

# **GLOBAL BEER INDUSTRY AND ITS ROLE IN THE GERMAN CULTURE**

Author: Emily Hafner, University of Montevallo, Montevallo, Alabama, USA

Mentor: Dr. Alexander Mechitov, University of Montevallo, Montevallo, Alabama, USA

## **INTRODUCTION**

In Germany, beer has a far bigger meaning than just an alcoholic beverage. It's part of Germany's history and culture. Most people associate beer with Germany and the Oktoberfest. However, beer is also very important to a country's economy, as it brings in a lot of revenue and creates a lot of jobs. The focus of this paper will be on the history and cost of beer as well as the importance of beer for a nation's economy, specifically for Germany, as it has a unique beer culture, and the United States.

## **HISTORY OF BEER**

Nobody can be 100 percent sure when and where the first beer was discovered, but according to a legend, a Sumerian bread baker was the first person to discover beer. He allegedly was banking bread in southern Mesopotamia, which is today's Iraq, between the Euphrates and Tigris rivers, and left his dough in the sun for too long one day. Over time, the dough started to ferment, and when the baker tried it, he became intoxicated. Therefore, he sacrificed the bread to God. After this had happened, the Sumerians were curious about what had happened to the bread and did some experimentation with the fermentation process by putting flatbreads into water and letting them rest for a while. This is how the original form of the beer we know today was invented. The company named their product "bappir," which is probably why we now call it "beer."<sup>i</sup>

The Sumerians were the first people in the world to be civilized and to invent cuneiform writing. Thanks to them, we can be sure that beer is at least 6,000 years old, as they chiseled beer recipes into clay and stone. Unfortunately, we can't be sure that they were actually the first people who invented beer, as the first humans settled down more than 10,000 years ago.

The Babylonians took over when the Sumerian Empire crumbled. They used the knowledge they gained about beer from the Sumerians and allegedly brewed more than twenty types of beer. They also exported beer, and some of the more popular types were thin beer, white beer, black beer, and red beer. In addition to that, they produced a special kind of beer that was called "premium beer," which was a more expensive and premium version of beer. From old wall paintings and written signs, we know that people in Egypt were also brewing beer. They even had a special rule that every worker who was working on the construction of the pyramids was eligible for two liters of beer each day.<sup>ii</sup>

In the early Middle Ages, large quantities of beer were brewed, especially in monasteries where long periods of fasting had to be overcome and "what is liquid does not break a fast." So-called fasting beer was an ideal drink for monks, as it was not only delicious but also nourishing. This type of beer is still brewed in Bavaria today, but it is only served between Ash Wednesday and Easter. The alcohol content of Lenten beer is higher than regular beer, which is why it's often called "strong beer." In Bavaria, there are special festivals called "strong beer festivals" that only serve "strong beer."

The monks not only invented the Lenten beer tradition but were also the first to flavor beer with hops and spent a great deal of time and dedication researching the drink. In the 16th century, beer started to become more popular and eventually turned into an international commodity. With the beer industry expanding, it was important to make sure

that there were some rules about what kind of ingredients were allowed to be used, and therefore, the Bavarian Duke Wilhelm IV passed the Purity Law in 1516, which states: "In particular, we want that from now on, in our cities, markets, and in the countryside, no more ingredients than barley, hops, and water are to be used for beer." One big reason for passing this law was the ongoing famine; therefore, only barley was to be used for brewing beer and not the higher-quality grains like wheat and rye, because these were urgently needed for baking bread.

The railroad finally starts operating in the 19th century. From then on, it was a lot easier and faster to export beer. The production of brewing products undergoes many modifications as a result of the industrial revolution. Brewing is now possible year-round thanks to new tools like the refrigeration machine developed by German engineer Carl von Linde. Beers that require a low temperature to mature, like Pilsner or lighter beer, could now be produced in the summer without having to be chilled with ice in cellars.<sup>iii</sup>

### **PRODUCTION OF BEER**

The "Reinheitsgebot," translated as "purity law," was written by a Bavarian nobleman in 1516. It states that "only water, barley, and hops may be used to brew beer." Later, yeast was also added to the list. The reason for making this law was because all kinds of spices had previously been added to the beer. Some of them were very harmful to your health.<sup>iv</sup>

In total, there are six main steps in the beer-making process. The first step is the brewing process. Here, the malt goes into the grist mill to be ground up, and then it is mashed up in the mash tun. Here, the malt grist is mixed with warm brewing water. Now, the mash is slowly heated up to about 76 °C. Natural enzymes found in malt convert the starch mostly into malt sugar. Vitamins, minerals, and portions of proteins are dissolved. The husks and other undissolved malt components are subsequently removed from the mash in the lauter tun. The residue from this lautering process is called spent grains and is used as nutrient-rich animal feed or in bread mixtures. The obtained liquid, known as beer wort, is boiled after being combined with hops in the wort kettle. This dissolves the aromas and bitter substances. At the same time, the wort is concentrated to the desired original wort by evaporation. Original wort is defined as the proportion of dissolved substances (malt sugars, proteins, vitamins, and aromas) in the unfermented wort. The still-hot beer wort then flows through the whirlpool for clarification and is cooled to the temperature required for fermentation. In conclusion, the goal of brewing is to change the solid elements in malt into liquid form. The result is the wort. This whole process takes roughly seven hours.

In the fermentation process, yeast is added to the cooled wort in the fermentation cellar. During fermentation, the yeast largely converts the malt sugar into alcohol, carbon dioxide, and aromatic substances. After a few hours, the fermentation in the fermentation tank produces magnificent foam structures on the surface. The primary fermentation ends after about a week, and the wort transforms into green beer.

In the storage process, the young beer now undergoes secondary fermentation, maturation, and clarification in the storage tank. The beer is chilled to temperatures close to freezing during storage. The pressure in the tank saturates the beer with its own natural carbon dioxide, which is of great importance for foam formation, taste, and digestibility.

After a few weeks, the beer has reached its consumption maturity. It is now either filtered to a brilliant finish before bottling or left natural (the yeast is still contained in the beer). This step is called filtering.

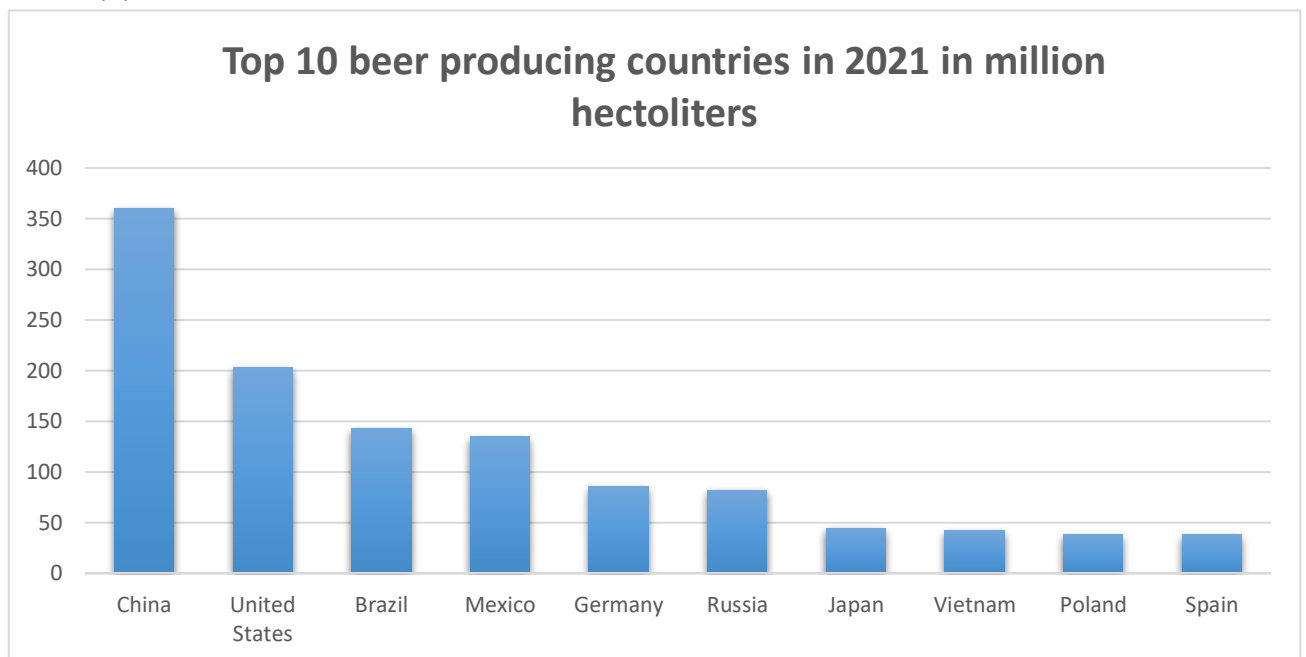
To prevent carbon dioxide loss and foam formation, the beer is filled under counter-pressure into kegs (containers), disposable or refillable bottles, cans, or the so-called gastro-

tank system (beer drive). Before filling, returnable bottles and already-used, intact kegs are thoroughly cleaned. All containers must be labeled in accordance with legal requirements, e.g., with the product name, alcohol content, and manufacturer. The beer is then prepared for delivery after being packaged for transportation.

Quality controls are carried out regularly at all stages of beer production, i.e., from the individual raw materials to the finished packaged beer. Both sensory checks and laboratory tests are conducted. The objectives are to ensure the most consistent quality possible and to identify defects in good time.

Overall, beer can be put into two categories: lagers and ales. Their fermentation processes Lagers are fermented at colder temperatures and are bottom-fermented, whereas ales are fermented at room temperature and are top-fermented.

All four ingredients of beer (malt, hops, water, and yeast) can be altered to change the taste, color, and alcoholic percentage of the beer. The malt gives the beer its color and alcohol content. The hops give the beer flavor, and the yeast turns sugar into alcohol. The water is also important in determining the taste of the beer, depending on the salt content and the degree of hardness. Malt distinguishes the most differences because different grains are used to make beer, such as barley, wheat, spelt, and rye. Depending on which temperature is used to dry the malt, the color changes. Higher and more humid temperatures lead to darker beers. <sup>v,vi</sup>,



vii

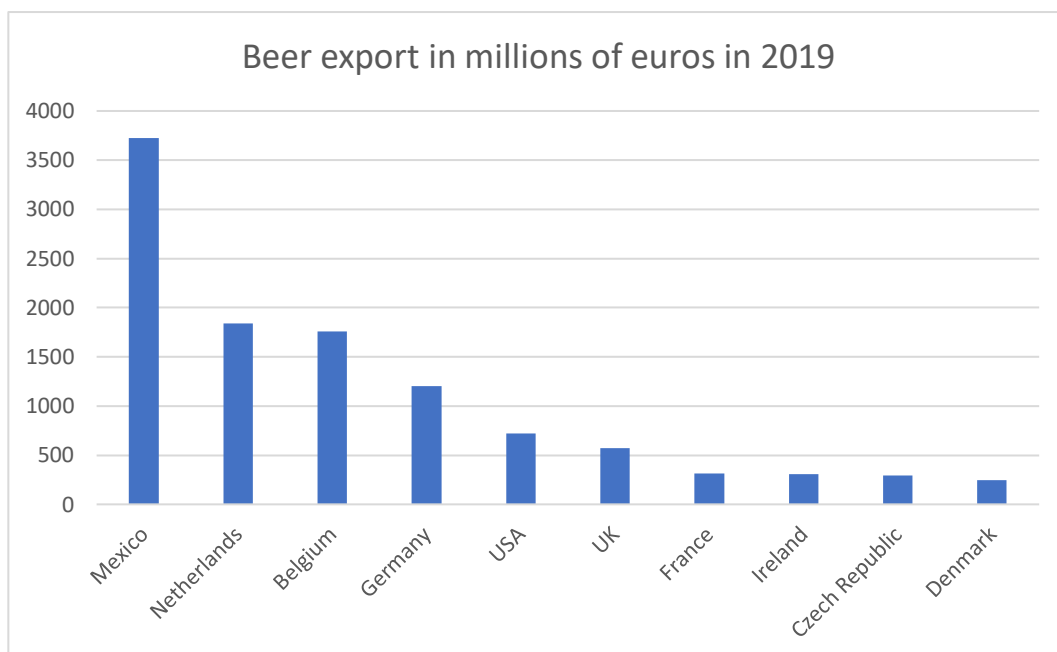
China is by far the largest beer-producing country. It produced almost 360 million hectoliters of beer in 2021. Snow Breweries, Tsingtao Brewing Group, and Yanking are responsible for producing almost two-thirds of the country's total beer production and roughly 12% of the world's beer production. The United States produced roughly 203 million hectoliters of beer, with Coors and Budweiser being the two largest companies in the U.S. Brazil is the third-largest producer, with 143 million hectoliters. Grupo Petrópolis is by far the largest beer-producing company in Brazil and also the 11th largest in the world. Mexico, the 4th largest beer producer with 134.7 million hectoliters, has one big company that produces a quarter of the world's beer. It's called AB InBev, which owns Grupo Modelo,

which produces the famous Corona beer. The fifth-largest producer is Germany, followed by Russia, Japan, Vietnam, Poland, and Spain. <sup>viii</sup>

Looking at the largest beer companies in the world, Anheuser-Busch InBev is the leader with gross annual sales of \$53 billion in 2021. The American company owns 500 different beer brands, including Budweiser and Bud Light. Anheuser-Busch has been part of Anheuser-Busch-InBev since 2008 and has its headquarters in Belgium. Heineken comes in second with \$27 billion. It is the largest beer company in Europe and has its headquarters in Amsterdam, the Netherlands. Kirin Brewery, a Japanese company, is the third-largest beer company in the world, with gross annual sales of \$16.6 billion. Its headquarters are located in Tokyo. Asahi, another beer company from Japan, is the 4th largest with \$14.5 billion. Next is Moson Coors Brewing Company, with \$10.3 billion in gross annual sales and its headquarters in Chicago, followed by Carlsberg from Denmark with \$9.2 billion, China Resources Snow Barrels from China with \$5.2 billion, and Tsingtao Brewing Group with \$4.5 billion from China. Radeberge Gruppe KG, headquartered in Frankfurt, is Germany's largest brewery. It is part of the Oetker Group and had a turnover of \$1.7 billion in 2019. <sup>ix, x</sup>

Over the last 30 years, the beer market has shifted immensely. There have been numerous mergers between large beer-producing companies, turning the 48 largest brewing companies into the two large companies, Anheuser-Busch InBev and MillerCoors. This has led to a decline in employment and a lack of variety for consumers. This has caused many craft beer breweries to start their businesses and introduce new flavors of beer. This has not only benefited the consumers but also the economy, as it has led to an increase in employment within that sector. <sup>xi</sup>

## EXPORT OF BEER

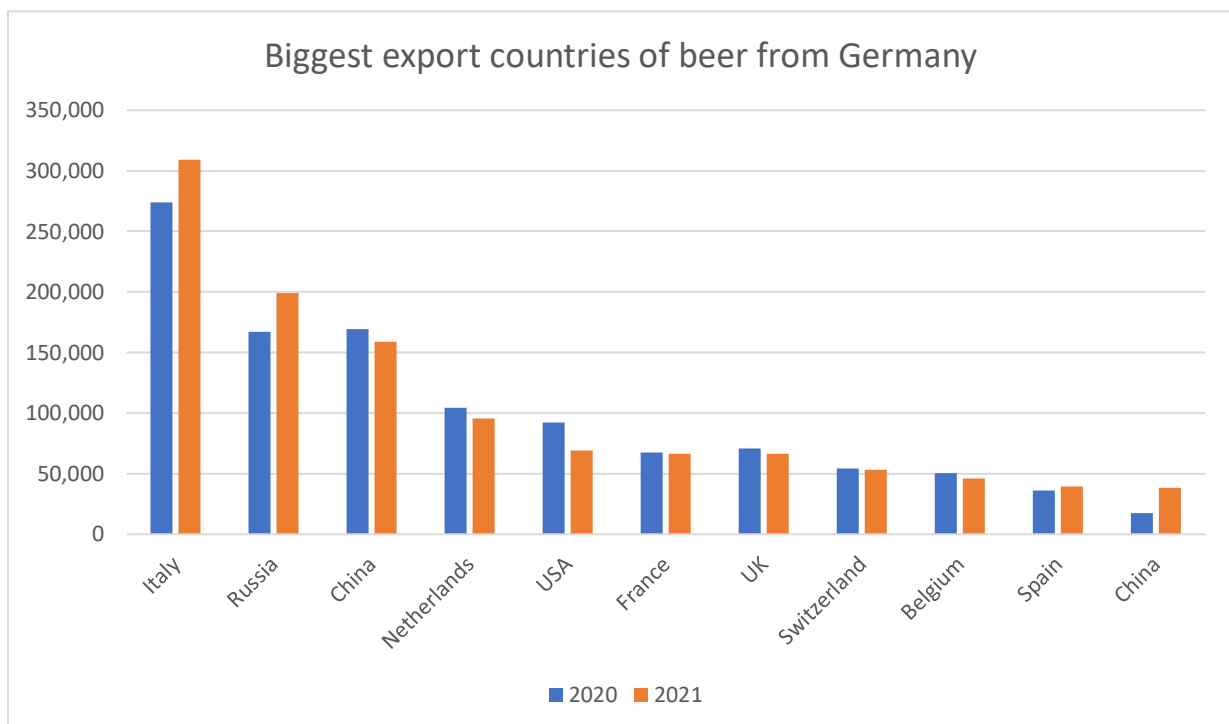


Mexico is the absolute number one in the international beer export market in 2019, not only in terms of value but also in terms of volume. The European countries such as the Netherlands, Belgium, and Germany who are typically known for beer, cannot even come close to Mexico's share of the global export volume. Global beer export volume in 2019

totaled around 13.9 billion euros. Mexico alone exports beer worth 3.7 billion euros, which is just under 27% of the global market share.<sup>xii</sup>

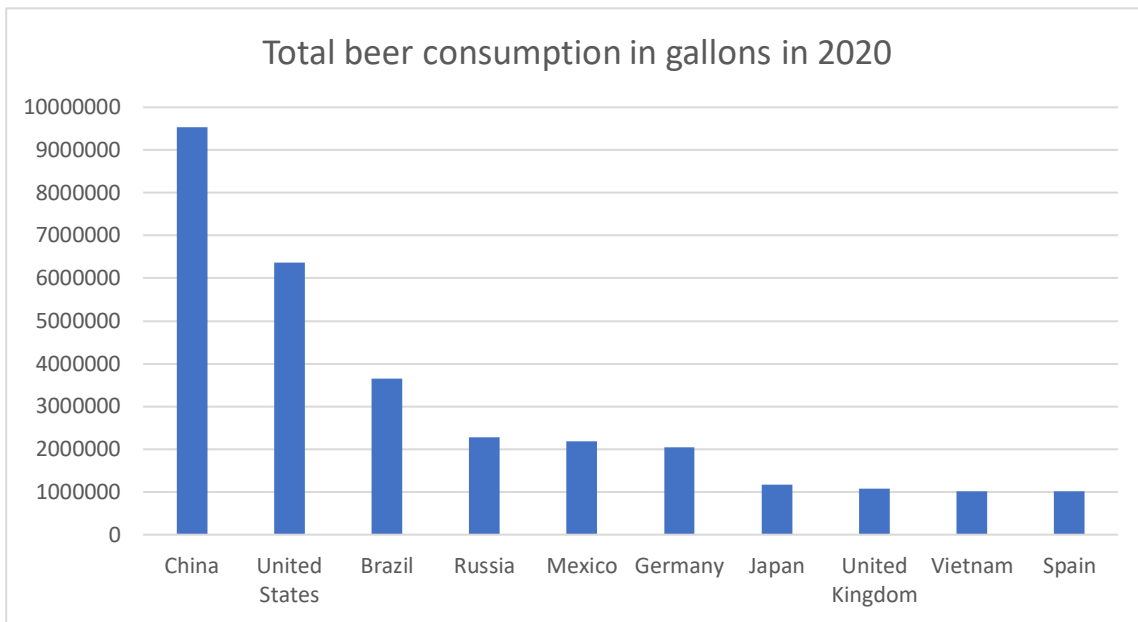


The biggest reason why Mexico has such a prominent position is because they export 75% of their beer to the USA. Germany is the 4th-most important beer exporting country with 1.2 billion euros, which represents 8.6% of the world market share. In 2021, Germany exported about 15.6 million hectoliters of beer. The largest importer of German beer is Italy, with over 309,100 tons. It is followed by Russia with just under 199,000 tons and China with 159,000 tons. The USA is in fifth place with just under 69,000 tons.



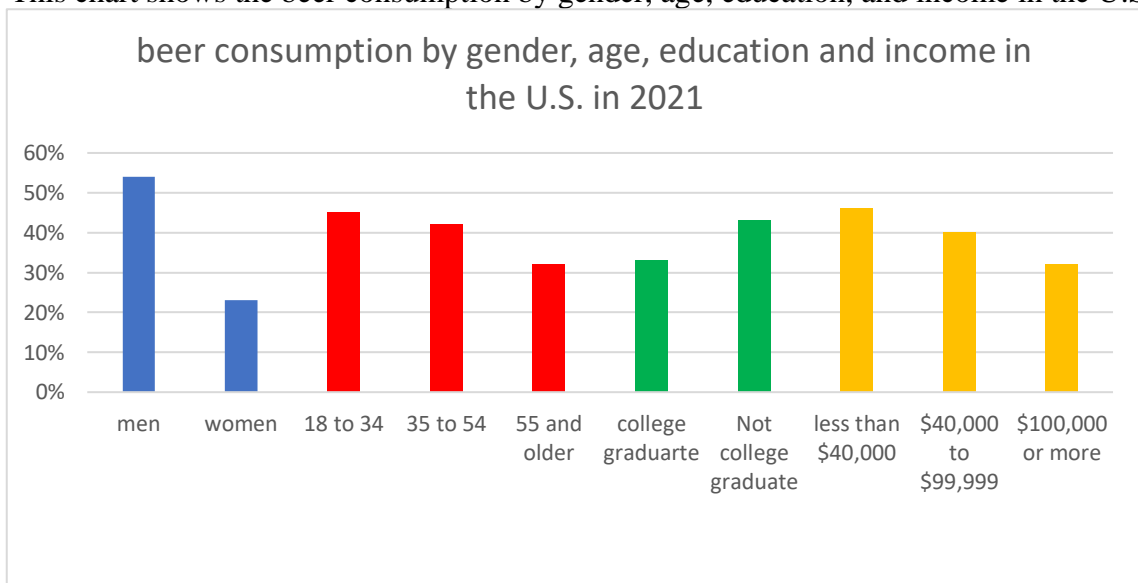
## BEER CONSUMPTION

Beer is one of the oldest and most popular beverages in the world. It is the most popular alcoholic beverage and the third most popular drink in the world, after water and tea. Nowadays, most countries are big beer consumers. Especially in Asia, beer has become more and more popular over the last century. Looking at the countries that consume the most beer, the consumption is spread out similarly throughout the continents of the world, with China being the clear leader. However, if we look at beer consumption per capita, Europe is far ahead. Nine of the top ten beer consumers per capita are from European countries. The Czech Republic is the far leader, with 181.70 liters consumed per capita in 2020, followed by Austria with 96.80 liters, Poland with 96 liters, Romania with 95 liters, and Germany with 93.50 liters.



xiv

Studies show that men drink significantly more beer than women all over the world. This chart shows the beer consumption by gender, age, education, and income in the U.S.<sup>xv</sup>



Looking at the chart, one can see that men are twice as likely as women to drink beer. The older people get, the less beer they drink. One reason might be that they prefer to drink other alcoholic beverages. Beer is more popular with non-college graduates than with college graduates, as it is one of the cheapest alcoholic beverages to buy in the U.S. Also, the more money a person makes, the less likely it is that they will drink beer, probably because they prefer to drink more expensive drinks such as wine or hard liquor.

Over the past few years, beer consumption patterns have changed a lot. The biggest reason for that is the COVID-19 pandemic, as people needed to stay home and weren't allowed to go outside. In addition to that, restaurants, pubs, and nightclubs were closed, which reduced the consumption of beer drastically. However, the consumption of beer at home increased, which also led to an increase in the sales of retail and online shops. The COVID-19 pandemic, in particular, altered beer consumption in Europe, where going out for a few drinks at a bar or restaurant is a bigger part of the culture than in other countries. Also, Europe had far longer lockdowns compared to other countries, such as the U.S.<sup>xvi</sup>

### **COST OF BEER**

There are many costs that go into producing one bottle of craft beer. I am going to look at the different costs of producing craft beer versus regular beer. There are four main ingredients that make up beer: water, malt, hops, and yeast. To brew beer, a lot of water has to be used. To produce around one gallon of beer, we need around five gallons of water. However, water is very inexpensive and therefore barely adds any cost to a bottle of beer. The next ingredient is malt. On average, malt costs 40 to 50 cents per pound. In order to make one barrel of craft beer, 70 to 100 pounds of malt are needed. Therefore, we pay around 65 cents of malt for a six-pack of craft beer. For low-alcohol beers such as Bud Light, a lot less malt is used. It takes only around 40 pounds of malt to produce one barrel of beer, which costs around 22 cents per pound. So, for a six-pack of microbrew, we only pay around 16 cents for malt.

The next key ingredient we are going to look at is hops. It contributes the district's flavor to the beer, such as bitterness. There are different types of grains that can be used to produce beer. Regular hops cost about \$4 to \$6 a pound. There are special kinds of hops that can be a lot more expensive (up to \$20). Microbrews use less hops, which is why the beer tastes less bitter. For one barrel of beer, only 1 pound of \$3 hops is used, whereas craft beer uses 4 pounds of \$7 hops. For microbrews, we only need around 5 cents worth of hops for a six-pack of beer, whereas for craftier beers, we need around 53 cents worth of hops.

The last ingredient is yeast. It can cost up to \$800 to make one barrel of beer. So, a lot of brewers reuse the yeast as often as they can, typically around four times. Some brewers make their own yeast to save money. On average, we can calculate that there is 13 cents worth of yeast in a six-pack.

On average, it takes around 16 to 20 hours of work to make a batch of beer. Since the average wage for labor in the brewing industry is \$12, it costs around \$200 for labor. Assuming that one batch of beer creates 30 barrels, this means that the cost of labor for a six-pack of beer is around 15 cents. The next step is packaging, which is one of the most expensive parts. It costs around 20 cents to produce one glass bottle of beer with a label. The containers in which the bottles are in cost a few cents as well, making a total of \$1.50 for a six-pack of beer, just for packaging.

There are many costs for equipment, rent, and other fixed expenses. Therefore, beer distributors add around 30 to 40 percent to the final costs. For example, \$1,31 for raw ingredients, 15 cents for labor costs, and \$1.50 for packaging costs and 91 cents were added to the final cost of the six-pack for fixed costs (equipment, rent, etc.).

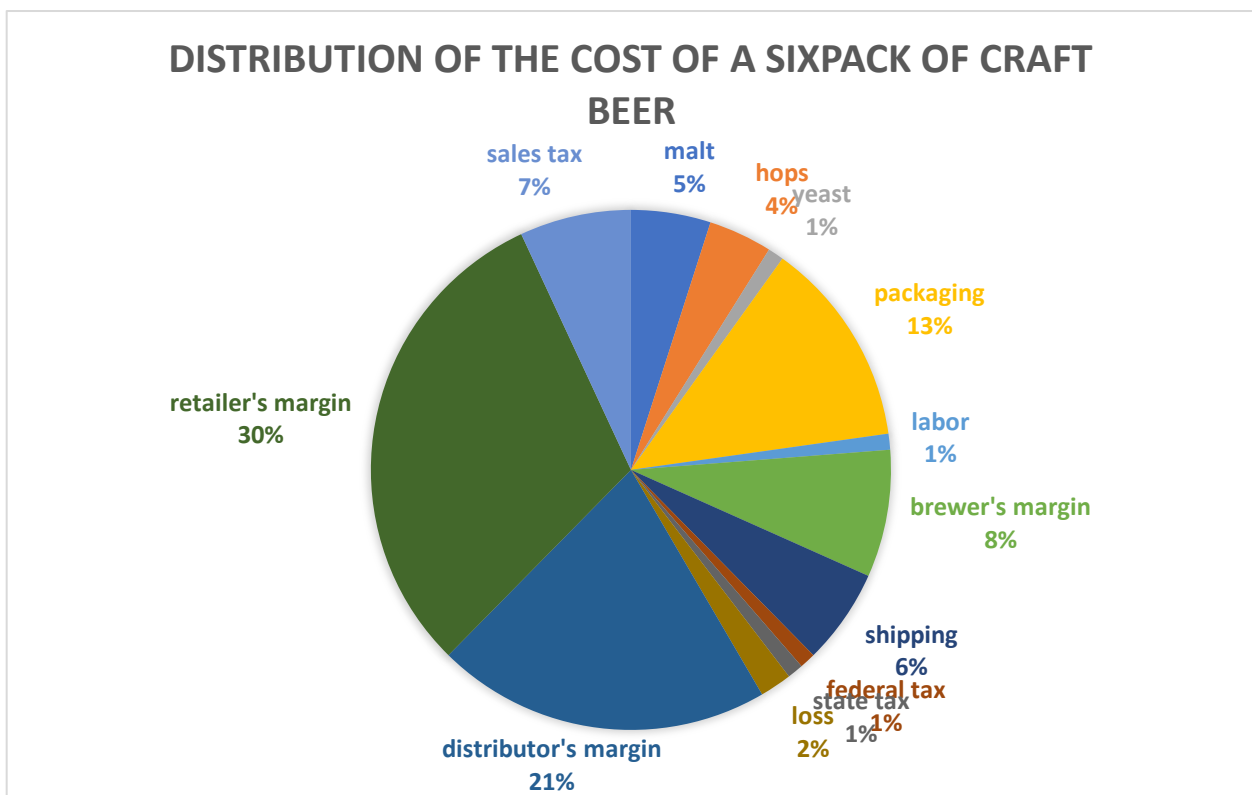
Depending on how far the beer comes, there is an increased cost for shipping. Costs

depend on the season, but it costs around \$5000 to \$7000 for a truck full of beer (18 pallets, 80 cases per pallet); therefore, it costs around cents for one six-pack of beer.

There are taxes on all alcohol products. Depending on how big the breweries are, the costs change. Smaller breweries pay lower taxes than larger breweries. Each state has different taxes. On average, we charge 23 cents for one six-pack of beer.

In the U.S., almost all beers that are sold need to go through a distributor before being sold to consumers. Distributors are in charge of marketing beers to restaurants and shops. Also, they bring beer from warehouses to retail locations and teach retailers the right way to serve beer. The distributors add a lot of costs to the six-pack of beer for their services. Looking at our six-pack, it was sold for \$4.75 to the distributor, and they added \$2.73 to the price of the six-pack, making it \$7.48.

Retailers buy the beers from the distributors, in our case for \$7.48. The retailers add around 50 percent to the six-pack of beer, which is roughly \$3.75. Therefore, our six-pack costs \$11.23. A buyer would have to pay around \$12 for a six-pack of beer since 7 percent of sales tax is added.



xvii

## JOBS

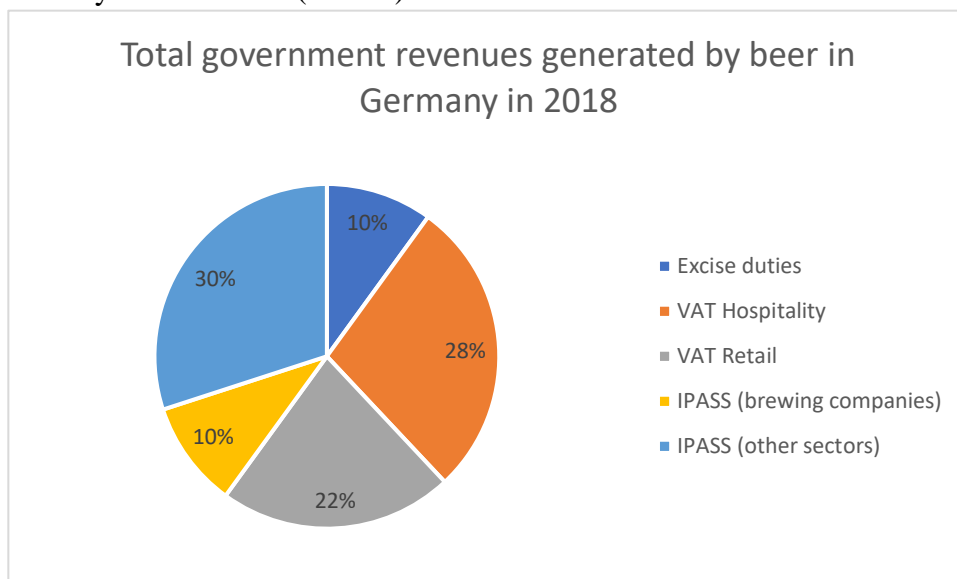
Beer doesn't only serve people because they enjoy drinking it. The beer industry also creates many jobs, which benefits the economy. A study for the Beer Institute and the National Beer Wholesale Association found that the beer industry creates more than 2.1 million jobs in the U.S. This includes industries such as farming, manufacturing, construction, and transportation. There are roughly 7000 active breweries in America and more than 3000 distributors. They directly create more than 200,000 jobs, which indirectly support more jobs in other industries. According to Jim McGreevy, the President and CEO of the Beer Institute, the beer industry is very important to the U.S. as it contributes more than \$328 billion to the American economy. "America's 3,000 independent beer distribution



companies are proud to employ 141,600 hardworking Americans with jobs that pay a collective \$9.5 billion in wages, offer solid benefits, and provide the opportunity for advancement,” said Craig Purser, President and CEO of the National Beer Wholesalers Association. “Independent beer distributors are Main Street businesses whose economic contributions are felt in every community and congressional district across the country as they work with brewers large and small to grow brands and safely deliver America’s favorite alcohol beverage to more than 640,000 licensed retailers nationwide.”<sup>xviii</sup>

In Germany, more than 480,00 jobs are directly or indirectly created by the beer industry. The biggest employment sector within the beer industry is the hospitality sector, which brings in around 367,000 jobs, followed by the retail sector with 48,000 jobs, the supply sector with 41,000 jobs, and the brewing companies with 27,000 jobs. In the supply sector, 13,097 jobs are in agriculture, 6,827 jobs are in packaging, 8,126 jobs are in transport, and 2,048 jobs are in media and marketing. The rest are from utilities, equipment, and other sectors. This industry brought in more than €10 billion in 2018. The biggest income comes from the hospitality sector, with €4 billion, followed by the brewing companies with €2.8 billion, the supply sector with €2.2 billion, and the retail sector with €1.1 billion.

The beer industry in Germany is not only beneficial to the people but also to the government. It brings in €6.5 billion in tax revenue each year. Half of it comes from the sale of beer in the retail and hospitality sectors. The other half is collected from labor taxes and excise duty payments. In addition to that, the government collects more than €2 billion in taxes each year originating from employment, specifically from income, payroll, and social security contributions (IPASS).



xix

## OKTOBERFEST

Oktoberfest is the largest folk festival in the world. It takes place annually in September on the Theresienwiese in Munich. Locals call it “Wiesn,” which means “lawn,” and are referring to the large grassland where the festival takes place. The Oktoberfest lasts for a total of 16 days. Around 6 million people visit the Oktoberfest every year from all over the world. Each year, 5.6 million measures of beer are served at a price of 13.60 euros, and more than 60,000 hectoliters of beer are consumed.<sup>xx</sup> The Oktoberfest is often visited for business purposes, either as a company outing or as an unofficial meeting with customers. There are 14 tents, each of which can hold up to 10,000 people. The Oktoberfest is an enormous economic factor for the city of Munich. Every year, it brings in around 1 billion

euros. Half of that money comes directly from the operators of rides, catering establishments, and sales booths. Each visitor spends roughly 74 euros each day at the Oktoberfest, which would add up to a total of 450 million euros as there are around 6.1 million visitors each year. Another 300 million euros are spent on the cost of hotels, and another 205 million euros are spent on other expenses in the city. The city of Munich, however, makes only a small profit from the Oktoberfest. The money that is generated from the rent of the booths (50,000 to 170,000 euros) is invested in infrastructure.

“The sale of souvenirs accounts for an important share of Oktoberfest's revenue. A new beer mug called “Wiesnkrug“ is created every year, and the typical felt hat, the Wiesn mascot, gingerbread hearts, postcards, music, and books about the festival are also on sale. The marketing of the Wiesn is also in full swing outside of Munich: all souvenirs can be ordered via the "Official Wiesn Shop" on the Internet.“ The Oktoberfest is also hugely beneficial to the labor market in Munich. Every year, around 12,000 people work at the Oktoberfest: 8,000 permanent employees and 4,000 temporary staff. <sup>xxi</sup>



xxii

## CONCLUSION

To sum it up, beer is not only an important part of Germany 's history and culture; it is also an important economic factor for many countries. Especially in Europe, drinking beer and socializing go hand in hand, e.g., at the Oktoberfest, which is probably the reason why the biggest beer consumers per capita are all European countries. Beer is especially popular among young people and males. Recently, there has been a shift in beer production and consumption. There have been many mergers between big beer companies, which created two companies that are the main beer producers in the U.S. However, there has also been a rise in craft beer breweries, which focus more on specialized beer tastes. Due to COVID, there has been a decline in beer consumption in recent years, as people weren't able to go out to bars and restaurants anymore, which is a big part of European culture. Nowadays, beer is produced and exported all over the world, which makes it an important economic factor for most countries. There are many more costs that go into producing a bottle of beer

than people might think, as it is a long process. Overall, beer is and probably will always be popular all around the world.

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