## Agenda

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CHAPTER 1

Introduction – Market Insights
What are the Statista Market Insights?

Statista Market Insights offer essential market indicators, independent forecasts, and detailed insights into the most relevant B2C and B2B markets for over 150 countries. The availability of market data is often inconsistent in terms of form, scope, and segmentation, making it challenging to obtain reliable comparisons between different data sets. Our aim is to simplify your research and planning process by providing all the necessary data with a clearly defined market scope.

We have developed the Statista Market Insights tool by utilizing resources from the Statista platform, conducting in-house market research, and leveraging the expertise of our analysts. Our team evaluates the status quo of the markets, tracks emerging trends, and provides an independent forecast regarding market developments.

Our tool offers data on various figures such as revenue, volume, price, users, penetration rate, spending, market share, which are easily accessible on the platform and downloadable in multiple formats. We update data for each market at least twice a year and prepare comprehensive reports for all markets, providing an extensive overview of the latest trends and the current state of the market.

All in all, Statista Market Insights is a vital tool for market analysts, providing reliable and up-to-date data for making informed decisions. With our user-friendly platform and expert analysis, we aim to help you stay ahead of the competition in your respective markets.
The Statista Market Insights cover over 150 countries & territories and over 40 geographical and political regions

Country and territory coverage (1/4)
The Statista Market Insights cover over 150 countries & territories and 28 geographical regions

Country and territory coverage (2/4)

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Source: Statista Market Insights 2023
The Statista Market Insights cover over 150 countries & territories and 28 geographical regions

Country and territory coverage (3/4)

Asia
South Asia
Bangladesh
Bhutan
India
Nepal
Pakistan
Sri Lanka

West Asia
Bahrain
Iran
Iraq
Israel
Jordan
Kuwait
Lebanon
Oman

Qatar
Saudi Arabia
United Arab Emirates

Southeast Asia
Brunei Darussalam
Cambodia
Indonesia
Laos
Myanmar
Philippines
Singapore
Thailand
Timor-Leste
Vietnam

East Asia
China
Hong Kong
Japan
Mongolia
South Korea
Taiwan

Central Asia
Kazakhstan
Kyrgyzstan
Tajikistan
Turkmenistan
Uzbekistan

Central Africa
Angola
Cameroon
Chad
Equatorial Guinea
Gabon
Republic of the Congo

Australia & Oceania
Australia
Fiji

New Zealand
Papua New Guinea

West Africa
Benin
Burkina Faso
Gambia
Ghana
Guinea
Ivory Coast
Niger
Nigeria
Senegal
Sierra Leone
Togo

Southern Africa
Botswana
Lesotho
Mauritius
Namibia

South Africa

East Africa
Burundi
Ethiopia
Kenya
Madagascar
Niger
Nigeria
Rwanda
Seychelles
Tanzania
Uganda
Zambia
Zimbabwe

Source: Statista Market Insights 2023
The countries covered can also be grouped into political regions

Country and territory coverage (4/4)

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Source: Statista Market Insights 2023
The Statista Market Insights provide data on 10 different topics:

- Global Indicators
- Advertising & Media Markets
- Industrial Markets
- Mobility Markets
- Financial Markets
- Digital Markets
- Consumers Markets
- Technology Markets
- Health Markets

Source: Statista Market Insights 2023
This broad range of topic-specific markets includes further markets on deeper data layers.

**Advertising & Media**
Advertising
AR & VR
eSports
Media
Metaverse

**Consumer Markets**
Accessories
Alcoholic Drinks
Apparel
Beauty & Personal Care
Consumer Electronics
DIY & Hardware Store
Eyewear
Food
Footwear
Furniture
Home & Laundry Care

**Global Indicators**
Socio-Economic Indicators
Macroeconomic Indicators
Health Indicators
Digital & Connectivity Indicators
Consumption Indicators
Logistics & Transport Indicators

**Financial Markets**
Capital Raising
Digital Assets
Real Estate
Retail & Commercial Banking
Wealth Management

**Health Markets**
Cannabis
Digital Health
Hospitals

**Industrial Markets**
Agriculture
Energy
Manufacturing
Mining & Quarring

**Mobility Markets**
Bicycles
Electric Vehicles
Motorcycles
Passenger Cars
Shared Mobility
Third-Party Logistics (3PL)
Travel & Tourism

**Medical Technology**

**Technology Markets**
Communication Services
Cybersecurity
Data Center
Devices
Internet of Things
IT Services
Public Cloud
Robotics
Semiconductors
Software
CHAPTER 2

Market sizing – Our process
Our team of international experts identifies and evaluates available data sources. These include statistical offices, industry & trade associations, public institutions, specialized private research companies, financial & company data, furthermore, data of exclusive partners whom we cooperate with.

We ensure that the information used in our models is comparable and expressed in standard units. Using an algorithmic approach, outliers are eliminated, and missing data points are either estimated (if enough information is already available) or further researched.

We build standardized bottom-up or top-down models that leverage data science and machine learning technologies to scale. All our market models take into consideration the specific market dynamics of each country. The forecasting is done based on key market indicators, using a mix of standard approaches, e.g., exponential smoothing.

Extensive plausibility and consistency checks of derived time series are done in order to assure the high level of quality of our market analysis. This quality assurance also includes validations which are done using external sources. Model data is finally aggregated into indicators for the Statista platform.
CHAPTER 3

Market sizing – Market modeling approaches
The eCommerce market as an example for bottom-up models built based on data of national statistic offices and the Statista Consumer Insights

Similarly modeled markets: Digital & Traditional Music, eServices, Online Food Delivery

Sources and benchmark:
Validation through third-party studies, national statistics, the ecommerceDB, expert interviews
Retail revenue data from the Statista Market Insights
Third-party studies, national statistics, primary research, Google Trends search data, key market indicators
Statista Consumer Insights
National statistics
National statistics

x – Stands for a multiplier

Source: Statista Market Insights 2023
Trade organization data is the foundation of multiple consumer markets, such as the Bedroom Furniture market.

Similarly modeled markets: Home & Laundry Care, Eyewear, Footwear, Apparel, Accessories, Tissue & Hygiene Paper, Robotics

**Bedroom Furniture revenue**

**Market sizing** = Mattresses + Beds + Closets, Nightstands, Dressers

**Retail Selling Price** = Margin retails * Margin wholesales * Sales tax/VAT

**Revenue before taxes** = Import - Export + Production

**Sources and benchmark:**

- National statistics, association data, third-party study
- National statistics, trade organization data
- National statistics, trade organization data

Source: Statista Market Insights 2023
The multiple-regression approach is fitting to fragmented markets with numerous local players, such as TV Advertising


Traditional TV Advertising

Multiple regression analysis + benchmarking

Driver compilation
GDP, consumer spending, TV households, and total TV revenue (cable TV, IPTV, satellite TV, and DTT revenues)

Revenue of local players

Sources and benchmark:

Benchmark through third-party studies, analyst expertise, industry research

National statistics, third-party studies, industry research

Example Germany:
ZAW, ARD-Werbung SALES & SERVICES, ZDF Werbefernsehen, VAUNET, financial reports RTL Group, ProSiebenSat.1 Media SE, and more
The Retail & Commercial Banking market as an example for financial & company data-based bottom-up modeling

Similarly modeled markets: Pharmaceuticals, Wealth Management, Public Transportation

**Retail & Commercial Banking Net Interest Income**

- **Traditional Retail Banking Net Interest Income**
- **Traditional Commercial Banking Net Interest Income**
- **Neobanking Net Interest Income**

**Deposits Interest Expenses** (Amount of Deposits per country * deposit interest rate)

**Loans Interest Income** (Amount of Loans per country * lending interest rate)

**Sources and benchmark:**
- Validation through third-party studies, national statistics offices, and benchmarking
- Top 1000 Banks’ income statements & balance sheets, IMF data
- Top 1000 Banks’ income statements & balance sheets, IMF data

Source: Statista Market Insights 2023
The Hospital market as an example for bottom-up modeling using data from industry associations, public institutions, and statistical offices as its bedrock

Similarly modeled markets: Pharmacies, Mental Health, Cannabis, Communication Services, Real Estate

<table>
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<th>Source collection</th>
<th>Infrastructure indicators</th>
<th>Data processing and validation</th>
<th>Hospital market</th>
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<td>WHO, OECD, national statistical bureaus, industry associations, third-party sources</td>
<td>Driver compilation: Total health expenditure, public health spend, GDP, population, human development index</td>
<td>Regression analysis + benchmarking</td>
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Sources and benchmark:

Benchmarks are set through third-party studies, analyst expertise, industry research

National statistics, third-party studies, industry research

Example United Kingdom: NHS, BMI Healthcare, Spire Healthcare, Nuffield Health
Product and price monitoring as well as survey results are the foundation of multiple mobility markets, such as Buses

Similarly modeled markets: Flights, Trains, Ride-Hailing, Car-sharing, Bike-sharing, Travel & Tourism

Sources and benchmark:
Validation through third-party studies and benchmarking

National statistics, primary research, third-party studies, expert interviews, company profiles, product and price monitoring

Statista Consumer Insights

Notes: For countries in which no surveys were conducted or which have missing values, we have calculated user and ARPU figures using a driver-based projection method.
We build our industrial markets based on on the International Standard Industrial Classification of All Economic Activities (ISIC)

Similarly modeled markets: Agriculture, Energy, Mining & Quarrying

Sources and benchmark:
Validation through third-party studies, national statistics offices, and benchmarking

Deepest level is based on the International Standard Industrial Classification of All Economic Activities (ISIC)
A financial statement-based top-down model is applicable for markets with few global players, such as the Cybersecurity market.

Similarly modeled markets: Public Cloud, Software, Data Center, Luxury

- **Worldwide Revenue Determination through Financial Revenues**
- **Calculation of the core countries revenue based on key market indicators**
- **For rest of the countries, estimate based on key market indicators such as GDP, internet penetration, secure index and analysis model**
- **Forecasts for next five years by using predictive models**
  E.g., ARIMA, Seasonal ARIMA, Holt-winters, Nearest-neighbor, Bayes,..

**Sources and benchmark:**
National statistical offices, and various organizations that specialize in cybercrime response and strategic analysis, such as Anti-Phishing Working Group, Center for Internet Security, Center for Strategic and International Security, and Federal Bureau of Investigation.

**Specific source:** the German Cyber Security Council, NCSC in the UK, and the Canadian Centre for Cyber Security.

Data is obtained from a variety of sources, including analysis of +30 financial statements of key players in their respective industries.

Source: Statista Market Insights 2023
Data of international organizations and investment websites could be the foundation of models with very limited data availability, such as Capital Raising.

Similarly modeled markets: Metaverse, AI

**Capital Raised**

- **Traditional Capital Raised**
- **Digital Capital Raised**

**Average of Deal Size (Transaction Value)**

**Number of Deals (Campaigns) = Average of Deals x Number of organizations**

**Sources and benchmark:**
- Validation through third-party studies and benchmarking
  - OECD, ITC, FDIC
- Investment websites, IMF

Source: Statista Market Insights 2023
Well established markets
When it comes to markets existing for long periods of time, such as the Passenger Cars market, we have a lot of data on which we can base our forecast. In these cases, we use standard methods, such as exponential smoothing, ARIMA, or the Holt-Winters seasonal smoothing method, on detailed data sets to arrive at our market estimate.

New markets
Digital products and services, such as Digital Assets, are not embraced by all individuals at the same time. The market maturity can be evaluated using the Bass diffusion model, which describes how new products penetrate the market and how long it takes until users adopt the new product. This lifecycle of technology penetration can be represented as a graph:

The Bass model is suitable for making predictions for all products despite possible differences in product characteristics and complexity - the curve can shift in time and its steepness might differ, but its shape is always similar.

Once the status quo has been established, we assess the recent market growth and the macroeconomic environment of the country in question and its region. Then we move on to trend scouting, looking out for business-critical developments in the industries that provide the basis for the future growth of the markets.

The result is an algorithm-backed forecast based on relevant market drivers (internet penetration, consumption spending, infrastructure development, share of urban population, etc.) and the lifecycle of technology adoption in the given market. We validate our data through collaboration with other Statista teams, third-party forecasts, regional comparisons, and the analysis of development cycles in different markets.
Exponential trend smoothing

Forecasting (2/5)

Parameters that determine the projected market development

- \( y^* (\alpha = 0.3, \beta = 0.3) \)
- \( y^* (\alpha = 0.9, \beta = 0.3) \)
- \( y^* (\alpha = 0.9, \beta = 0.9) \)
- \( y^* (\alpha = 0.3, \beta = 0.9) \)
- \( y \) (target)

\( h: \) Forecast horizon – number of years to be forecast

\( \alpha: \) Level reactivity – reactivity of the model towards changes in the level

\( \beta: \) Trend reactivity – reactivity of the model towards changes in the trend

\[ y_{t+h} = h\hat{a}_{1,t} + \hat{a}_{0,t} \]
\[ \hat{a}_{0,t} = \alpha y_t + (1 - \alpha)\hat{y}_t = \alpha y_t + (1 - \alpha)(\hat{a}_{0,t} + \hat{a}_{1,t}) \]
\[ \hat{a}_{1,t} = \beta (\hat{a}_{0,t} - \hat{a}_{0,t-1}) + (1 - \beta)\hat{a}_{1,t-1} \]
Where applicable, we use seasonal forecast algorithms

Forecasting (3/5)

- **Pre-processing / model identification**
  - **Seasonal input**
    - Base functions:
      - $y = a \cdot x + b$
      - $y = b \cdot x^2$
      - $y = a \cdot \log x + b$
  - **Identify base function**
    - $y = a \cdot x + b$
  - **Calculate season length**
    - $y = \sum_{n=0}^{N-1} y_n \cdot e^{-\frac{2\pi k n}{N}}$
  - **Estimate type of seasonality**
    - $y_s = S \cdot S_u$
    - $y_s = S + S_u$
  - **Deseasonalize data**

- **Parameter estimation / parallel forecasting**
  - **Fit parameters**
    - $\alpha = ?$
    - $\beta = ?$
    - $\phi = ?$
  - **Calculate seasonless forecast**
    - $y_s = \frac{S_i, n + S_i, n, \ast}{\mu_s}$
    - $S_{i, n +} = S_{i, n} - \mu_s$
    - $S_{i, n, \ast} = S_{i, n} / \mu_s$
  - **Calculate seasonal impact**
  - **Normalize seasonality**

- **Finalization / assembly**

Source: Statista Market Insights 2023
The application of the Bass innovation diffusion model exemplified by Ride-Hailing market growth

Forecasting (4/5)

Innovation diffusion curve 2021

The diffusion of innovations graph shows successive groups of consumers adopting ride-hailing (the graph above shows the penetration rate of selected countries). In general, innovations are not adopted by all individuals at the same time. Instead, they tend to adopt them successively, and it is possible to classify customers into different adopter categories based on how long it takes them to adopt the innovation. Diffusion is the rate and volume at which innovations spread among their users. An adoption rate of 100% is theoretically possible but not realistic. Thus, the high online share in Singapore and China can be considered close to saturation.
The S-curve function and its parameters

Forecasting (5/5)

Parameters that determine the projected market development

\[ y = A + \frac{G}{1 + T \cdot e^{-k \cdot (x - M)/T}} \]

- **A**: Base level – starting point of market development / known threshold
- **G**: Jumping height – remaining potential until maximum market penetration
- **T**: Symmetry – progression of market diffusion
- **k**: Steepness – development speed / intensity of growth
- **M**: Inflection point – point of transition to incipient market saturation

Notes:

(1) Depending on the market for which the forecast is made, a market maturity metric might be user penetration, revenue, saturation, etc.

Source:

Statista Market Insights 2023
All forecasts take projected currency effects into account

Exchange rates in the Market Insights (1/2)

Statista Market Insights data is presented in current, or nominal, prices, which means it is not adjusted for inflation (unless explicitly stated otherwise). Correspondingly, the underlying exchange rates used to convert market data from local currencies into the reported currencies refer to the current value in the relevant year.

The usage of current exchange rates marks a change compared to previous releases of the Market Insights (prior to Q4 2021), where the average exchange rates of the year 2017 were applied to all years. This artificial stabilization provided a clear view of the relevant market's underlying growth rates in local currencies but hid currency risks associated with certain regions. Since the Market Insights are mostly used to compare regions, we decided to no longer use constant exchange rates in order to enable a more realistic assessment of market potential from the perspective of international investors, who must factor in currency risks. In short, current exchange rates make forecasts more comparable across regions.

When looking at markets in a currency other than the local one, the growth rates of new market data will be different and can appear more volatile than before because currency effects are now visible. The underlying growth rate of the market can still be seen when looking at the data in the respective local currency.

Statista's exchange rate data is sourced from international institutions, such as the International Monetary Fund, the World Bank, or the United Nations, and reflects official rates set or reported by a country's, territory's, or region's foreign exchange administration (usually the central bank).

To take account of potential regional currency risks, we also make forecasts of exchange rates. These forecasts are based on the outlook of the relevant region's overall economy as well as on its projected inflation differential relative to other regions. They are updated twice a year and do not take into account sudden and drastic changes that might result from crises such as wars, natural disasters, or similar events.

Source: Statista Market Insights 2023
Current exchange rates enable a more realistic assessment of actual market potential and dynamics

Exchange rates in the Market Insight (2/2)

Notations:
(1) All values represent made-up numbers for exemplary purposes and are not based on any existing country, market, or currency. (2) CAGR: Compound Annual Growth Rate / average growth rate per year

Compared to constant exchange rates (on the left), current exchange rates put the seemingly high nominal growth rates in country C into perspective: Due to the country's unstable currency, international investors must expect diminishing returns from that country. In contrast, country B shows some fluctuations in the value of its currency, but, overall, remains stable.
CHAPTER 5

Russia-Ukraine war

This section provides information on how we assess the impact of the Russia-Ukraine war
The Russia-Ukraine war has been causing severe pressure on both supply chains and consumer budgets, and effects are likely to last long-term

Summary

Situational assessment

• We assume that the conflict will be limited to Ukrainian territory without spilling over into neighboring countries.
• For the unfolding situation, we consider three different scenarios, from bad to worst, to include various factors that may impact the economy. The scenarios are mostly based on assumptions on how long the fighting will last. The “bad” scenario is our default assumption.

Expected immediate impact

• The war will have long-term, severe consequences for both Russia and Ukraine. There is also a high probability of a recession in Europe, and global growth could decrease by 1 to 2 percentage points as compared to prewar forecasts.
• Although Russia and Ukraine make up only around 2% of global trade, they are key suppliers of some mineral and agricultural commodities, so the war has been triggering additional supply chain pressures.
• Energy-intensive industries as well as industries reliant on affected commodities are most exposed to the crisis.
• Consumers have been forced to squeeze their budgets by higher food and fuel prices, which crowds out other spending. Discretionary consumer goods spending are most affected.

Possible long-term consequences

• Due to disrupted crop cycles and increased risk perception, a COVID-like V-shape recovery of food supply is not in the cards, and there is likely to be long-term scarring.
• Russia's economic isolation is likely to outlast the conflict, at least partially, thus sapping economic growth.
• Globally, preexisting deglobalization pressures will likely be exacerbated, with countries seeking a higher degree of self-reliance and companies rebalancing supply chains.

Source: Statista Market Insights 2023
Global growth is set to decelerate, while the inflation is projected to slightly decrease but stay on a high level in 2023

Macroeconomic impact: dented growth

### Global inflation in %

- **2021**: 4.7%
- **2022**: 8.8%
- **2023e**: 6.6%

### Projected real GDP growth rate in %

- **2021**: 6.1%
- **2022**: 4.9%
- **2023e**: 3.6%

**Notes:**
1. "Baseline" reflects the IMF's World Economic Outlook, as of October 2021; baselines of respective forecasters differ. (2) IMF World Economic Outlook. April 2023

**Source:** IMF
Industries reliant on energy and other key commodities are most affected by the Russia-Ukraine war, with collateral damage to domestic consumption

Impacts on B2B markets: rattled supply chains

**Expected impact by industry (ISIC\(^{(1)}\))**

<table>
<thead>
<tr>
<th>Agriculture(^{(2)})</th>
<th>Banking, Finance &amp; Insurance</th>
<th>Accommodation, Restaurants &amp; Nightlife</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining &amp; Quarrying(^{(3)})</td>
<td>Manufacturing</td>
<td>Real Estate</td>
</tr>
<tr>
<td>Energy Supply</td>
<td>Transportation &amp; Storage</td>
<td>Professional, Scientific &amp; Technical Activities</td>
</tr>
<tr>
<td>Wholesale, Retail Trade &amp; Car Dealers</td>
<td>Construction</td>
<td>Administrative &amp; Support Services</td>
</tr>
<tr>
<td>Water Supply, Sewerage &amp; Waste Management</td>
<td>Information &amp; Communication</td>
<td>Other</td>
</tr>
</tbody>
</table>

Notes:
- \(^{(1)}\) ISIC = International Standard Industrial Classification of All Economic Activities
- \(^{(2)}\) Negative impact on supply from Ukraine and increased cost of fertilizers, feed, and fuel; crop producers outside the conflict zone might benefit from higher prices for their produce.
- \(^{(3)}\) Negative impact on companies operating in Russia or Ukraine; companies active in other regions might benefit from higher commodity prices.

Source: Statista Market Insights 2023
Durable consumer goods will likely take a blow because higher food and fuel bills need to be paid

Impacts on B2C markets: higher food and fuel budgets

**Modeled impact on forecast by category (COICOP\(^{(1)}\))**

<table>
<thead>
<tr>
<th>Category</th>
<th>Subcategory</th>
<th>Impact Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>Housing maintenance and repairs</td>
<td>Strong negative impact (-5% or less)</td>
</tr>
<tr>
<td></td>
<td>Goods for routine household maintenance</td>
<td>Medium negative impact (-3% to -4%)</td>
</tr>
<tr>
<td></td>
<td>Transportation services</td>
<td>Slightly negative impact (-1% to -2%)</td>
</tr>
<tr>
<td></td>
<td>Newspapers, books, and stationery</td>
<td>Positive impact (0% to 24%)</td>
</tr>
<tr>
<td>Non-alcoholic beverages</td>
<td>Water, garbage disposal, etc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Services for routine household maintenance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Postal services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Package holidays</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Insurance</td>
<td></td>
</tr>
<tr>
<td>Alcoholic beverages</td>
<td>Electricity, gas, etc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medical products</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Telephone and telefax equipment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Financial services n.e.c.(^{(2)})</td>
<td></td>
</tr>
<tr>
<td>Tobacco</td>
<td>Furniture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medical services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Telephone and telefax services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Catering services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other services n.e.c.(^{(2)})</td>
<td></td>
</tr>
<tr>
<td>Clothing</td>
<td>Household textiles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Purchase of vehicles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Audiovisual, photographic, and information-processing equipment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accommodation services</td>
<td></td>
</tr>
<tr>
<td>Footwear</td>
<td>Household appliances</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vehicle fuel and oil</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Major recreational durables</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Personal care products</td>
<td></td>
</tr>
<tr>
<td>Actual rent</td>
<td>Glassware, tableware, etc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vehicle parts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other recreational items</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Personal care services</td>
<td></td>
</tr>
<tr>
<td>Imputed rent</td>
<td>Tools and equipment for house and garden</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vehicle services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recreational and cultural services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Personal effects n.e.c.(^{(2)})</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
(1) Based on the Classification of Individual Consumption by Purpose (COICOP)
(2) n.e.c. = not elsewhere classified

**Source:** Statista Market Insights 2023
CHAPTER 6

Key Market Indicators
Statista offers ~300 proprietary macroeconomic indicators in 8 major content areas and 150+ geographies with a ~40-year time frame

Scope

- Macroeconomic offering is extended annually
- Heavy investment in automation & tech in 2020
- Data updated bi-annually or more frequently based on novel events (COVID-19; Russia-Ukraine war)
- 98% of indicators with time range 2000-2040

Notes:
- In addition to the published indicators, we internally use more than 2,000 indicators in our market modeling and forecast models
- Exceptions include indicators starting later than 2000, e.g., social media penetration rate
- 152+ countries in all relevant geographical & political regions covered
- Country coverage represents 99.7% of global GDP
- Many commonly uncovered niche countries included, e.g., Bahrain, Nigeria, and Oman

Number of macroeconomic indicators covered per year

<table>
<thead>
<tr>
<th>Year</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicators</td>
<td>~300</td>
<td>+57%</td>
<td>~300</td>
<td>~300</td>
<td>~300</td>
</tr>
</tbody>
</table>

Share of macroeconomic indicators per content area

- Economy: 32%
- Demographics: 5%
- Infrastructure: 4%
- Finance: 11%
- Health: 14%
- TelCo: 1%
- Transportation: 5%
- Education: 1%

Countries and regions covered with macroeconomic indicators

Source: Statista Market Insights 2023

(1) Exceptions include indicators starting later than 2000, e.g., social media penetration rate
Statista’s data creation process always ensures up-to-date data with continual quality assurance, standardized forecasting, and easy access.

### Process

#### Data sources
- Quality and reliability of all sources are assured
  - Official institutions
  - Local statistical offices
  - Industry associations
  - Leading private institutions
  - Global and local sources account for more reliably localized data

#### Data collection
- Automated data collection via source-specific data fetchers
- Reliable updates done twice a year or more frequently based on novel events (e.g., COVID-19, Russia-Ukraine war)
- Pre-processing to ensure a harmonized data structure

#### Data processing
- Data issues identification, e.g.,
  - Gaps
  - Inconsistency
  - Incompleteness
- Heal identified issues, e.g.,
  - Multi-source merging
  - Triangulation
  - Driver-based gap-filling
  - Interpolation
  - Manual research

#### Data forecasting
- Forecasting according to standardized methods and best practices, e.g.,
  - Exponential trend smoothing
  - Auto-Regressive Integrated Moving Average (ARIMA)
  - S-Curve
  - Application of methods dependent on respective indicator
  - Application of shock factors, e.g., COVID-19

#### Data quality
- Routinely assurance of accuracy, consistency, completeness, and validity via:
  - Frequent updates
  - Source selection
  - Tool standardization
  - Best-practice data handling
  - Automated error recognition
  - Customer validation
  - Manual QA checks

#### Data access
- Access via Market Insights Tool: comfortable visualization, macro indicators associated to markets, mass- and custom-download options
- Custom downloads of any data composition and volume upon request
- API access in the works

---

Source: Statista Market Insights 2023
Statista uses top-grade sources including international institutions, statistical offices, industry associations, and leading private institutions

Data sources

**International institutions**
- IMF: exchange rates
- WHO: health expenditures
- OECD: household income
- World Bank: development indicators

**Local statistical offices**
- KOSIS (Korea): household sizes
- BEA (U.S.): consumer spending
- SingStat (Singapore): household income distribution
- NBS (China): retail sales

**Industry associations**
- GSMA: telecommunication metrics
- ITU: telecommunication infrastructure
- ICAO: civil aviation

**Leading private institutions**
- Credit Suisse: Household wealth
- PwC, Deloitte, KPMG: Tax rates
- RSF: World Press Freedom Index
Process four steps

- Individual data fetchers for each source account for specifics & data retrieval is fully automated and reliable
- Updated at least twice a year (more often for novel events)
- 20x times higher data volume collected than published (selected & validated)

Sources

Collection

Pre-processing

Storage in AWS SQL database

- Data is transformed into a uniform structure
- Units are converted to harmonized standards
- Sources are matched to and blended towards KPI output
Data processing of input is a key quality driver; we establish automated routines to detect and heal >90% of input data issues.

**Storage in AWS SQL database**
- High server availability for high data availability
- Quick and scalable processing for easy extension
- Dynamic performance meets all requirements

**Analyze input data & detect issues**
- Data gaps, e.g., years missing or different time frames
- Data inconsistency, e.g., change of data definition/reporting logic
- Data incompleteness, e.g., not enough data points for forecast
- Data context, e.g., documentation, definition, methodology
- Data outliers, e.g., inexplicable individual jumps

**Heal issues with established methods**
- Source blending: data is combined from various inputs into one dataset
- Interpolation: parameter-based curve fitting is used to create more reliable and fitting data
- Driver-based gap-filling: existing data from neighboring or comparable countries is used to approximate gaps in a given country
- Manual research: For high-priority indicators, manual research is conducted to verify, falsify, and/or find alternative/proxy data

Source: Statista Market Insights 2023
Depending on the indicator, we use a range of well-established forecast techniques, which we employ at scale using machine learning.

Data forecasting

**Exponential trend smoothing (ETS)**

- Forecast trend is explained as the weighted average of past observations
- Trend component can be linear or damped
- Seasonal components can be incorporated

**ARIMA**

(1)

- Class of models is based on the concept that future values are a linear combination of past values of the same time series
- Combination of linear regression, moving average, and differencing
- Can incorporate seasonality

**S-Curve**

- Forecast is dependent on assumptions about potential market size and adoption rate over time
- Especially used for technological innovations
- Typical growth phases are driven in stages by specific users, e.g., innovators, early adopters

Notes: Background for exponential trend smoothing and ARIMA forecasting see Hyndman & Athanasopoulos 2018, for s-curve forecasting see Bass 2004

Source: Statista Market Insights 2015
CHAPTER 7

Market shares
Market shares offer a comprehensive view of the competitive landscape

Market shares methodology (1/2)

**Definition of market share estimates**

- Depending on the market, we show market shares of brands, companies, or both.
- Market shares always refer to the value share of the brand or licensing company in the market as defined on the respective insight page.
- Underlying revenue estimates usually include markups of intermediaries and sales taxes.

**Data inputs behind market share estimates**

- Brand usage surveys from Statista Consumer Insights and external data providers.
- Company data from Statista Company Insights, financial filings, earnings calls, data partners and additional desk research.
- Revenue-relevant key performance indicators (e.g., users, downloads, search volume, social media interactions) from own research and external data providers.
- Brand presence and pricing from shop inventory analysis.

Notes: Due to data limitations, market shares are not yet available in all markets and geographies. It is planned to add market shares for all insight verticals and geographies over time.

Source: Statista Market Insights 2023
The variety of approaches used to model market shares can be grouped into two main variants: top-down or bottom-up

**Top-down**

**Company A**
- **Total revenue**
- **Revenue of company A per market**
- **Revenue of brand product A per market & country**
- **Market share of brand product A in market & country**

**Data collection**: company data is collected from financial filings of companies, earnings calls, data partners, and public sources.

**Data mapping**: countries are mapped to reporting geographic segments, and brand products to reporting business segments of licensing companies.

**Data modeling**: market revenues are drilled down using general socio-economic indicators, own and external user surveys about brand usage, as well as proxy kpis such as app downloads, search interest, or product store presence.

**Data aggregation & adjustment**: missing brands and long tail are imputed, and shares are aligned with market size.

**Bottom-up**

**Company A**
- **Revenue of company A per market**
- **Revenue of brand product A per market & country**
- **Revenue proxy for brand product A in market & country**
- **Market share of company A in market & country**

**Data collection**: revenue-relevant kpis and proxy kpis (users, downloads, search interest, store availability etc.) are collected from own and secondary sources.

**Data mapping & adjustment**: brand products are mapped to licensing companies based on desk research; modelled values are adjusted not to over- or undershoot company revenues.

**Data modeling**: market-specific business models are used to estimate revenues at brand product level, missing brands and long tail are imputed, and shares are aligned with market size.

**Data aggregation**: modelled brand revenues are aggregated by licensing company and market.

**Source**: Statista Market Insights 2023
Frequently Asked Questions (FAQs)
What is the difference between a top-down and a bottom-up model? And how do I know which approach has been used for a particular market?

Market sizes are determined using a bottom-up or a top-down approach or a combination of the two. A top-down approach starts with the overall market, which is then broken down into smaller parts (e.g., the Food market is divided into the Meat, Fish & Seafood, and Vegetables markets, among others). A bottom-up approach, meanwhile, starts with individual submarkets (e.g., Home Entertainment and Energy Management, which are part of the Smart Home market), which are then aggregated to arrive at a total market size. More details and information on the individual modeling approaches can be found in the methodology box on the content page of the respective market.

The data in the downloadable files and/or in the report differs from the data shown on the platform. Which is correct?

The data on the platform is always updated first. In the reports and in downloadable files, the new data might be available a little later due to limited IT capacity and time lags.

Can I get the raw data or the original file where you modeled the market?

We do not offer our working files for download.

Whom do I contact in case of feedback or questions regarding the content of the Market Insights?

For all content support requests, please contact our customer support. The request will be immediately forwarded to the responsible market analyst, who can give you relevant feedback.

Has the monetary data been adjusted for inflation?

The forecasts in the Statista Market Insights data are presented in current, or nominal, prices, which means it is not adjusted for inflation (unless explicitly stated otherwise).

What currency rates were used to convert the values in local currency into US$?

The Statista Market Insights data is computed with the current currency rate in the respective year.
FAQs: General questions about the Market Insights

How often do you update the information?
We update the data in our Market Insights at least twice a year. The updates are scattered throughout the year. Thus, one market might be updated in January and July, while others are updated later. If something major happens that influences our estimations or if we find inconsistencies, we will update the information immediately.

The figures now differ significantly from those of the previous year. Why has the data changed?
Approaches, assumptions, input data, and scope are improved from update to update. Therefore, data from previous updates might not necessarily be comparable with current data.

Is data on different years comparable?
Yes, that is the main feature of our Market Insights: comparability across markets, countries, and years. If we change market definitions to adapt to the ever-changing business models in the world, we adapt the whole market estimate and forecasts so that all revenue data corresponds again to the new definition and is comparable across years.

What macroeconomic data was used to model the forecast?
You can find the key market indicators used for forecasting at the bottom of the market page.

How can the differences with competitor data (shown in the Comparable Estimates box) be explained?
Market sizes depend strongly on the scope of the market, e.g., which products and services are included or excluded or whether B2G spending is considered. As a consequence, the numbers of our competitors may vary. In the Comparable Estimates box, we display our data next to competitor data. The info button on the right shows the differences in market scopes.
How is luxury/prestige defined? What brands do you define as luxury ones?
The data in the Luxury market is based on an analysis of a vast amount of financial data of the key companies in that industry. We look at the financial filings of companies that sell personal luxury goods; therefore, we do not have any particular information on price-points but define luxury by brand. An overview of the modeling structure and the companies and brands included can be found in our methodology document.

How is “price per unit” calculated?
The average prices are calculated differently depending on the market. This is because different factors are considered for each market. In the food and beverage markets, for example, at-home and out-of-home consumption play a major role. The price per unit always refers to the specified unit of volume sales. If the volume sales are specified in kilograms, for example, then the price per unit is the price per kilogram. The average price per unit on the platform is calculated, among other things, by dividing the revenue by volume sales. It should be noted, however, that other factors also play a role.

How is the split between at-home and out-of-home markets calculated?
The at-home market, also called the off-trade market, covers all retail sales via super- and hypermarkets, convenience stores, or similar sales channels. The out-of-home market, also called the on-trade market, the away-from-home market, or HORECA, encompasses all sales to hotels, restaurants, catering businesses, cafés, bars, and similar hospitality service establishments. Both the at-home and the out-of-home market are valued at retail selling prices, including all sales and consumption taxes.

Which part of the data has been forecasted, i.e., in which year does the forecast begin?
Typically, the forecast starts in the current year because input data is either only partially available for the current year or only available for the previous year (unless it has been forecasted itself). As the underlying sources differ from market to market, the starting point of the relevant forecast may also be somewhat different.
What sources are used for the App market, and how are different kinds of apps assigned to their respective market?

The App market comprises the sale of software applications that can be downloaded, installed, and run on mobile devices. More specifically, it refers to apps that can be downloaded from Apple, Inc.’s App Store and the Google Play store (or, in the case of China, from stores such as Huawei AppGallery and Tencent Appstore). We track 20 non-game categories and 15 game categories that are found in both Apple Inc.’s App Store and the Google Play store. We also consider revenue from in-app purchases (IAP) that comes from the purchase of features, upgrades, and subscriptions within an app, paid app revenue from the one-time purchase of an app, and advertising revenue obtained from showing ads within an app. We use several data sources and data partners for our app information, supplementing their data (which usually does not cover all apps in a country) using an algorithmic process that accounts for any apps that they may have missed because of the fast-changing nature of this industry.

Why do the total user numbers in the Digital Media – Video-on-Demand market not match the aggregated market user numbers?

The total number of users in a market such as the Video-on-Demand market is not merely the sum of all the markets that are included in our definition, i.e., the Video Streaming (SVoD), Pay-per-View (TVoD), Video Downloads (EST), and Advertising Video-on-Demand (AVoD) markets. Since consumers can be users of all these markets, they are counted only once. We calculate the total Video-on-Demand users using an aggregation share for each of these markets.
FAQs: Digital Markets

Why is the eCommerce market bigger than the corresponding market in the Market Insights’ Consumer topic?
The online revenues of the markets that are part of the Consumer topic in our Market Insights do not entirely match those of the corresponding eCommerce market due to different scopes. In the eCommerce markets, we cover a broader range of products than in the markets of our Consumer topic, and this results in a higher market size of the former (total retail). These products can be found in the “Other” category in each eCommerce market.

What does the online/offline split in the eCommerce market represent?
The online/offline split in the Sales Channels box shows the share of online retail versus offline retail. The total of 100% corresponds to the market size of the relevant market in the Market Insights, which covers both online and offline sales. The online share, meanwhile, represents the corresponding eCommerce market. The remaining share refers solely to offline sales.

How are Digital Health users defined?
The user metrics show the number of customers (in the selected country or region) who have made at least one online purchase (in the selected market) within the last 12 months. Additionally, the users in the markets eHealth and Digital Fitness & Well-Being Apps are split into paying and non-paying users.
FAQs: Financial Markets
Frequently asked questions (6/12)

Is the interbank market included in the data of the Retail & Commercial Banking market?
The Retail & Commercial Banking market in the Market Insights provides data about the topics of traditional banking and neobanking, including the B2C & B2B business. The interbank market and government banking are out of scope.

What financial services are included in the revenue numbers in the Financial Advisory market?
The financial services taken into account are full-service products offered by financial institutions that relate to insurance, investing, lending, and trading.

How is the difference between company and advisory revenue in the Financial Advisory market?
Company revenue is the revenue the company generates through its commission income, which is a percentage fee that's charged for their financial services offering. Whereas advisor revenue is the revenue generated through a company's commission expense, this expense is what the company pays out to their advisors in terms of an advisory fee for providing their consulting services.

What does the value of real estate mean?
The value of real estate refers to the accumulated worth of all real estate in a region, country, or territory. This would be the estimated price of all real estate if they were all for sale.

What does the net interest income in the Retail & Commercial Banking market entail?
Net interest income is a key financial metric used by banks to measure the profitability of their lending activities. In the Market insights Retail & Commercial Banking market the net interest income represents the difference between the interest earned by banks on its loans, and the interest paid to depositors on their deposits for each country or region.
FAQs: Global Indicators

What data was used to model the forecast?

The Global Indicators market is based entirely on the Key Market Indicators. 128 selected data points from the Key Market Indicators, covering 152 countries, are used to construct the Global Indicators. Further details on data sourcing, modeling, and processing can be found in Chapter 6 (‘Key Market Indicators’) of this document.

How often is the data updated?

Global Indicators are updated twice a year: in June and December, or whenever major changes occur.

What is the difference between real GDP and GDP in current US dollars?

Real GDP uses a constant price level, i.e., it adjusts GDP for inflation. It shows the "real" volume of the economy. GDP in current US dollars converts local currencies into US dollars to ensure comparability but does not take inflation into account.

Are values in the Global Indicators Markets based on current or constant values?

Global Indicators’ market values are based on current values.

How are the various indicators in the product sourced and verified for accuracy?

Global Indicators are sourced from a wide range of reputable and authoritative data providers, including international organizations, statistical agencies, research institutions, and official government sources. A rigorous quality control process such as outlier handling (based on z-score), change point analysis and other qualitative and quantitative methods are followed to verify the accuracy, reliability, and consistency of the data before it is included in our product. Data sources are regularly updated to ensure that our customers have the most up-to-date and reliable information available.
FAQs: Health Markets

Why are some countries not shown in the Cannabis market?

We show all the countries where these products were legalized. The geographical scope varies depending on the exact cannabis product as not all types of cannabis are legalized in each country. For example, in Germany, the medical and therapeutic use of cannabis is legal, whereas recreational use is not legal.

What kind of products are included in the Other Pharmaceuticals market?

The market Other Pharmaceuticals covers revenues for areas that are not specifically mentioned in the other markets, such as psychotropic or gastroenterology drugs and less expensive but widely used drugs, such as cold and cough remedies or analgesics.

The sales channels refer to online and offline, how are they defined?

The distribution channel Online refers to the purchase of physical goods in online retail. In other words, the purchase is concluded via the internet - on a desktop PC, tablet or smartphone. The distribution channel Offline covers all purchases in stationary stores, via telesale or mailorder (e.g., print catalogs). The sales channels can be found on the top level of each market.

What is the difference between the Pharmaceuticals market and the OTC Pharmaceuticals market?

The Pharmaceuticals market comprises prescription drugs and all OTC drugs covered in the OTC Pharmaceuticals market. However, in the OTC Pharmaceuticals market, revenues are based on end-consumer prices.

Which vaccines are included in the COVID-19 Vaccines market?

This market covers data for the vaccines by Pfizer/BionTech, Moderna, Johnson & Johnson, AstraZeneca.

How are Digital Health users defined?

The user metrics show the number of customers (in the selected country or region) who have made at least one online purchase (in the selected market) within the last 12 months. Additionally, the users in the markets eHealth and Digital Fitness & Well-Being Apps are split into paying and non-paying users.
FAQs: Industrial Markets

Frequently asked questions (9/12)

What does Gross Production Value refer to in Agricultural market terms?
The Gross Production Value in the Agricultural market is calculated by multiplying the physical quantity of gross production by the output prices at the farm gate level. It represents the monetary value of production at this level. Since intermediate uses within the agricultural sector, such as seed and feed, have not been deducted from the production data, this production value is referred to as "gross production."

How specific are the indicators that you use to generate individual industries, e.g., in the case of food types?
Our forecasts are based on a wide range of official statistics and secondary data sources, including national and international governmental institutions, trade associations, and the trade press. Core sources are statistics on agricultural and industrial production and on international trade as well as household budget surveys that track the consumption of representative samples of a population over a certain period of time.

Are values in the Agricultural & Manufacturing Markets based on current or constant values?
Values in the Agricultural & Manufacturing markets are based on current values.

Why are there zero values for some years in the nuclear energy market?
This could indicate that the country either plans to phase out its nuclear sector or has not yet begun using it.
FAQs: Mobility Markets

How is the online/offline share of the Shared Mobility and Travel & Tourism markets calculated?

We use the Statista Consumer Insights as a base for calculating the share of online and offline bookings for both the Shared Mobility and Travel & Tourism markets since the survey contains separate questions about online as well as general (incl. both online and offline) product purchases.

Can the Shared Mobility market revenue be broken down by key market players?

To ensure a comprehensive understanding of our markets, we model independently from company-specific data, instead relying on overall booking data in the respective market (flights, busses, trains, public transportation, car rentals, car-sharing, bike-sharing, E-scooter-sharing, bike-sharing, moped-sharing). Rest assured that our revenue data does include data from key players in the market.

What does the electric vehicles market include?

The electric vehicle market offers data on electric vehicle sales, prices, and revenues for each country. We also provide data on each country’s public charging market revenues, revenue per public charging station and public charging revenue per electric vehicle. Additionally, we provide information on key market players and their revenues, and market shares in covered countries. Our coverage currently includes battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs). As the electric vehicle market evolves, we remain committed to increasing our coverage to include emerging technologies that meet the needs of sustainability and eco-friendly transportation; we are optimistic about the potential for new technologies to emerge and shape the market.

Are the markets broken down by brands/companies?

The Passenger Cars market is broken down by car makes, and we have market shares for some markets. For an idea on user shares, you can refer to the Statista Consumer Insights for all markets of the Statista Market Insights.
FAQs: Mobility Markets

What is the methodology for the electric vehicles market and the electric vehicles (charging) infrastructure?

Since the electric vehicles market is an emerging sector, our forecasts are based on two factors;

1. Current policies announced by countries' governments and unions around the world, we assume that these policies will be met in full and on time.

2. Historical figures while taking the economic situation of each country into consideration because pledges made by countries' governments and unions only partially reflect consumer behavior, in this case, the consumer purchase of electric vehicles.

For the electric vehicles charging stations, we include a variety of factors that finally determine the revenue. Among those are the following factors:

• The annual travel distance of vehicles
• The charging cost
• The share of charging at public charging stations vs. at-home charging

• The efficiency of electric vehicles
• The electric vehicle fleet

Dividing this revenue by the number of charging stations gives us the revenue per unit.

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2. Historical figures while taking the economic situation of each country into consideration because pledges made by countries' governments and unions only partially reflect consumer behavior, in this case, the consumer purchase of electric vehicles. For the electric vehicles charging stations, we include a variety of factors that finally determine the revenue, such as the annual travel distance of the vehicles, the charging costs, and the share of charging in public vs. home.
Why is the Software market revenue more in the United States than that in China although there are higher number of users in China?

The Software market Revenue in China is comparatively lower than that of United States in spite of higher number of users mainly because of the following two reasons:

1. The very high Software piracy rate in China compared to that of the United States. This can be observed in the Key market indicators presented on the market page on the platform.
2. The Software market in China is dominated by domestic players with pricing models different than that of the many international players.

Do the technology markets include B2B, B2C, and B2G figures?

In general, all technology markets include B2B (business-to-business), B2C (business-to-consumer), and B2G (business-to-government) spending. More details and information on the individual modeling approaches and potential exceptions can be found in the methodology box on the content page of the respective market.

How was the estimated cost of cybercrime built?

Regarding the estimated cost of cybercrime, the figures up to 2022 are called “estimated” data and the statistics for 2023-2028 are called “forecasted” data.

We had to make some assumptions as companies do not officially state this information in their financial filings. For this purpose, we reviewed, among others, third-party studies, such as APWG, FBI, and national cyber security organizations (German Cyber Security Council, Canadian Centre for Cyber Security, etc.), that used information from reported cyber-attacks during years. Furthermore, the growth of global GDP and internet penetration is also a part of the increasing trend of cyber attacks.

Then, to do the forecast, we combine economic developments and trend scouting with statistical and mathematical forecasting techniques to create forecasts for up to five years.
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