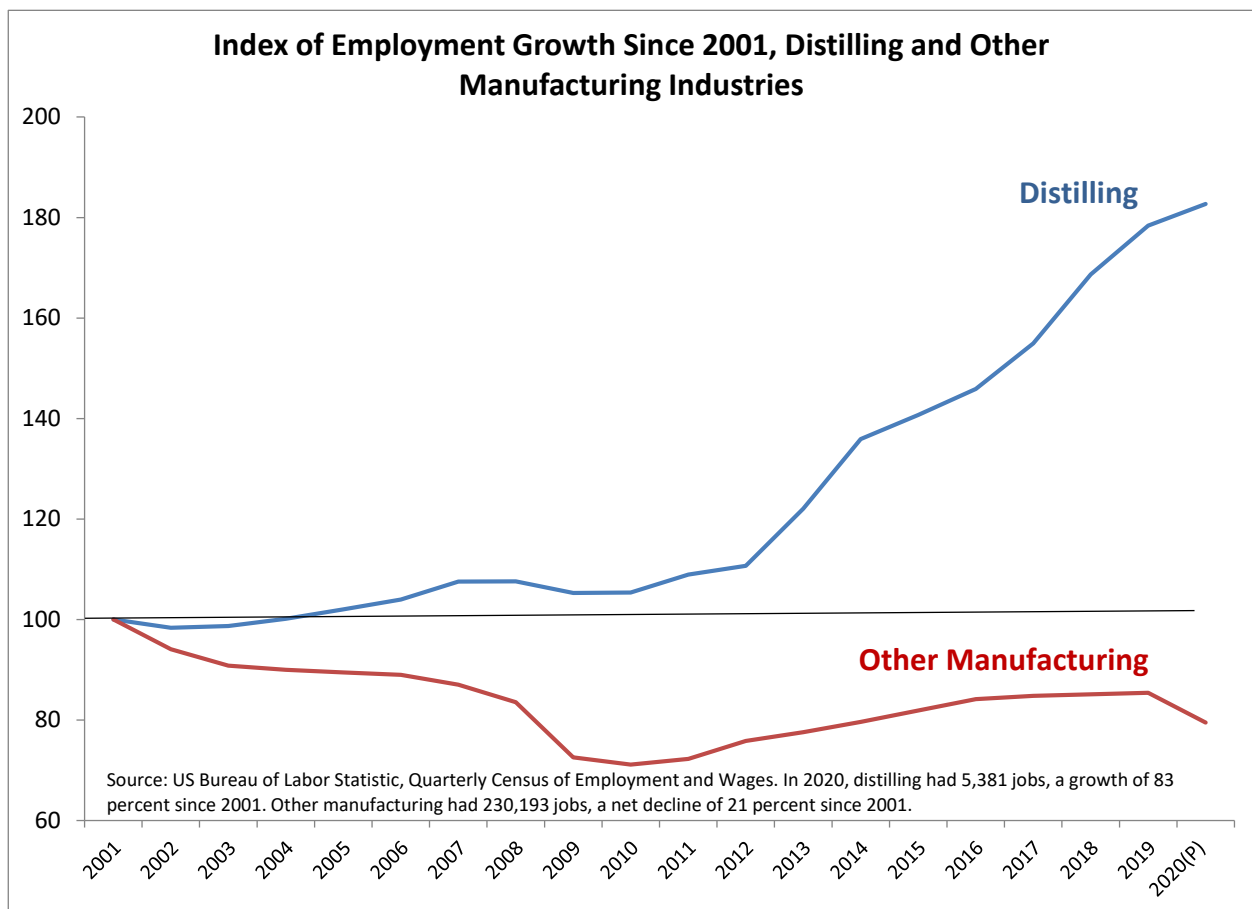
<b>Distillery Employment and Wages in Kentucky, 2001 to 2020</b>				
	<b>Number of Business Establishments</b>	<b>Employment</b>	<b>Wages and Salaries</b>	<b>Average Annual Wages and Salaries per Job</b>
2001	16	2,945	\$156,644,000	\$53,190
2002	16	2,896	\$156,832,000	\$54,155
2003	14	2,907	\$168,222,000	\$57,868
2004	15	2,949	\$179,753,000	\$60,954
2005	15	3,005	\$203,317,000	\$67,660
2006	15	3,062	\$225,437,000	\$73,624
2007	16	3,167	\$236,527,000	\$74,685
2008	17	3,168	\$243,959,000	\$77,007
2009	17	3,100	\$225,594,000	\$72,772
2010	17	3,103	\$245,667,000	\$79,171
2011	19	3,208	\$256,056,000	\$79,818
2012	20	3,260	\$311,709,000	\$95,616
2013	23	3,594	\$327,728,000	\$91,188
2014	30	4,003	\$392,859,000	\$98,141
2015	36	4,144	\$394,493,000	\$95,196
2016	43	4,297	\$405,040,000	\$94,261
2017	48	4,563	\$432,002,000	\$94,675
2018	54	4,968	\$482,691,000	\$97,160
2019	59	5,253	\$521,426,000	\$99,263
2020(P)	69	5,381	\$546,533,000	\$101,567
<i>Growth</i>	<i>53</i>	<i>2,436</i>	<i>\$389,889,000</i>	<i>\$48,377</i>
<i>Rate</i>	<i>331.3%</i>	<i>82.7%</i>	<i>248.9%</i>	<i>91.0%</i>

Source: US Bureau of Labor Statistics, *Quarterly Census of Employment and Wages*, for Distilling industry, NAICS 31214.



While we view the QCEW as the most comprehensive accounting of the distilling industry, these estimates actually understate the size of the industry in Kentucky a bit because the distilled spirits industry here is represented by larger and more vertically integrated companies than elsewhere.

Because most economic data are collected on an establishment basis, it is possible for two facilities of the same company involved in different aspects of the production process to be classified into different industries, even if they are on adjacent parcels of land. This is the case for a few bottling and shipping facilities in Kentucky. Because this is an integral part of the business, we fold these facilities into the industry for our economic analysis.<sup>2</sup> Our economic impact analysis assumes employment of roughly 6,000 people with annual wages totaling \$600 million.

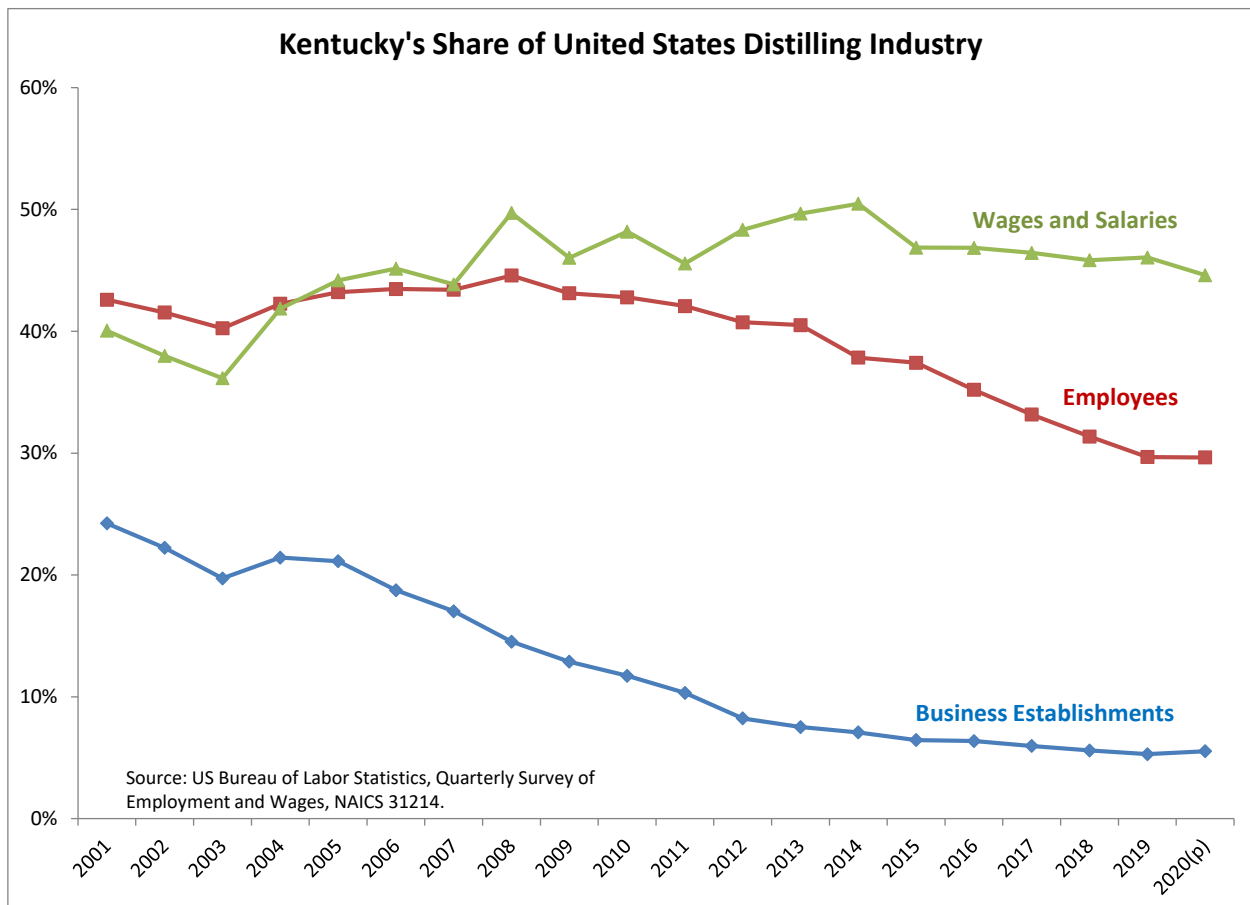


<sup>2</sup> Additionally, the U.S. Census Bureau dataset, *County Business Patterns*, which tends to be most stricter in terms of only counting direct production facilities as part of a manufacturing industry, shows a much higher increase in distilling industry employment from 2018 to 2019 for both Kentucky and the US, than does the QCEW. Historically normal ratios between the CBP and QCEW data indicate that the latest QCEW data may be underestimating the size of the industry in Kentucky.



How has distilling performed employment-wise relative to other manufacturing industries in Kentucky? One can see in the above chart that distilling employment has risen rapidly while on net the other manufacturing industries have shed jobs over the last two decades. Since 2001, distillery employment rose 82.7 percent, while falling by 20.5 percent for the rest of manufacturing.

We can use the QCEW data to get insight into Kentucky's share of the national distilling industry. The next chart shows Kentucky's share of business establishments, jobs, and payroll. These reveal that, while Kentucky remains the dominant state for distilling employment due to its large legacy producers, there has been a national boom in small distilling ('craft', 'micro') establishments. Nationally, the number of distillers went up 19-fold over the 2001 to 2020 period, from 66 to 1,247. Kentucky's share of distilling establishments fell from 24 to 6 percent over the period, while its share of employment fell only from 43 to 30 percent. Moreover, annual pay per job remains high in Kentucky, due to the location of several major headquarters operations in the state. Indeed, over the period shown, average annual pay per job in Kentucky went from six percent below the national average to 50 percent above the national average.



## Economic Census, and the Annual Survey of Manufacturers

The U.S. Census Bureau publishes detailed economic data by industry, for years ending in '2' and '7'. There is a several year reporting and estimation lag, so that the latest publication is for the year 2017. The Census Bureau also publishes less detailed industry statistics on manufacturing every year between the census years. Titled the *Annual Survey of Manufacturers*, the latest edition covers 2019, which was published in February 2021. However, state-level economic estimates are provided only at the four-digit NAICS level, so that estimates are available for the Beverages industry, but no breakout for alcoholic beverages, like spirits, wine, or beer. Only the economic census provides good industry detail at the state level. We summarize the last five sets of estimates for the distilling industry here.

<b>Kentucky's Distillery Industry, Selected Economic Characteristics</b>					
	<b>1997</b>	<b>2002</b>	<b>2007</b>	<b>2012</b>	<b>2017</b>
Number of establishments	16	16	15	19	49
Number of employees	2,124	2,061	2,391	2,283	3,239
Annual payroll (000)	\$75,727	\$88,915	\$111,351	\$146,936	\$231,960
Production workers avg per year	1,496	1,416	1,503	1,499	2,391
Production workers hours (000)	3,016	2,885	3,064	D	5,031
Production workers wages (000)	\$45,918	\$51,595	\$60,114	\$75,222	\$137,108
Value added (000)	\$613,814	\$579,681	\$2,003,008	D	\$2,883,306
Total cost of materials (000)	\$432,090	\$479,871	\$629,667	D	\$908,784
Total value of shipments (000)	\$1,034,299	\$1,070,722	\$2,459,131	D	\$3,902,731
Total capital expenditures (000)	\$28,331	\$30,864	\$50,176	\$66,647	\$218,285
Number of non-production workers	628	645	888	784	848
Payroll of non-production workers (000)	\$29,809	\$37,320	\$51,237	\$71,714	\$94,852

Source: US Census Bureau, Economic Census 1997, 2002, 2007, 2012, 2017. Distilling industry is NAICS 312140. 'D' means not disclosed, so as to maintain confidentiality on activity by one or two large establishments.

These data document the industry's strong economic growth in Kentucky over those 20 years, and especially 2012-2017. Every important category posted growth – establishments, employment, payroll, shipments, capital expenditures. One can see payroll doubled the last decade, primarily due to production-worker wages.

There are other details not shown in the table above. Hourly wages of production workers in Kentucky were \$27.25, compared to \$26.38 nationally. Across all workers, Kentucky distillers paid \$73.9 million in fringe benefits on top of the \$232 million in wages and salaries, a fringe rate of 32 percent. Also, the Census reports Kentucky distillers held \$1.43 billion in inventories at the end of 2017, primarily in finished goods and work-in-process.



Note that the economic census statistics are lower than those published under the QCEW program for the same years. For example, the 2017 census shows only 3,239 jobs in distilling for Kentucky, while QCEW reports 4,563. Similarly, the payroll estimate is much higher in the QCEW data series than in the economic census or CBP program. We believe this is due to an inconsistency in how the data programs classify corporate headquarters operations. Presumably, the QCEW counts distillery headquarters jobs and payroll as part of the distilling (manufacturing) industry, while the economic census counts headquarters activity under a management industry category. In our modeling work we will use the larger QCEW figures as a base, since the headquarters are certainly considered part of the distilling industry in Kentucky.

In the next table, we summarize Kentucky's share of the national industry for the same economic variables. One can see Kentucky maintained a lead position in the industry, with most economic measures holding steady at around one-third of the national totals. The huge share of U.S. capital expenditures (54 percent) in 2017 bodes well for the future of the industry in Kentucky. The declining share of establishments is due to the explosion of small craft distilleries around the country. We examine the growth in craft distilleries in detail in Appendix D.

<b>Kentucky's Share of US Distillery Industry, Selected Economic Characteristics</b>					
	<b>1997</b>	<b>2002</b>	<b>2007</b>	<b>2012</b>	<b>2017</b>
Number of establishments	26.7%	23.9%	15.6%	7.6%	6.3%
Number of employees	32.5%	36.8%	27.0%	32.7%	29.1%
Annual payroll (\$1,000)	30.0%	35.1%	26.9%	34.4%	33.4%
Production workers avg per year	32.0%	38.3%	30.0%	33.2%	32.1%
Production workers hours (1,000)	31.0%	38.1%	30.2%	D	34.0%
Production workers wages (\$1,000)	29.0%	37.9%	30.1%	32.8%	35.2%
Value added (\$1,000)	27.8%	22.9%	42.9%	D	33.6%
Total cost of materials (\$1,000)	25.2%	30.5%	24.3%	D	28.2%
Total value of shipments (\$1,000)	26.5%	26.4%	34.7%	D	31.7%
Total capital expenditures (\$1,000)	37.3%	28.9%	32.2%	37.0%	53.6%
Number of non-production workers	33.6%	33.9%	23.1%	31.7%	23.0%
Payroll of non-production workers	31.7%	31.9%	24.0%	36.3%	31.2%

Source: US Census Bureau, Economic Census 1997, 2002, 2007, 2012, 2017. Distilling industry is NAICS 312140. 'D' means not disclosed, so as to maintain confidentiality on activity by one or two large establishments.

The 2017 Census also provides a breakout of capital expenditures, as shown below. Of the \$218 million invested in 2017 by Kentucky distillers, 46 percent went to buildings and 54 percent to machinery and equipment. This is almost identical to the national distribution of capital expenditures by distillers that year, reflecting the nature of production facilities: buildings, fermenting equipment, warehouses, bottling lines, packaging, and shipping.



<b>Capital Expenditures by Distilling Industry in Kentucky, 2017</b>	
Buildings and other structures	\$101,325,000
Automobiles, trucks, etc. for highway use	\$1,144,000
Computers and peripheral data processing equipment	\$3,784,000
All other machinery and equipment	\$112,032,000
<b>Total capital expenditures for buildings, structures, machinery, and equipment</b>	<b>\$218,285,000</b>
Source: US Census Bureau, 2017 Census of Manufacturing, November 2020.	

### County Business Patterns

Yet another federal source of data on employment and payroll is the Census Bureau’s County Business Patterns (CBP) program. Like the QCEW program discussed above, CBP covers only wage and salary workers in nonagricultural industries, and thus misses self-employed persons. CBP publishes county-level (as well as state, MSA and zip code-level) data on an annual basis. The estimates for 2019 were released in April 2021. We examine the national pattern of distilling establishments in Appendix D. Here we show the historical summary data for Kentucky only. The CBP data also reveal the strong growth in distilling establishments and pay. Employment doubled over the 2006 to 2019 period, while average pay rose 56 percent. One can see the boom in small craft distilleries in Kentucky beginning in 2011: the number of establishments has tripled over the past decade.



### Distilling Establishments, Jobs, and Payroll in Kentucky

	Establishments	Paid Employees	Annual Payroll	Average Annual Pay per Job
2005	15	2,047	\$99,498,000	\$48,607
2006	16	2,207	\$103,967,000	\$47,108
2007	14	1,681	\$81,081,000	\$48,234
2008	17	2,209	\$117,439,000	\$53,164
2009	16	1,903	\$104,575,000	\$54,953
2010	16	1,945	\$98,230,000	\$50,504
2011	18	1,897	\$107,441,000	\$56,637
2012	20	2,340	\$131,328,000	\$56,123
2013	23	2,272	\$150,002,000	\$66,022
2014	27	2,456	\$158,480,000	\$64,528
2015	37	3,020	\$205,248,000	\$67,963
2016	40	3,057	\$210,148,000	\$68,743
2017	47	3,306	\$228,086,000	\$68,992
2018	50	3,646	\$277,742,000	\$76,177
2019	55	4,505	\$331,577,000	\$73,602
<i>growth</i>	39	2,298	\$227,610,000	\$26,494
<i>2006-19</i>	243.8%	104.1%	218.9%	56.2%

Source: US Census Bureau, County Business Patterns, for Distilling industry, NAICS 312140.

How does the CBP data align with the QCEW data discussed above? Note that the number of distilling establishments is almost the same from the two sources for the last year that common data are available (2019), with QCEW showing 59 establishments and CBP showing 55. But the employment counts and payroll estimates are quite different. Recall that for 2019, the QCEW program estimated Kentucky had 5,253 distilling employees (750 more than CBP) and an annual payroll of \$521 million (almost double that of CBP). We believe the difference is due to the treatment of some corporate headquarters activity, with the QCEW program including it and CBP excluding it. The large difference in payrolls is consistent with this explanation, since corporate office employees typically have advanced educational credentials and skills, and thus earn much higher salaries than production workers. In 2019, workers covered by the QCEW program averaged \$99,300, while those covered by the CBP program average \$73,600.



### Kentucky Directory of Business and Industry

The Kentucky Cabinet for Economic Development maintains a database of business and industry, containing information by industrial classification. For each business establishment, the database provides an address, officers, contact information, major products, and full-time employment (self-reported by the companies). We asked the Cabinet to query the database in June 2021 to discern information for ‘Distilleries’, NAICS 312140, and related sectors. All major producers are represented, with entries for a total of 79 establishments, up from 56 represented in the comparable 2018 report. An employment count was provided, and the sum of employment reported across the industry was 5,630, up from 4,908 in 2018. Most of the craft distillers listed in Appendix A are not included in the directory.

### Summary

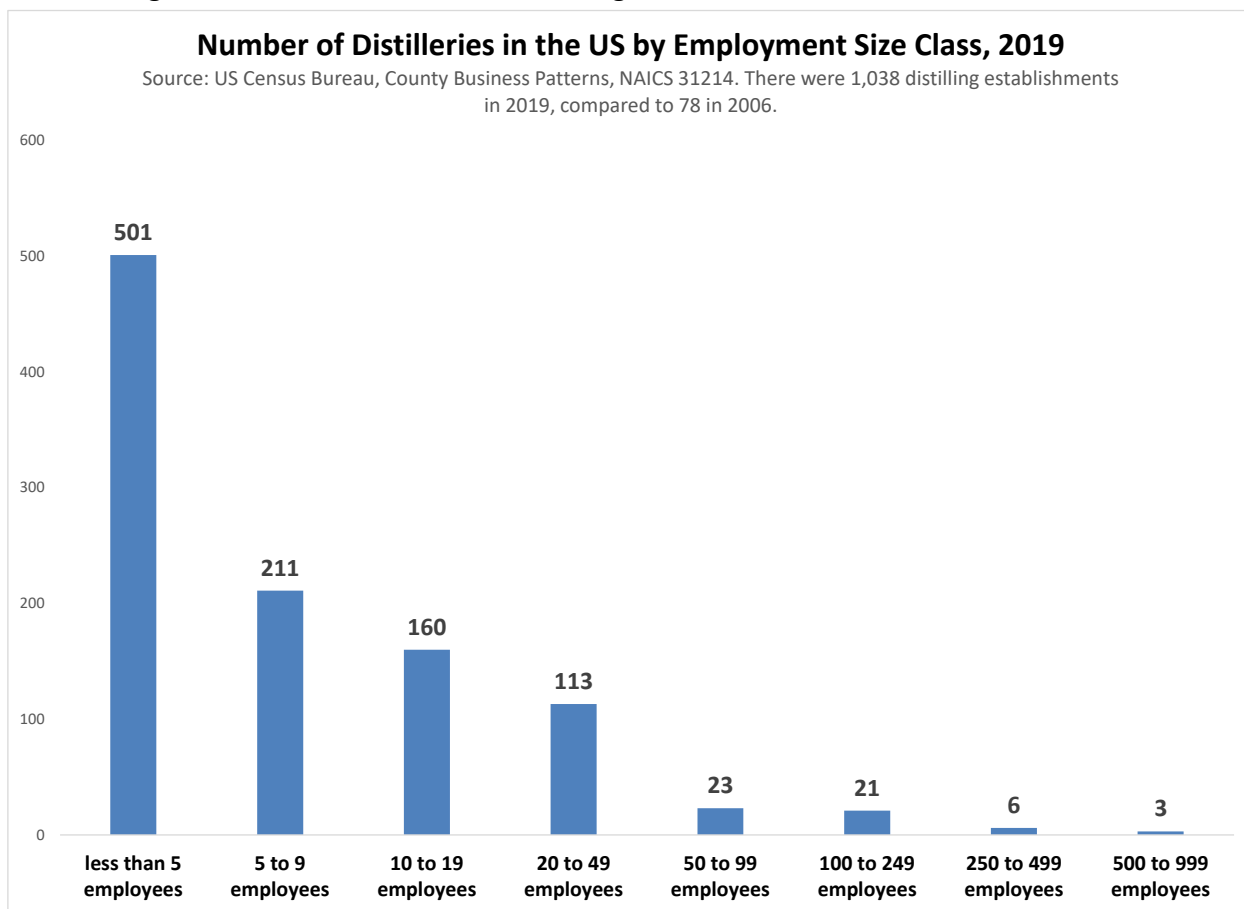
As noted above, our economic impact analysis assumes employment of roughly 6,000 people with annual wages totaling \$600 million. The difference between this employment estimate and the number of jobs reported in the QCEW, Economic Census, County Business Patterns, and business and industry directory are due to our consideration of the entire process of production from distilling to barreling to bottling, shipping and marketing compared to the QCEW’s, Economic Census’, and CBP’s missions of documenting the economy by business establishment. In practice, this means that the QCEW, Economic Census, and CBP assign an establishment (and its employees) to the industry that the majority of the products and/or services produced at the particular site are most directly related to. Sometimes, even if they are in close physical proximity, two facilities under the same corporate structure and part of the same overall production process can be classified under different industries if their functions are different enough. In the case of the distilling industry in Kentucky, this occurs when facilities are primarily engaged in bottling and shipping spirits distilled and aged elsewhere and when headquarters-type functions are the primary work at a particular location. The QCEW, Economic Census, and CBP classify the former establishments into the wholesale distribution and services industry. There are several such facilities in Kentucky, some located quite close to distilling facilities, each bottling the Kentucky-produced spirits of its corporate sibling. The latter establishments get classified into the management of companies industry. The Directory of Business and Industry does tend to include both types of those other facilities under the distilling category. With the additional help of a survey of the state’s distillers, we therefore fold these jobs into the distilling industry for our economic impact analysis. We have adjusted the IMPLAN models to reflect this and all the functions of the production process.



## APPENDIX D

### National Growth in Distilling Establishments Over the Last Decade

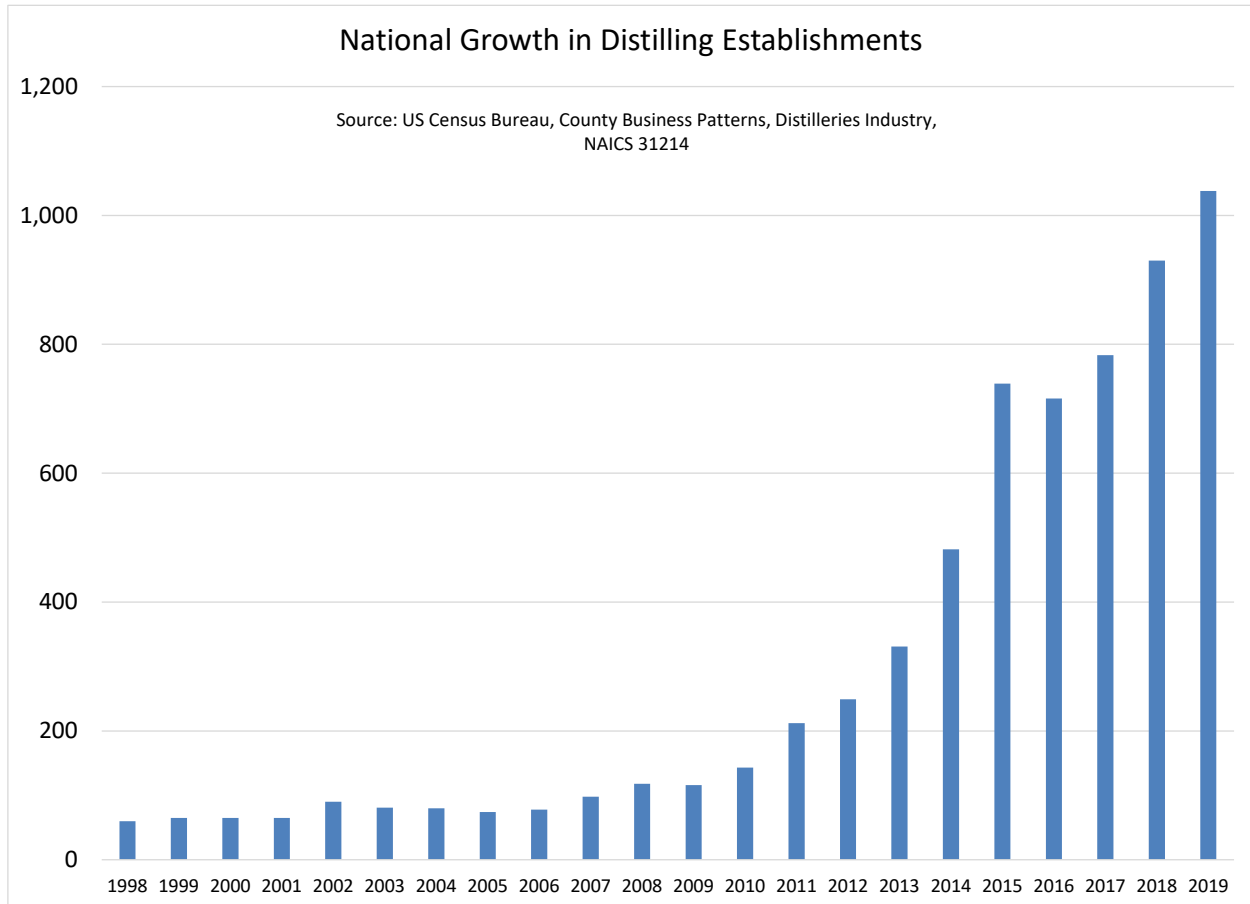
It is well known that we are amid a national boom in small local distilling operations. These are sometimes called craft distillers, or micro-distillers. There is no standard definition of a craft distiller, though in Kentucky they are defined for regulatory purposes as producing less than 50,000 gallons of spirits per year. That sounds like a lot, but amounts to less than 1,000 barrels per year, or about three per day. In this section, we examine data on all U.S. counties to see where the growth in ‘small’ distillers has been greatest.



For purposes of this discussion, we will distinguish between distillers with less than 10 employees to those with 10 or more employees. We use data from *County Business Patterns*, a statistical program of the U.S. Census Bureau, which recently published data through 2019. The chart above shows the distribution of establishments by employment size class. Note that about one-half of all distillers had fewer than five employees and about three-quarters of all



distillers had nine or fewer employees in 2019. Among the very large employers, most are in Kentucky or adjacent states.<sup>3</sup>



As is evident in the chart above, the year 2006 marked the beginning of exponential growth in distilling establishments nationally – with some subsequent years posting over 40 percent growth. One can see that the number of distilleries has grown thirteen-fold over the 2006-19 period, from 78 establishments to over 1,000. For the period, national distilling employment *only* rose by two and one-half times, from around 6,700 to 16,800, a further indication of the small size of the new distilleries. Distillers employing fewer than 10 people across the country grew dramatically, from 78 to 712 establishments.

<sup>3</sup> Unfortunately, the Census Bureau recently changed its disclosure policy for estimates involving just a few establishments, which prevents us from observing activity in many small Kentucky counties, as well as from producing a national county-level maps included in our 2018 report. “Beginning with reference year 2017, a cell is only published if it contains three or more establishments. In all other cases, the cell is not included in the release (i.e., it is dropped from publication). In prior years, payroll values for cells with fewer than three establishments would have been suppressed and an employment size range (EMPFLAG) would have been provided; however, the number of establishments would have been published.” See [www.census.gov/programs-surveys/cbp/technical-documentation/methodology.html#par\\_textimage\\_245304869](http://www.census.gov/programs-surveys/cbp/technical-documentation/methodology.html#par_textimage_245304869)



## APPENDIX E

### Exports of Kentucky Distilled Spirits

Kentucky distillers shipped \$391 million of product abroad in 2020, according to a report from the Kentucky Economic Development Cabinet, compiled from Census Bureau trade data (see table below). One can see the industry's exports are dominated by whiskies, of which Bourbon is the main component. The noticeable decline in 2020 was due to the heavy retaliatory tariffs imposed on whiskey by the European Union and China, reducing Kentucky whiskey exports by \$170 million.

Kentucky's Export of Distilled Spirit Beverages to the World							
HS Code	Description	2015	2016	2017	2018	2019	2020
-	<b>Total All Spirit Beverages</b>	\$408,797,958	\$368,494,452	\$451,593,633	\$517,850,003	\$567,653,926	\$390,907,538
220830	Whiskies	\$310,761,311	\$294,627,732	\$380,400,534	\$454,937,151	\$488,638,814	\$319,002,877
220870	Liqueurs And Cordials	\$35,517,671	\$24,881,534	\$20,194,779	\$22,970,687	\$42,653,029	\$38,939,320
220890	Cordials, Liqueurs, Kirschwasser, Ratafia, Etc.	\$17,871,542	\$15,562,205	\$15,800,510	\$19,449,588	\$19,905,193	\$21,975,651
220860	Vodka	\$12,231,870	\$6,109,700	\$7,525,888	\$13,458,667	\$9,575,008	\$4,591,468
220820	Grape Brandy	\$28,091,579	\$23,298,598	\$23,957,800	\$3,563,570	\$2,851,862	\$2,713,370
220840	Rum And Tafia	\$3,546,122	\$2,972,522	\$2,929,544	\$2,675,063	\$3,396,199	\$2,489,537
220850	Gin And Geneva	\$777,863	\$1,042,161	\$784,578	\$795,277	\$633,821	\$1,195,315

Source: Kentucky Economic Development Cabinet, derived from data provided by WISERTrade: State HS Database , [www.wisertrade.org](http://www.wisertrade.org), via the U.S. Census Bureau, Foreign Trade Division.

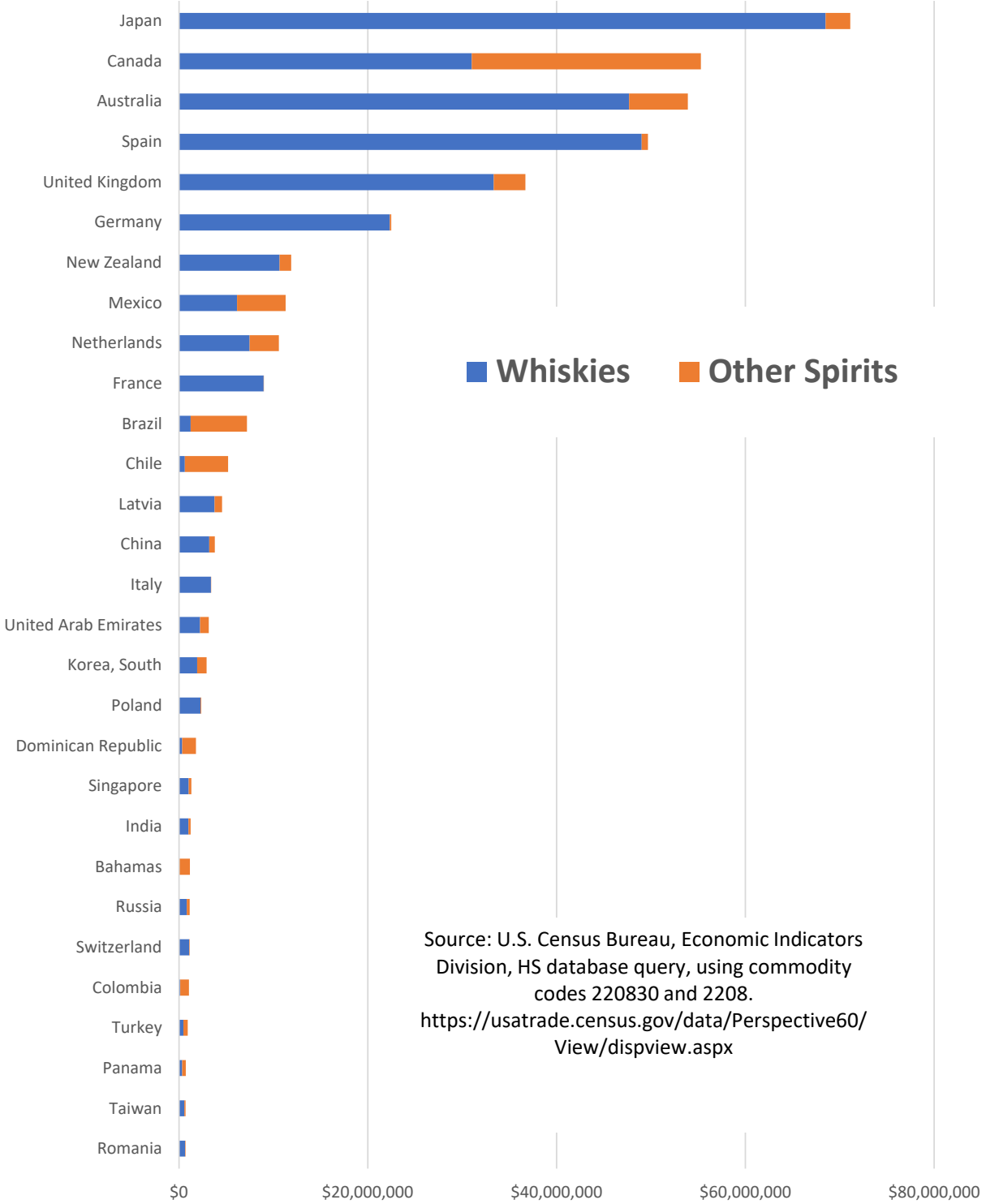
HS: harmonized system for classifying goods

The chart on the next page provides a summary of Kentucky spirits exports by country in 2020, showing the top 30 destination countries, with a breakout for whiskies. Japan, Canada, Australia, Spain, and the United Kingdom lead the way, together accounting for 68 percent of the value of all Kentucky spirits exports. Clearly, whiskey is the dominant Kentucky export for almost all countries. There are exceptions, however. Canada, for example, imports significant amounts of Kentucky-made liqueurs and cordials, as does Australia, Mexico, Brazil and Chile.

The strong growth in international demand before the tariffs is evident in the subsequent chart, showing Kentucky whiskey exports over the last two decades. Between 2002 and 2019, the value of exports more than tripled, reflecting growth in both volume and price. Export sales by Kentucky whiskey distillers peaked in 2019 at \$489 million. One can also see the negative impact of tariffs on 2020 sales. The European Union and China imposed 25% retaliatory tariffs on U.S. whiskey, beginning in the summer of 2018. One can see the slowing of growth in 2019 export sales to EU and Asia, and the absolute declines in 2020.



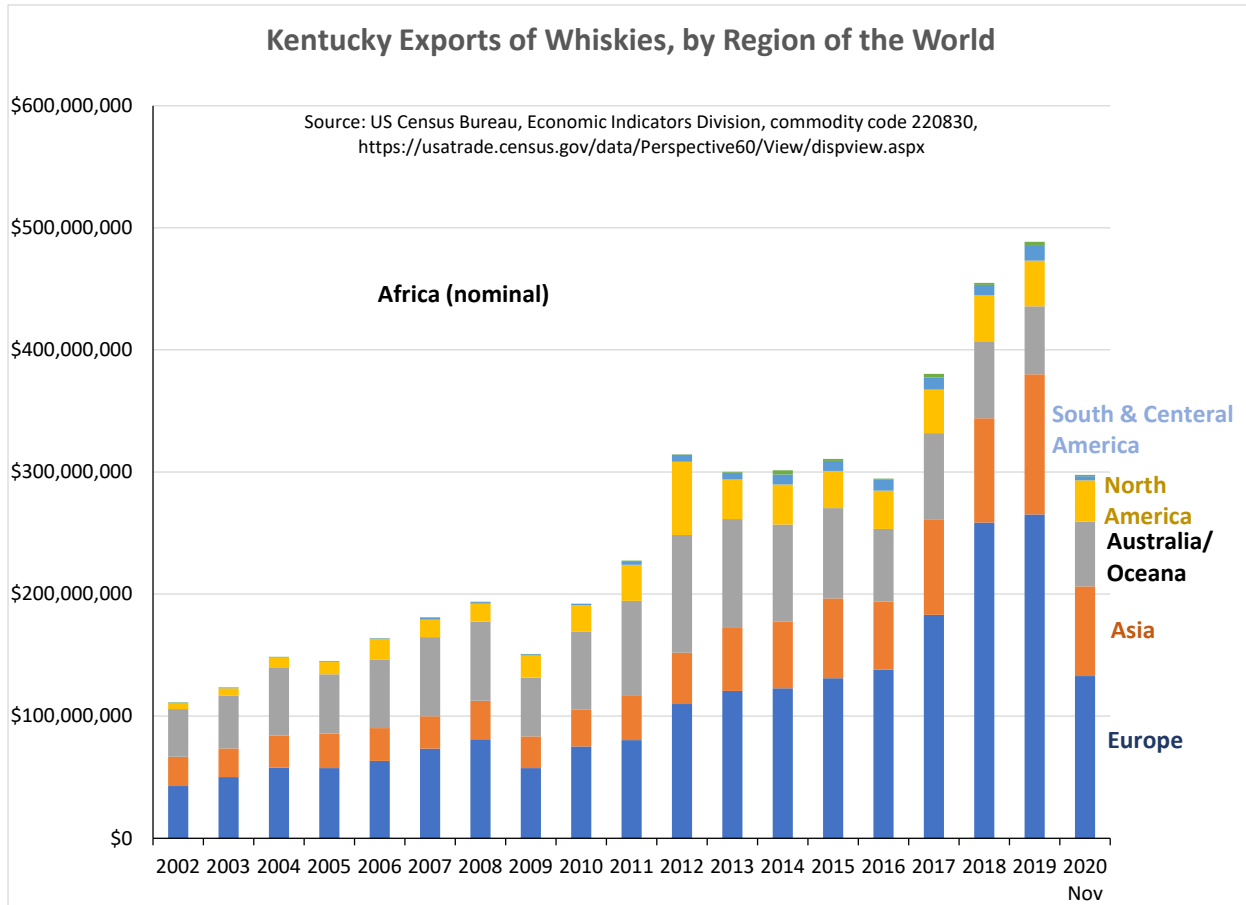
### Top 30 Countries for Kentucky Spirits Exports, 2020



Source: U.S. Census Bureau, Economic Indicators Division, HS database query, using commodity codes 220830 and 2208.  
<https://usatrade.census.gov/data/Perspective60/View/dispsview.aspx>



The Distilled Spirits Council of the United States (DISCUS) digs deeper into federal export data and breaks out Bourbon from the whiskey category<sup>4</sup>. The group shows \$304 million in Bourbon exports in 2020, on 19.7 million proof gallons of volume. Note, 82 percent of Bourbon is exported in bulk form, rather than bottled. This varies widely by country. For example, essentially all exports to Spain are in bulk form; Germany receives 95 percent, Japan about 85 percent, and Australia about 75 percent in bulk form. Canada, on the other hand, receives all its Bourbon in bottled form, and the United Kingdom receives about 35 percent in bottles.



<sup>4</sup> See <https://www.distilledspirits.org/wp-content/uploads/2021/02/Distilled-Spirits-Exports-Volume-December-2020.pdf> and <https://www.distilledspirits.org/wp-content/uploads/2021/02/Distilled-Spirits-Exports-Value-December-2020.pdf> .



## APPENDIX F

### The Distilling Industry's Linkages to Other Industries

We use a custom input-output model of Kentucky to investigate the linkages between the distilling industry and other industries in the state. Input-output models are the standard method for measuring sales among industries in a given economy. Our IMPLAN model of Kentucky has details on 544 industrial sectors, and can predict how much each industry buys from every other industry in the state, as well as how much must be imported from outside the state to support a given level of production.

For the 2018 study we were able to significantly enhance the customization of the IMPLAN production function for the distilling industry compared to previous reports in this series<sup>5</sup>. We received calendar year 2017 accounting data from one of the state's major distillers from which we were able to construct a table describing most of the inputs by industry and their geographic sources. In many ways this table corresponded fairly closely with IMPLAN's distilling industry production function, but there were some significant differences. These included the value of grains purchased (more), the amount of spirits purchased from other suppliers (less), plastic bottles (much less), and the inclusion of additional industries, most often associated with food and beverage manufacturing and packaging mechanical equipment.

Two of the larger differences involved aspects of production at opposite ends of the process – barreling and bottling. The accounting data from the local distiller made it clear that IMPLAN did not adequately address the peculiarity of the Bourbon industry with respect to its close relationship with cooperages. IMPLAN had misclassified these inputs into the miscellaneous wood products industry when they belong in the wood containers and pallets industry, and also greatly underestimated the value of the distilling industry's purchases from the wood container industry. Without the detailed accounting data, we had not been able to adequately address the issue in reports prior to 2018.

With respect to bottling, IMPLAN's default recipe expects more of this function to be outsourced than is the case in Kentucky, where most of the major distillers have their own bottling facilities. This is reflected in the production function value for the Wholesale Services - Other nondurable goods merchant wholesalers industry (where bottling is relegated in the NAICS classification system). Since our impact model folds the large bottling facility plants located in Bullitt, Daviess, and Franklin counties (and smaller ones elsewhere) into the distilling industry (while they are separate establishments, they are parts of vertically integrated corporate structures), we adjust that part of the production function downward.

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<sup>5</sup> A production function is basically a recipe, showing on average how much must be purchased from every other industry to produce a unit of output in each industry.



The following table summarizes the predicted makeup of purchases to support distilling in Kentucky and how much of that will be bought from other Kentucky businesses. It shows that for every dollar of distilling output, distillers purchase about 50.7 cents of goods and services, pay 22.8 cents in tax payments, 19.1 cents in dividend, interest and rent payments and about 7 cents for labor services. Of the goods and services required, the model predicts about 45.5 percent of their value (23.1 cents per dollar of distilling output) is purchased within Kentucky.

### Production Function for the Kentucky Distilling Industry

Commodities Purchased by the KY Distilling Industry	Purchases per \$1 Million of Distillery Output		
	Total Purchases	From Kentucky Vendors	Percent from KY Vendors
Distilled liquors & wines	\$85,630	\$19,480	22.7%
Wood containers, pallets, misc. wood products	\$78,630	\$53,940	68.6%
Glass containers, misc. glass & stone	\$63,420	\$710	1.1%
Wholesale trade distribution services	\$58,730	\$45,180	76.9%
Transportation services	\$34,590	\$29,280	84.6%
Grains	\$20,000	\$11,850	59.3%
Fabricated metal products	\$16,690	\$2,530	15.2%
Fruit, flour, rice, & malt	\$15,240	\$20	0.1%
Legal, accounting, & advertising services	\$13,400	\$6,910	51.6%
Business services & hospitality	\$13,210	\$11,120	84.2%
Banking & insurance services	\$12,530	\$10,030	80.0%
Machinery, material handling & electronic components	\$12,180	\$1,420	11.7%
Utilities	\$11,980	\$9,590	80.1%
Plastic bottles & other plastics	\$10,220	\$1,430	14.0%
Buildings	\$9,260	\$7,990	86.3%
Petroleum & other chemical products	\$8,630	\$1,840	21.3%
Motor vehicles, including maintenance	\$8,500	\$1,230	14.5%
Management of companies and enterprises	\$8,240	\$4,890	59.3%
Paper & packaging products, printing	\$7,630	\$1,400	18.3%
Noncomparable foreign imports	\$4,270	\$0	0.0%
Rental & leasing services	\$3,780	\$2,900	76.7%
Management, scientific, and tech. consulting services	\$3,670	\$1,560	42.5%
Retail services	\$2,660	\$1,890	71.1%
Repair and maintenance services	\$1,910	\$1,720	90.1%
Telecommunications & digital services	\$1,200	\$910	75.8%
Warehousing and storage services	\$970	\$940	96.9%
State & Local Govt enterprises (except electric utilities)	\$450	\$450	100.0%
<b>Total intermediate purchases</b>	<b>\$507,620</b>	<b>\$231,210</b>	<b>45.5%</b>
Employee compensation	\$69,984		
Proprietors' income	\$2,856		
Other property-type income (dividends, interest, rent)	\$191,195		
Indirect business taxes	\$228,360		
<b>Total value of output</b>	<b>\$1,000,014</b>		

Source: IMPLAN input-output model of Kentucky, version 3.1, using 2019 economic data, October 2021.



Our IMPLAN model shows that the distilling industry stands out from others in terms of the tax portion of output, with taxes accounting for 21.2 cents per dollar of output. Only three other industries generate a higher a tax share – wholesale petroleum, commercial fishing, and tobacco manufacturing – and all are much smaller than distilling in terms of Kentucky employment and payroll. The wine industry is taxed at 3.1 cents per dollar of output; breweries are taxed at 8.2 cents per dollar output. For most manufacturing sectors, the portion of each dollar of output that goes to taxes is less than a penny.

These commodities purchased by the distilling industry, as well as the household income created, are the basis for regional economic multipliers. Output in one industry lifts output in supporting industries, which in turn raises output in industries that support them. Generally speaking, the more an industry purchases in the state, the larger the spinoff impacts of that industry’s activity. The more it imports its raw materials and services, the smaller the spinoffs in the state. In this regard, it is important to note that compared to the previous edition of this study in January 2019, the IMPLAN model expects a larger percentage of purchases to be made within Kentucky (45.5 percent versus 43.5 percent). In addition, the latest edition of IMPLAN shows a large drop in indirect business taxes in the distilling industry production function (primarily in state and local sales and property taxes and federal excise taxes). Combined, these two differences lead to an expectation of 5 cents more being spent within Kentucky for each dollar of distilling industry output.

The largest input expense is the purchase of distilled spirits among distillers themselves. There is a significant amount of mixing and bottling of product that is produced offsite, which includes non-Bourbon products as well as Bourbon taken from barrels in a warehouse. Some of these purchases are from out-of-state distillers. There has been a significant expansion of bottling facilities in the state that process product made elsewhere. The boom in the craft part of the industry is also a likely factor. Newer craft distillers either buy distilled spirits, lease capacity, and/or purchase aged barrels from the larger companies in order to build their brands.

It is helpful to think of an input-output table as a set of production recipes, with each industry column showing how much must be purchased from each industry row to produce its annual output. For example, the distilling industry nationally is a large purchaser of glass containers, grain, wood containers and pallets, truck transportation and cardboard. These are identified from national industry surveys.

These national tables are ‘regionalized’ by IMPLAN using economic data on the presence and size of industries at the state, metropolitan area, or county level as needed. The resulting regional models take into account the ability of the regional economy to supply inputs to each industry. In the case of distilling, for example, IMPLAN predicts that most of the wood containers and pallets (or rather products from the industry that produces these, which



includes cooperages) needed by the industry can be supplied by Kentucky firms, but that almost none of the glass bottles can be supplied in-state. The glass bottles must be imported, with the result that those purchasing dollars leak out to other states (or countries). One of the major inputs to distilling is grain, in particular corn, wheat and rye. We examine grain purchases in more detail in the next appendix.

IMPLAN includes the value of fringe benefits (employee provided social security and Medicare taxes, unemployment insurance and workers' compensation premiums, health insurance, pension contributions, etc.) in its compensation estimate, estimating that fringes add about 25 percent to direct wages and salaries in this industry.

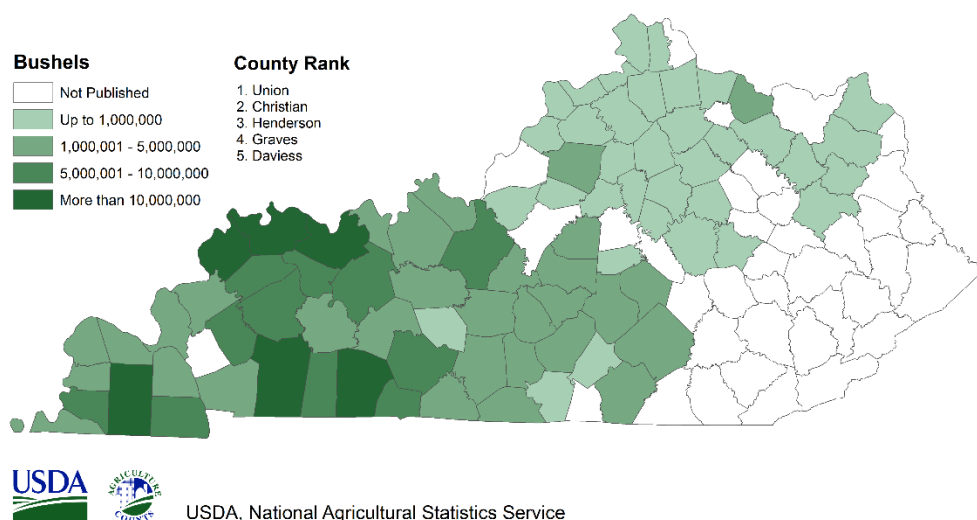


## APPENDIX G

### Grain Usage by Distillers

There is a relatively fixed ratio of grain required to produce, say, a barrel of Bourbon. Hence, we know from production records and our survey of KDA members that Kentucky distillers purchased about 16.9 million bushels of corn and around 8.4 million bushels of other grains such as wheat and rye. Survey respondents reported that 74 percent of corn used was purchased from Kentucky farms, up from 40 percent in our first grain survey in 2014. Only 12 percent of other grains used came from Kentucky. Applying these survey results to total industry production, we estimate that Kentucky distillers purchased 12.5 million bushels of corn, and 1.0 million bushels of other grains, from Kentucky farmers<sup>6</sup>.

### 2020 Kentucky Corn Production

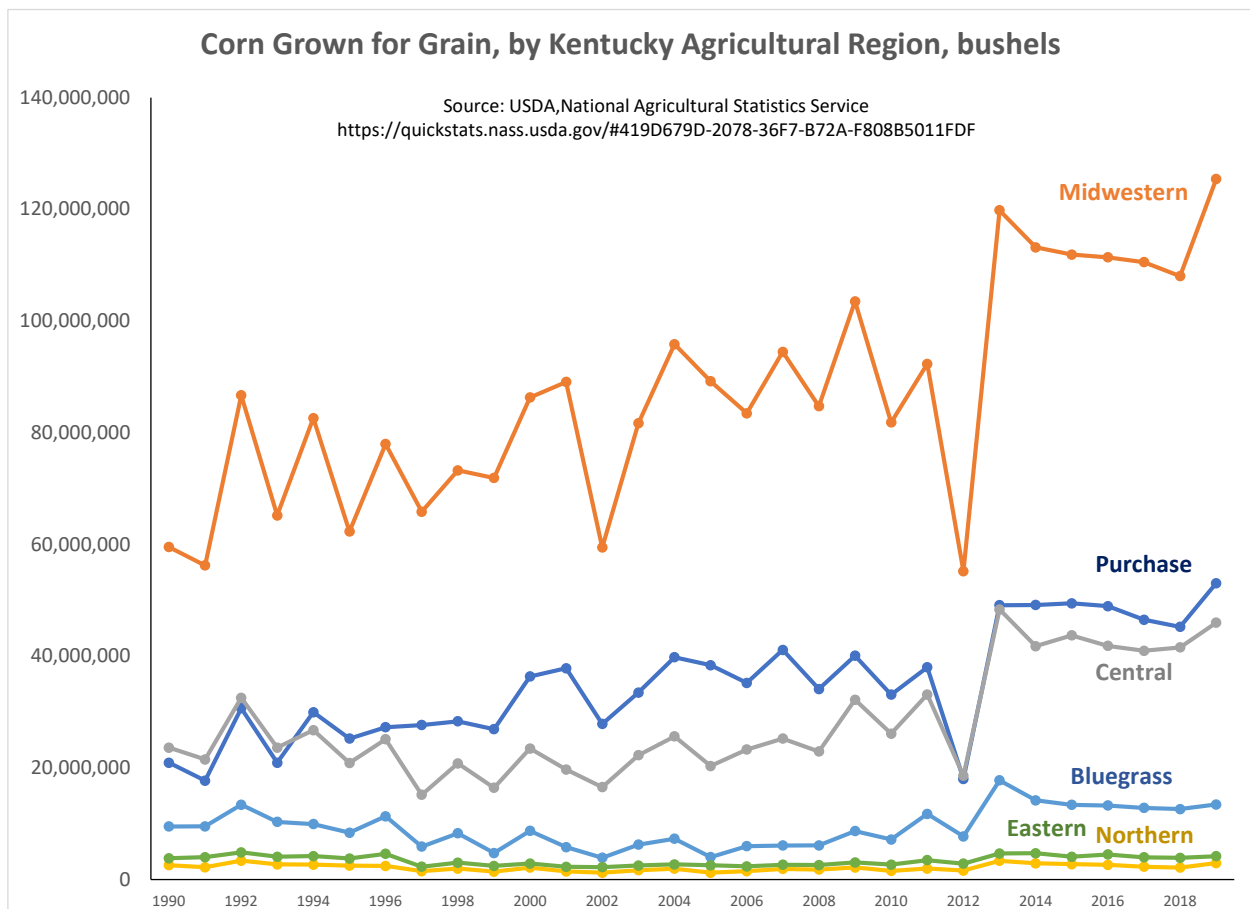


<sup>6</sup> Our IMPLAN model of Kentucky has a 'regional purchase coefficient' for grains of 62.67%. This means that on average Kentucky farmers provide about two-thirds of grains required by industry and consumers in the state. There is no breakout for corn, soybeans or other grains. According to the model, Kentucky actually produces more total grain than is demanded in the state; however, the mix of grain production is such that much of the grain is exported out of state for use in industries not prevalent in Kentucky. For a technical explanation, see <https://implanhelp.zendesk.com/hc/en-us/articles/115009674728-Understanding-the-Social-Accounts-Tables>



The map above, copied from the USDA website, shows 2020 corn production by county in Kentucky, based on surveys (reliable estimates are not available for all counties). The state as a whole produced 253.9 million bushels of corn in 2020<sup>7</sup>. This implies that Kentucky distillers purchased about 5 percent of the state’s output. One can see the concentrations in Western and Central Kentucky, near all major distilleries.

We can also see over the last three decades corn production in Kentucky is dominated by three regions – Purchase, Midwestern, and Central. The Midwestern region contains Owensboro and surrounding counties, thus providing plenty of grain for distilleries there. The Central region contains the major distilling counties of Bullitt, Marion and Nelson. All three of these major regions have posted strong growth in corn production since 1990, roughly doubling in output. Anderson, Franklin, and Woodford counties – major distilling sites – are in the Bluegrass region; however, they are adjacent to the much larger cornfields of the Central region.



The most accurate measures of corn production at the county level are provided in the Census of Agriculture, conducted every five years – years ending in ‘2’ and ‘7’. The 2017 Census data

<sup>7</sup> [www.nass.usda.gov/Statistics\\_by\\_State/Kentucky/Publications/County\\_Estimates/coest/2020/Corn20\\_KY.pdf](http://www.nass.usda.gov/Statistics_by_State/Kentucky/Publications/County_Estimates/coest/2020/Corn20_KY.pdf)



were released in 2019. Below we summarize corn production in the region of heritage distilling operations for the last five censuses. One can see very strong growth in corn production over the last two decades in several of the core counties, especially Nelson, Shelby, Washington, Mercer and Marion. Nelson County is, of course, home to many heritage distilleries. Marion County is home to Maker’s Mark distillery, and has seen a tripling of corn production over the past 20 years. It is not valid to use these basic data to draw strong conclusions about the linkage between distillery production and corn production, given the many other local factors involved. There are competing uses for land, particularly in an urban area like Jefferson County. Moreover, the land/topography in some counties is not suitable for large scale grain production. Nevertheless, it is apparent that corn production grew faster in these core distilling counties than it did statewide.

<b>Corn Production (bushels) in Census Years, Counties in Heritage Distillery Region</b>						
	<b>1997</b>	<b>2002</b>	<b>2007</b>	<b>2012</b>	<b>2017</b>	<b>Growth 1997 to 2017</b>
Anderson	36,940	24,750	8,640	109,516	38,960	5.5%
Bullitt	152,012	140,368	200,939	193,252	330,688	117.5%
Daviess	7,693,883	7,034,003	13,875,026	7,887,559	13,234,890	72.0%
Franklin	62,021	17,982	71,260	188,204	121,060	95.2%
Jefferson	132,331	80,811	152,912	126,848	59,508	-55.0%
Henry	290,158	149,812	259,374	434,737	749,749	158.4%
Marion	534,461	589,312	613,573	809,143	1,725,737	222.9%
Mercer	188,881	112,866	53,883	174,997	765,064	305.1%
Nelson	622,109	1,217,504	1,800,868	1,533,586	3,905,961	527.9%
Shelby	685,817	708,028	1,821,125	2,376,594	3,290,423	379.8%
Spencer	307,822	197,177	194,361	338,881	672,772	118.6%
Washington	143,933	204,258	381,902	345,515	595,484	313.7%
Woodford	177,356	55,551	151,713	218,194	375,487	111.7%
subtotal	11,027,724	10,532,422	19,585,576	14,737,026	25,865,783	134.6%
Kentucky Total	115,775,864	108,721,040	166,687,678	104,894,595	220,077,862	90.1%
Region share of state	9.5%	9.7%	11.7%	14.0%	11.8%	

Source: US Department of Agriculture, National Agricultural Statistics Service



## APPENDIX H

### Economic Multipliers

The distilling industry's purchases of intermediate goods and services in Kentucky, as well as its payments to workers and business owners in the state, cause rounds of re-spending across other industries. The inter-industry impacts are often referred to as 'indirect' effects, since changes in activity at distilleries will quickly cause changes in activity at suppliers. The household spending impacts are often referred to as 'induced' effects, since changes in industrial production ultimately hit the regional economy through employees' wages and the associated spending on goods and services.

At each round of re-spending, a portion of the dollars leak out due to saving, purchases of imported goods, and tax payments, so the re-spending ultimately goes to zero. The cumulative impact of the re-spending is summarized in economic multipliers, which are the ratio of change in total economic activity to changes in activity by the distilling industry.

The production function in Appendix F applies to the manufacturing of distilled spirits, but the industry in Kentucky tends to operate almost like two industries in one. On one side are the distilling, warehousing, and bottling activities, and on the other is the corporate, subsidiary, or regional managing office. The latter oversee and manage the former, and provide the strategic and organizational planning for the entire enterprise. Because Brown-Forman and Heaven Hill are headquartered in Kentucky, and Beam Suntory (Jim Beam and Maker's Mark), Kirin (Four Roses), and Sazerac (Buffalo Trace) have significant corporate subsidiary operations here as well, much of the activity in the broader industry involves functions that belong to the management of companies sector. These two activities – manufacturing and corporate headquarters – have very different linkages with the rest of the economy. We created a split into two industries for modeling purposes.

In our 2018 report, we asked the members of the KDA to provide us with employee figures divided according to whether the employee was working on the manufacturing or corporate side of the business. We also have fairly comprehensive employment counts for each distillery, as published in the 2021 Kentucky Directory of Manufacturers. We were able to combine the results from these two surveys with other available data to estimate total distilling industry employment for 2021. After examining the survey numbers along with the figures from the QCEW, CBP, and Kentucky Directory of Manufacturers, we estimate there are about 6,000 people currently employed in the distilling industry statewide. This includes around 600 employees in bottling facilities in Bullitt, Daviess, and Franklin counties that are not included in the QCEW and CBP industry statistics, which are based on establishment locations. Of the 6,000 jobs, we believe approximately 1,750 are more properly categorized as working in the management of companies (NAICS code 551114) in the sector. This estimate of 2021



employment is a 20 percent increase over the figure we used to estimate the economic and fiscal impacts in the 2018 study.

The table below summarizes some important economic multipliers for the distilling industry in Kentucky, with separate calculations for the production side and the corporate headquarters side, as well as the combined effect. The multipliers reflect our customization of the IMPLAN model for distilling, as described in Appendix F. For each row, the multiplier provides an estimate of the change in total economic activity in the state as a result of a unit change in activity in the distilling industry. So, for example, an employment multiplier of two means for each job added, the total change in the number of jobs would be two (the direct job added plus one from spinoff activities).

<b>Economic Multipliers for the Distilling Industry in Kentucky</b>			
	<b>Combined Functions</b>	<b>Manufacturing Functions</b>	<b>Corporate Functions</b>
<b>Employment</b> (change in total jobs in KY per job in industry)	3.81	4.22	2.83
<b>Employee Compensation</b> (change in total compensation in Kentucky per compensation in industry)	2.01	2.66	1.36
<b>Output</b> (change in value of output among all Kentucky firms per change in output in industry)	1.50	1.45	1.92

Source: Customized IMPLAN (IMpacts for PLANing), version 3.1, model of Kentucky, using 2019 economic data.

The first line is the job multipliers. For example, if the manufacturing side of the distilling industry adds an employee, there will be another 3.22 jobs supported elsewhere in Kentucky for a total of 4.22. The IMPLAN job multiplier for Kentucky’s distilling industry is slightly lower than that used in our previous study, but in line with other past reports. About two-thirds of the spinoff impact is due to additional employees among industries that supply distillers, and the rest is due to new employees in retail and other industries that sell to households. This is a very large multiplier compared to most other Kentucky industries. If the corporate side of the distilling industry adds an employee, there will be another 1.83 jobs supported elsewhere in Kentucky for a total of 2.83. About 70 percent of the corporate function economic impact is due to household spending. This is because input purchases are relatively fewer compared to the production side of the industry, but wages (and therefore household spending) are much greater.



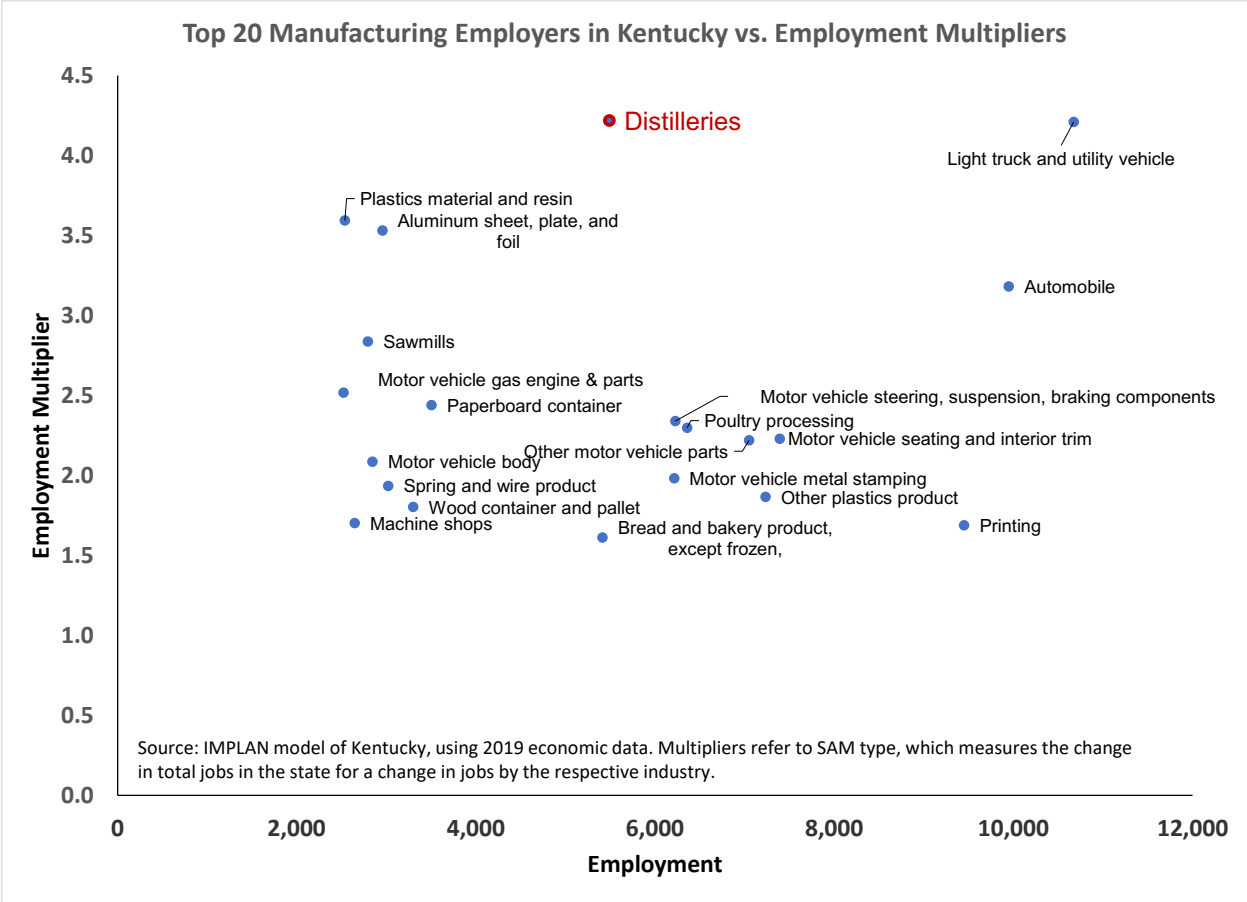
In combination, all functions of the distilling industry in Kentucky support 2.81 extra jobs for each job in the industry (the multiplier in the table reflects the one distilling job plus the 2.81 spinoff jobs), again a bit lower than in our previous study, but in line with other prior reports. Similar interpretations can be given for the employee compensation and output multipliers. The employment multipliers are much greater than the other multipliers because output per worker and average wages in the distilling industry are fairly high. Workers in spinoff industries are not producing as much output per worker, nor earning as much in wages.

### **Comparison of distilling industry impacts with other industries**

Our IMPLAN model of Kentucky contains detailed estimates of output, employment, payroll, and value added for 544 detailed industrial sectors in the state. We can use those estimates to make some observations about the relative importance of the distilling industry. First, consider manufacturing. IMPLAN provides details for 329 detailed manufacturing industries, of which 302 have operations in Kentucky. Among those 302 industries, the distilling industry ranks 11<sup>th</sup> highest in terms of jobs and 21<sup>st</sup> highest in terms of employment multipliers. However, many of the manufacturing industries with very high multipliers have relatively few employees and hence are not as economically significant.

The figure below shows the employment multipliers for major manufacturing industries in the state, those that employ at least 1,600 people. The only manufacturing industry with both more jobs and a higher employment multiplier than distilling is light truck and utility vehicle production.





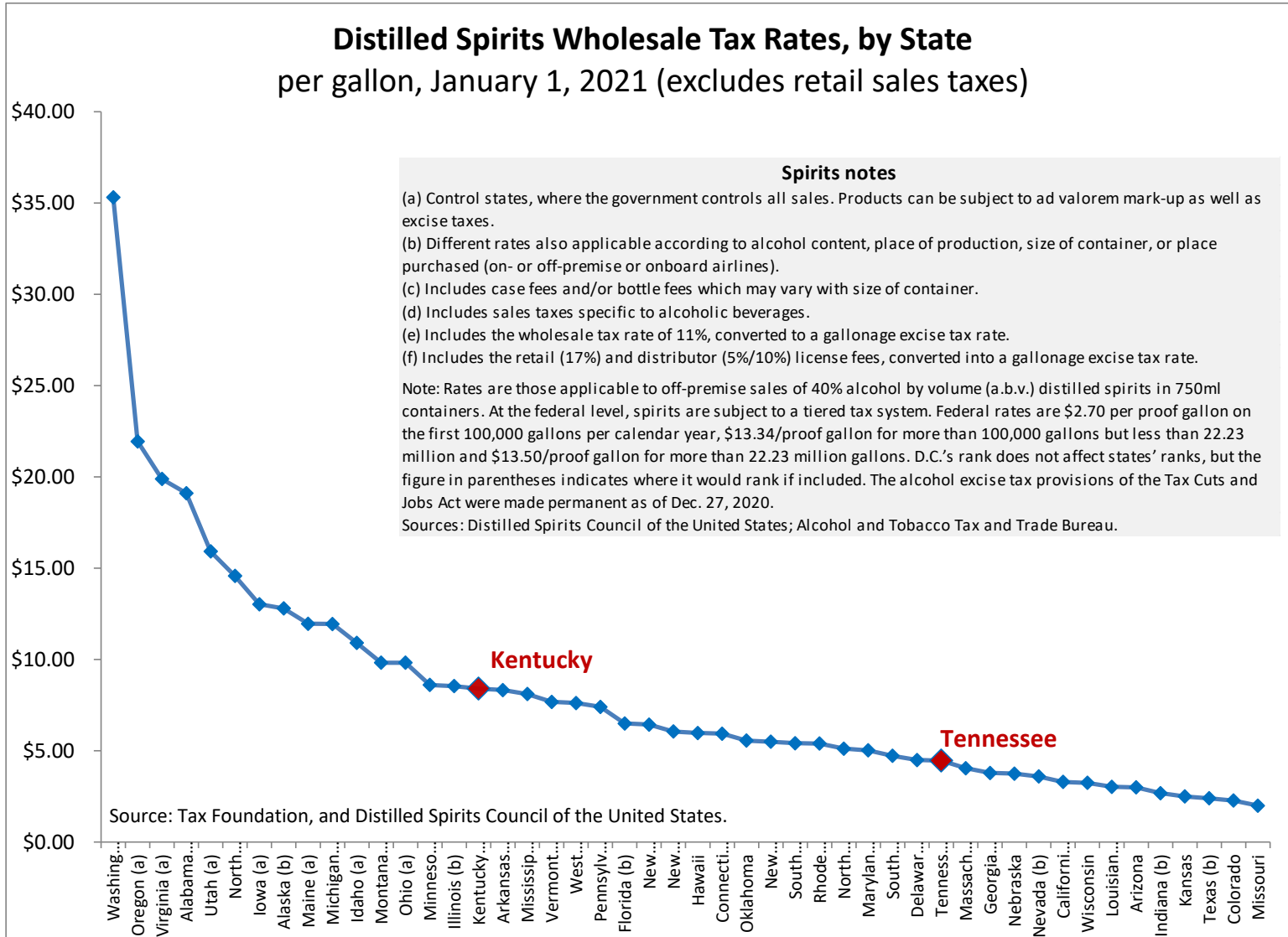
Most of the other detailed industries outside of manufacturing are in retail trade, personal services, health care, education, and other enterprises that primarily serve the local market – and hence are not typically considered as economic development targets. However, there are several non-manufacturing industries that receive considerable public attention and it is interesting to compare their impacts to that of distilling.

Our IMPLAN model estimates that the insurance carriers’ sector, which includes Humana, employs 19,700 people, has an employment multiplier of 3.88. Coal mining employs just 7,000, and has an employment multiplier of 2.03. The courier and messenger industry, which includes UPS, Kentucky’s largest private employer, has direct employment of more than 39,600, but its employment multiplier is only 1.59. Kentucky breweries and wineries, which employ far fewer people than these other industries, have industry employment multipliers of 2.10 (beer) and 1.85 (wine).

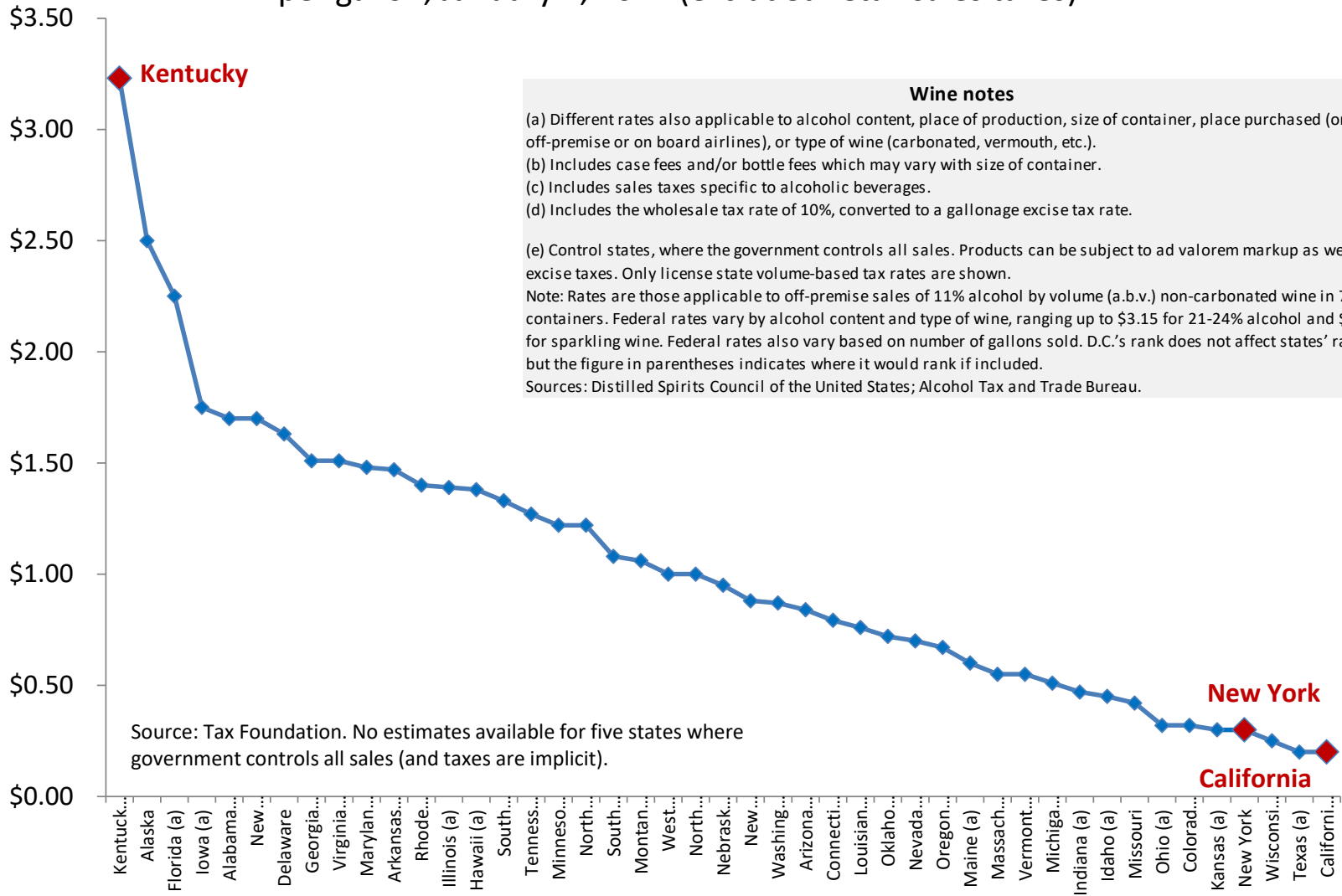


APPENDIX I

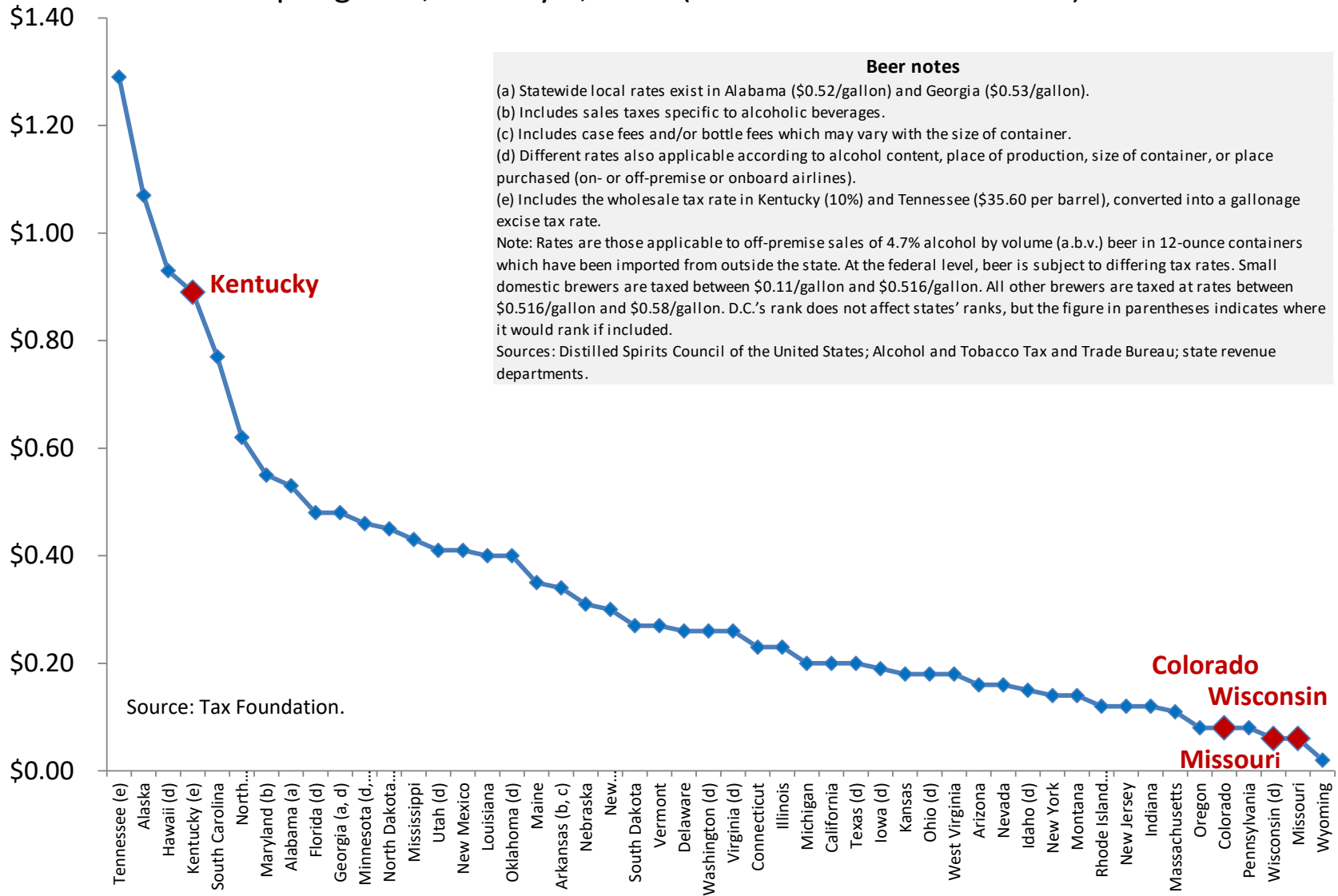
Wholesale Tax Rates on Alcohol, by State



## Wine Wholesale Tax Rates by State per gallon, January 1, 2021 (excluded retail sales taxes)



## Beer Wholesale Tax Rates by State per gallon, January 1, 2021 (excluded retail sales taxes)



## State Wholesale Excise Tax Rates per Gallon of Alcohol

Source: Excise tax rates from Tax Foundation, 2021. Ecluces control states for spirits.  
 Calculation assumes 40% alcohol content for spirits, 12% for wine, and 5% for beer.

