Global Wine Markets,
1860 to 2016
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This volume revises, updates, backdates and expands the volume published in 2011 as:


The annual time series data are also available as Excel spreadsheets at [www.adelaide.edu.au/wine-econ/databases/global-wine-history](http://www.adelaide.edu.au/wine-econ/databases/global-wine-history)

The authors welcome comments on how to improve the quality and coverage of data and the way they have been summarized. Please send feedback to:

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Global Wine Markets, 1860 to 2016: A Statistical Compendium

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University of Adelaide Press
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Technical notes

This section provides definitions of products, indicators and measures used throughout the compendium and an explanation of how national and global wine markets are valued by quality categories.

Definitions of products

Grapes (FAO CODE 0560), both for fresh consumption and winemaking; processed products include dried grapes (FAO CODE 0561), grape juice (unfermented grape must, FAO CODE 0562), and (fermented) grape must (FAO CODE 0563). Grapes are the world’s most valuable (unprocessed) horticultural product, according to the FAO gross value of production data.

Wine (FAO CODE 0564; SITC 112.12; Harmonised System Tariff Heading 2204)
Beverage wines of fresh grapes of all qualities, including still, sparkling, fortified and dessert wines. Beverage wines are sometimes divided into the following three sub-categories:

- **Bottled still wine** (Harmonised System Tariff Heading 220421)
  Still grape wines traded in containers of two litres or less (further sub-divided into ‘commercial premium’ or ‘CP’ and ‘super premium’ or ‘UP’ wines in Sections VI and VII);

- **Bulk (or other) wine** (Harmonised system tariff headings 220429)
  Still grape wines traded in containers exceeding two litres (also called ‘non-premium’ or ‘NP’ wine in Sections VI and VII); and

- **Sparkling wine** (Harmonised System Tariff Heading 220410)
  Grape wines, sparkling.

Non-beverage wine
Grape wines used for distillation and industrial uses. Brandy, or “spirits obtained by distilling grape wine or grape marc” (Harmonised System Tariff Heading 220820) is important in a few countries and was more important during the earlier period of excessive wine production in early decades of the EU’s common wine policy. In 2015 the value of brandy exports (net of re-exports) was 18% of the value of wine exports globally and 34% for France (down from 48% in 1994), 29% for Georgia, 24% for Moldova, and 7% for Spain (down from 18% in 1990), according to UN COMTRADE data.

Rice wine
Wine made from rice is of some importance in East Asia, especially China, Japan and Korea. It has a different name in each country (sake in Japan, mijiu in China, cheongju in Korea, …). Typically, it is at least 15% alcohol, is brewed differently than beer, and looks and is drunk like a clear spirit. For that reason, we include it in the spirits category throughout this compendium, with the exceptions of Sections VIII and X, which are based on Euromonitor International’s ‘Alcoholic Drinks’ data that include rice and other fruit wines along with grape wine. This makes almost no difference except for China, Japan and Korea, where the wine numbers are overstated and the spirits numbers are understated somewhat. For
comparison, the indexes in Section IX are based on our standard wine definition and can therefore be compared with the volume indexes in Section X.

**Definitions of indicators**

**GDP**
Gross Domestic Product, the total market value of all goods and services produced within a country in a year.

**Wine self-sufficiency**
Calculated as the volume of wine production divided by beverage wine consumption, times 100 so as to be expressed as a percentage.

**Exports of wine**
Wine exports include re-exports of foreign wine.

**Net imports of wine**
Wine imports minus wine exports (including any re-exports of foreign wine).

**Wine trade volume (value) specialization index**
Calculated in volume (value) terms as the ratio of minus the net imports of wine to the sum of wine imports plus exports, so that the index ranges between –1 and +1.

**Intra-industry trade volume (value) index**
Calculated in volume (value) terms and expressed as a percentage, it is 100 minus 100 times the modular (i.e. ignoring any negative sign) of the trade specialization index, so that the index ranges between 0 and 100%.

**Index of revealed comparative advantage in wine**
Calculated in value terms as the share of a country’s or region’s wine exports in its total merchandise exports divided by the share of world wine exports in total world merchandise exports. Thus, the higher a country’s index is above (below) 1, the stronger its comparative advantage (disadvantage) in wine, as revealed from the trade data assuming the government has not distorted producer or consumer incentives.

**Unit value of wine exports (imports)**
Calculated as the value of a country’s wine exports (imports) by region divided by the volume of its wine exports (imports) by region, expressed in current US$ per litre.

**Index of bilateral wine trade intensity**
Calculated in volume or value terms as the share of country i’s wine exports going to country j \([x_{ij}/x_i]\) divided by the share of country j’s imports \((m_j)\) in world wine imports \((m_w)\) net of country i’s imports \((m_i)\). That is, \([x_{ij}/x_i]/[m_j/(m_w - m_i)]\). If j is a country group and country i is part of country group j, it is necessary to subtract country i’s imports from \(m_j\) (in the numerator of the second expression in square brackets). Where the exporter also is a region, the following adjustments are made to allow for intra-regional trade: (a) exclude only \(1/n^\text{th}\) of i’s imports from the denominator where \(n\) is the number of countries in the region, and (b) also multiply the numerator of the second expression in square brackets by \((n-1)/n\) in the case where the index is for intra-regional trade.
**Consumption volume (value) intensity index**

Calculated in volume or value terms for country \(i\) as \(f_{im}/f_m\) where \(m\) is one of three beverages (wine, beer or spirits) and \(f_{im}\) is the fraction of wine, beer or spirits consumption in total national alcohol consumption volume or expenditure in country \(i\) such that \(0 \leq f_{im} \leq 1\) and \(\sum_m f_{im} = 1\). This is divided by the fraction for that same beverage in world total alcohol consumption, \(f_m\), with \(0 \leq f_m \leq 1\) and \(\sum_m f_m = 1\). For weighted averages of intensity indexes for groups of countries, we use as weights each country’s consumption of that beverage as a fraction of the group’s total consumption of that beverage.

**Consumption volume (value) similarity index**

The similarity index uses vector representation to project combinations of variables with lengths determined by the shares of wine, beer and spirits in a country’s total alcohol consumption volume or expenditure. The vector \(f_{im}\) is the fraction of beer, wine or spirits consumption in the national alcohol consumption volume or expenditure in country \(i\), such that these fractions are between 0 and 1 and sum to 1. The index is defined as:

\[
\omega_{ij} = \frac{\sum_{m=1}^{M} f_{im} f_{jm}}{\left( \sum_{m=1}^{M} f_{im}^2 \right)^{1/2} \left( \sum_{m=1}^{M} f_{jm}^2 \right)^{1/2}}
\]

where \(i\) and \(j\) are countries, and \(m = 1,2,3\) beverages corresponding again to wine, beer and spirits so \(M = 3\). This makes it possible to indicate the degree of beverage consumption mix “similarity” of any pair of countries. The index also can be generated for each country relative to the average of a sample of countries or of all of the world. In short, \(\omega_{ij}\) measures the degree of overlap between \(f_i\) and \(f_j\). The numerator will be large when \(i\)’s and \(j\)’s beverage mixes are very similar. The denominator normalizes the measure to unity when \(f_i\) and \(f_j\) are identical. Hence, \(\omega_{ij}\) will be close to 0 for pairs of countries with little similarity in their beverage mix, and 1 for pairs of countries with identical beverage consumption mixes. For cases in between those two extremes, \(0 < \omega_{ij} < 1\). This index is thus conceptually similar to a correlation coefficient and, like a correlation coefficient, is completely symmetrical in that \(\omega_{ij} = \omega_{ji}\).

**Consumption quality index**

Calculated as the ratio of the national average retail price of a beverage to the world average retail price of that beverage. It is an imperfect quality index in that the prices include import, excise and value added taxes which vary greatly across countries and beverages.

**Definitions of unit measures**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unit (per year)</th>
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<tbody>
<tr>
<td>Grape vine area</td>
<td>‘000 ha</td>
</tr>
<tr>
<td>Volume of grape production</td>
<td>KT</td>
</tr>
<tr>
<td>Grape yield</td>
<td>tonnes/ha</td>
</tr>
<tr>
<td>Volume of grape production for wine</td>
<td>KT</td>
</tr>
<tr>
<td>Volume of wine production</td>
<td>ML</td>
</tr>
</tbody>
</table>
Volume of wine consumption ML
Wine consumed per capita or per adult L
Beer consumed per capita or per adult L
Spirits consumed per capita (alcohol content) LAL
Alcohol consumed per capita or per adult LAL
Domestic wine sales current local currency units and US$
Volume of wine exports and imports ML
Value of wine exports and imports current $US million
Unit value of wine exports and imports current $US/L

Explanations of unit measures

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
<th>Conversion</th>
</tr>
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<tr>
<td>ha</td>
<td>hectare</td>
<td>10,000 square metres or 2.471 acres</td>
</tr>
<tr>
<td>t</td>
<td>tonne</td>
<td>1,000 kilograms or 2,205 pounds</td>
</tr>
<tr>
<td>KT</td>
<td>kilotonne</td>
<td>1,000 tonnes</td>
</tr>
<tr>
<td>L</td>
<td>litre</td>
<td>1,000 millilitres or 0.2642 US gallons</td>
</tr>
<tr>
<td>LAL</td>
<td>litres of alcohol</td>
<td>Assumed 12% for wine, 4.5% for beer</td>
</tr>
<tr>
<td>KL</td>
<td>kilolitre</td>
<td>1 thousand litres or 10 hectolitres</td>
</tr>
<tr>
<td>ML</td>
<td>megalitre</td>
<td>1 million litres</td>
</tr>
<tr>
<td>US$</td>
<td>current US dollar</td>
<td></td>
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<tr>
<td>US$m</td>
<td>million US dollars</td>
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<tr>
<td>US$/L</td>
<td>US dollars per litre</td>
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<tr>
<td>1 million</td>
<td>1,000,000</td>
<td></td>
</tr>
<tr>
<td>1 billion</td>
<td>1,000,000,000</td>
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</table>

Explanations of multi-year data

In Sections I and III, multi-year data are presented. For Section I they refer to 2014-16 and are the average of as many of those three years of data as are available. In section III they are decadal except for the most-recent period which is 2010-16, where again the average is shown for as many years as are available in each period. For data starting in the 1960s, for example, they may include data just nine years from 1961 if the source is the United Nations.
Geographical regions and their abbreviations

The compendium separately identifies the 47 most important individual countries in global wine markets plus 5 regional groupings of other countries. It also provides sub-totals for 8 regions (summing to the world) which have the following acronyms:

Wine regions of the world

- WEX: Western European wine net exporters
- WEM: Western European wine net importers
- ECA: Central and Eastern Europe and Central Asia
- ANZ: Australia and New Zealand
- USC: United States and Canada
- LAC: Latin America and Caribbean
- AME: Africa and Middle East
- APA: Asia and Pacific Islands

Individually reported countries in each wine region

- WEX: France, Italy, Portugal, Spain
- WEM: Austria, Belgium-Luxembourg, Denmark, Finland, Germany, Greece, Ireland, Netherlands, Sweden, Switzerland, United Kingdom
- ECA: Bulgaria, Croatia, Georgia, Hungary, Moldova, Romania, Russia, Ukraine
- ANZ: Australia, New Zealand
- USC: Canada, United States
- LAC: Argentina, Brazil, Chile, Mexico, Uruguay
- AME: Algeria, Morocco, South Africa, Tunisia, Turkey
- APA: China, Hong Kong, India, Japan, (Republic of) Korea, Malaysia, Philippines, Singapore, Taiwan, Thailand

Residual country groups

Other Western European wine net importers (OWEM)
Andorra, Channel Islands, Cyprus, Faeroe Islands, Gibraltar, Greenland, Holy See, Iceland, Isle of Man, Liechtenstein, Malta, Monaco, Norway

Other Central and Eastern Europe and Central Asia (Oeca)
Albania, Armenia, Azerbaijan, Belarus, Bosnia Herzegovina, Czech Republic, Estonia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Mongolia, Poland, Russia, Serbia, Montenegro, Slovakia, Slovenia, Tajikistan, Turkmenistan, Uzbekistan

Other Latin America and Caribbean (OLAC)
Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, British Virgin Islands, Cayman Islands, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Falkland Islands, French Guiana, Grenada, Guadeloupe, Guam, Guatemala, Guyana, Haiti, Honduras, Jamaica, Martinique, Montserrat, Netherlands
Antilles, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Saint Kitts and Nevis Islands, Saint Lucia, Saint Pierre & Miquelon, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Turks and Caicos Islands, U.S. Virgin Islands, Venezuela

Other Africa and Middle East (OAME)
Africa: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (Democratic Republic of), Congo-Brazzaville, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Reunion, Rwanda, Saint Helena, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Sudan, Sudan, Swaziland, Tanzania, Togo, Uganda, Western Sahara, Zambia, Zimbabwe
Middle East: Afghanistan, Bahrain, Gaza, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Occupied Territories, Oman, Palestine, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates, Yemen

Other Asia and Pacific Islands (OAPA)

Memo items: other country groups

European Union members as of March 2004 (EU15)
Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom

European Union members as of July 2013 (EU28)
Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom

New World wine exporters (NWE7)
Argentina, Australia, Canada, Chile, New Zealand, South Africa, United States
Statistical sources

As with the earlier compendia, the key data drawn upon are the United Nations’ agricultural and trade sources, namely FAOSTAT and COMTRADE, supplemented by the World Bank for GDP data and Euromonitor International for domestic alcohol beverage consumption and sales data, plus EUROSTAT and various national statistical agencies and wine industry organizations to check individual country data and to obtain winegrape plantings by grape variety. Where possible the latest available revised time series are used to replace former series. There have been some changes of data from previous editions due to changes in data availability and organizational developments affecting data providers. For example, the OIV is now deferring to the FAO on vineyard and wine statistics, although we continue to use OIV for estimates of the two most-recent years of global wine production, consumption and export volume data. Following the listing of key contemporary and then historical sources, notes are provided below for the various sections of tables in this Compendium.


Key contemporary data sources

UN FAO (http://faostat.fao.org)
World Bank (http://econ.worldbank.org)
Euromonitor International, country beverage sector briefings (www.euromonitor.com)
EUROSTAT (http://ec.europa.eu/eurostat)
Wine Australia (www.wineaustralia.com)
Wine Institute, California (www.wineinstitute.org/resources/statistics)
South African Wine Industry Information and Systems (www.sawis.co.za)
Wines of Argentina (www.winesofargentina.org/en)
Wines of Chile (www.winesofchile.org)

Key historical data sources (pre-1961)

Parts I to III:

Data on grape vine area, yield/ha and production are derived from FAOSTAT at: http://faostat.fao.org/site/567/DesktopDefault.aspx?PageID=567#ancor

To get the share of cropping land under vines, grapevine area is divided by the total area of agricultural land (arable land and land used for permanent crops), as derived from FAO’s ResourceSTAT database: http://faostat.fao.org/site/377/DesktopDefault.aspx?PageID=377

The FAO publishes the gross value of crop production for all crops and for individual crops such as grapes. The share of grapes in gross value of all crop production data refer to grapes for all purposes including wine-making.

The FAO only publishes total grape production, which includes grapes used for wine-making and grapes used for other purposes. Grapes used for wine data are estimated from the volume of wine production, assuming one tonne of wine grapes yields 750 litres of wine.

FAO data on wine production have been updated for 2015 and 2016 from OIV and national sources.

The wine, beer and spirits consumption data for high-income countries from 1880 to 1936 are from the Institut national de la statistique et des études économiques, Annuaire Statistique de la France (Paris, 1938). From 1960 the default source is World Health Organization, http://apps.who.int/gho/data/node.main.A1022?lang=en except for wine for countries with reliable production and trade volume data, in which case apparent wine consumption is estimated as net imports plus the average of production in the current and two previous years (so as to allow for delays between production and final consumption and to smooth vintage weather fluctuations). All consumption data, like production data, are ‘recorded’, that is, no account is taken of informally produced or homemade (legal or illegal) alcoholic beverage production or consumption. The World Health Organization estimates that 29 percent of world alcohol consumption was unrecorded in 2005, and that estimate is 48 percent in low-income countries and 69 percent in South and Southeast Asia, compared with 11 percent in high-income countries (WHO, Global Status Report on Alcohol and Health, Geneva: World Health Organization, 2011, www.who.int).

Data from Euromonitor International are used to compile the shares of off-trade in total wine consumption. Off-trade refers to wine purchased and consumed off the premises and therefore includes sales from retail outlets including grocery and liquor outlets but not from restaurants, hotels, bars and pubs. Unlike in other tables, the off-trade figures include non-grape wine. Non-grape wine accounts for more than a 5 percent share of wine sales in seven of the featured countries. In 2009 it was higher than 50 percent in China, Japan, South Korea and Taiwan (made up predominantly from rice wine, sake and takju), was one-fifth in Azerbaijan, and was about one-eighth of wine sales in Austria (mostly fruit wines) and Hong Kong.

The shares of the largest firms in total wine sales are based on volumes of ‘still light grape wine’ as defined by Euromonitor International.


Population data by country was sourced from the FAO (http://faostat.fao.org). The share of the population that is adult (greater than 14 years of age) is from the United Nations. The real GDP data are in 1990 International Geary-Khamis dollars to 2010, and updated using purchasing power parity (PPP) estimates by the International Comparisons Program at http://www.worldbank.org/en/programs/icp. Taiwan’s GDP, population and exchange rate data are from the Taiwan’s Council for Economic Planning and Development publication, the Taiwanese Statistical Data Book 2016 (www.ndc.gov.tw/).

Parts IV and V:

The UN Commodity Trade Statistics database (COMTRADE) is used to obtain bilateral value and volume of trade data for all countries (whose ratio provides the unit value, or average price). COMTRADE distinguishes sparkling wine, still wine in bottles of less than 2 litres (split into commercial- and super-premium as detailed at the end of the Technical Notes
section above), and other still wine (assumed to be equal to non-premium still wine). COMTRADE also is the source for the sum of all merchandise trade (http://comtrade.un.org). Taiwan’s trade data are from http://cus93.trade.gov.tw/ENGLISH/FSCE and http://wits.worldbank.org/wits/.

The bilateral trade matrices are based on export data, but they would be very similar if they have been based on import data.

Part VI:


Parts VII, VIII, and IX:


Part X:


South African (Cape) vine area, wine production and wine exports are from the following:
1657-62: Jan van Riebeek’s Diary (South African National Archives);
1798-1860: Van Zyl, D.J. (1975), *Kaapse wyn en brandewyn 1795-1860* [Cape wine and brandy 1795-1860], Cape Town: HAUM; and


In cases where information is not available, or where a number is not applicable for a particular country, na is inserted. Lack of information is mainly a problem for small and poor countries, especially ones that are not wine-focused. Their omission thus has almost no impact on the regional and especially global aggregates reported in those tables.
Authors’ preface

This latest edition of our Statistical Compendium is the tenth version to be prepared since 1998. It has been compiled by the Wine Economics Research Centre of the University of Adelaide. It updates data to 2016 but also revises past data, and it expands on earlier editions in a number of ways. For example, we include many more tables to show wine’s consumption relative to that of other beverages, from A.J. Holmes and K. Anderson, *Annual Database of National Beverage Consumption Volumes and Expenditures, 1950 to 2015*, at [www.adelaide.edu.au/wine-econ/databases/alcohol-consumption](http://www.adelaide.edu.au/wine-econ/databases/alcohol-consumption), July 2017. As well, an extra century of historical data are included as ten-year averages, drawing on a new annual database that is freely available as K. Anderson and V. Pinilla (with the assistance of A.J. Holmes), *Annual Database of Global Wine Markets, 1835 to 2016*, Wine Economics Research Centre, at [www.adelaide.edu.au/wine-econ/databases/global-wine-history](http://www.adelaide.edu.au/wine-econ/databases/global-wine-history), November 2017. This edition is thus a major improvement over previous editions, the pre-2009 ones of which were compiled by the Centre for International Economic Studies (CIES) at the University of Adelaide, and by the Centre of Policy Studies (CoPS) at Monash University, as follows:


We acknowledge and thank the University of Adelaide’s Faculty of the Professions for assisting with funding the project to produce this Compendium. We are also grateful to Alexander Holmes and Thithi Nguyentran for research assistance with various Parts, to Kimie Harada for revisions of Japan’s data (as reported in Anderson, K. and K. Harada (2017), “How Much Wine is Really Produced and Consumed in China, Hong Kong and

Because that Cambridge University Press volume is being published simultaneously with this Compendium, there is no need to include an Introductory chapter here as in preceding issues of the Compendium. Instead, readers are referred to the empirically based analytical narratives in that multi-authored volume, particularly chapter 2 by K. Anderson and V. Pinilla, which provides a lengthy overview of wine globalization during the past 180 years. There are around 200 charts and tables in that volume, drawing on the data in this Compendium.

While the authors have made every effort to ensure the accuracy and currency of information within this compendium, we accept no responsibility for information which may later prove to be misrepresented or inaccurate, or for any reliance placed on the information by readers.