

Toolkit for Assessing the Unrecorded Alcohol Market



IARD

INTERNATIONAL ALLIANCE FOR
RESPONSIBLE DRINKING

action on alcohol and global health



IARD is a not-for-profit organization dedicated to addressing the global public health issue of harmful drinking. We are also committed to promoting responsible drinking worldwide, and acknowledge that this can only be achieved by a collective effort shared by governments, producers, retailers, consumers, and civil society. As a global public health NGO, we work together with these stakeholders to promote policy dialogue, assess the evidence, and seek local solutions to harmful drinking globally.

We are supported by the world's leading beer, wine, and spirits producers who are our Member Companies, and Signatories to the Beer, Wine and Spirits Producers' Commitments to Reduce Harmful Drinking. One key aspect of IARD's work is our role as Secretariat to these Commitments. IARD was launched in 2015 to build on the two decades of research, policy analysis, and programming work done by the International Center for Alcohol Policies (ICAP), as well as the efforts of the Global Alcohol Producers Group (GAPG), both industry-supported.

Contributors

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- Economics
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Toolkit for Assessing the Unrecorded Alcohol Market

PART 1: THE UNRECORDED ALCOHOL MARKET

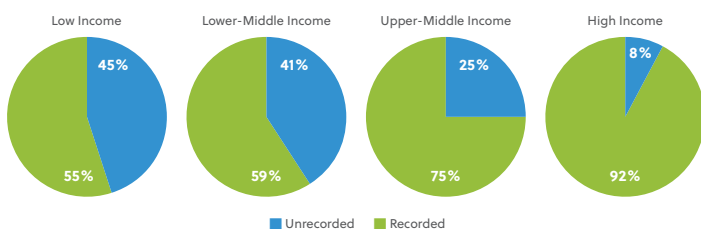
1.1 What is the Issue

A significant portion of all alcohol consumed globally is not reflected in official statistics on production, cross-border trade, and sales. According to the World Health Organization (WHO; 2014), this unrecorded category includes roughly a quarter of all alcohol consumed around the world. However, the accuracy of this estimate is difficult to ascertain because of the limitations of existing approaches to sizing the unrecorded market.

Some unrecorded beverages are traditional or artisanal drinks produced legally for home consumption or limited local trade, and linked with local culture and tradition. However, a large portion of the unrecorded market falls outside of legal channels for manufacture, sale, or both. Furthermore, alcohol that moves between countries through either legal cross-border shopping or smuggling will go unrecorded in the country of consumption. A final type of unrecorded alcohol includes alcohol-containing liquids that are not intended for human consumption. The component parts of the unrecorded market are discussed in greater detail in the following section.

Both the size and composition of the unrecorded market vary by country and region, as well as over time. The issue is complex, with a number of social, cultural, and economic factors driving the production and consumption of unrecorded alcohol. Unrecorded alcohol is typically cheaper than recorded products, and, according to WHO (2014) estimates, the unrecorded share of the total alcohol market is highest in low- and middle-income countries (see Figure 1).

FIGURE 1. Recorded and Unrecorded Adult Per Capita Consumption and Total Consumption, By World Bank Income Group



Source: WHO (2014)

Unrecorded alcohol also assumes a prominent role in culture and tradition in a number of countries around the world. In many communities, ceremonial consumption of informally produced traditional drinks is central to important social and cultural events and facilitates group identity, cohesion, and leisure-time interaction.

Nonetheless, the unrecorded alcohol market is often clandestine, which makes accurate estimates of its size difficult to obtain in many countries. For the same reason, information on production processes, drinking patterns, and outcomes associated with unrecorded alcohol, as well as the quality and safety of unrecorded products, is also limited. This makes it challenging to study the unrecorded market and develop policy measures and interventions to address it.

1.2 What is “Unrecorded” Alcohol?

The alcohol market can be divided into two main segments – recorded and unrecorded. Both segments are well established in many parts of the world and respond to social, cultural, economic, and political change. They also play a role in a range of key social and health issues.

The **recorded alcohol** market segment includes legally produced and traded beverages that are reflected in official statistics and are subject to regulation. Most commercially and legally traded branded beverages are recorded.

The **unrecorded alcohol** market segment, by definition, is not reflected in official statistics and is not subject to the same regulations as the recorded market. Some unrecorded products are licit, but, for various reasons, escape being captured in records. Such products include alcohol purchased through **legal cross-border shopping** for beverages recorded in the country of purchase but not in the country of consumption, and **legal informal alcohol**, which is licit but not recorded.

The illicit part of the unrecorded alcohol market includes a wide array of products, namely: **illegal informal alcohol**, which differs from legal informal alcohol only in the extent to which it adheres to laws regarding the supply and sale of such beverages; **contraband or smuggled alcohol**; **counterfeit alcohol**; **tax leakage**; and **non-conforming products**. Complicating matters is the fact that some illicit products may, in fact, be captured in some official records (for further discussion, see Section 1.4).

Still another type of unrecorded alcohol is **surrogate alcohol**, which includes products that contain ethanol but also other alcohols (isopropanol, methanol) and are not intended for human consumption. These products generally are significantly cheaper than beverage alcohol and, in some parts of the world, are consumed as substitutes.

Because of the number and range of product types subsumed under the umbrella term of “unrecorded alcohol,” it is important that the definitional criteria for the entire unrecorded market segment and its sub-segments are consistent across studies. This is critical for facilitating meaningful cross-country comparisons of market size and composition. To this end, Figure 2 presents a taxonomy of the alcohol market and its segments and sub-segments, as well as corresponding definitions.

1.3 Why Study the Unrecorded Market?

A solid understanding of the unrecorded market and its dynamics is of shared interest to a range of stakeholders for a variety of reasons.

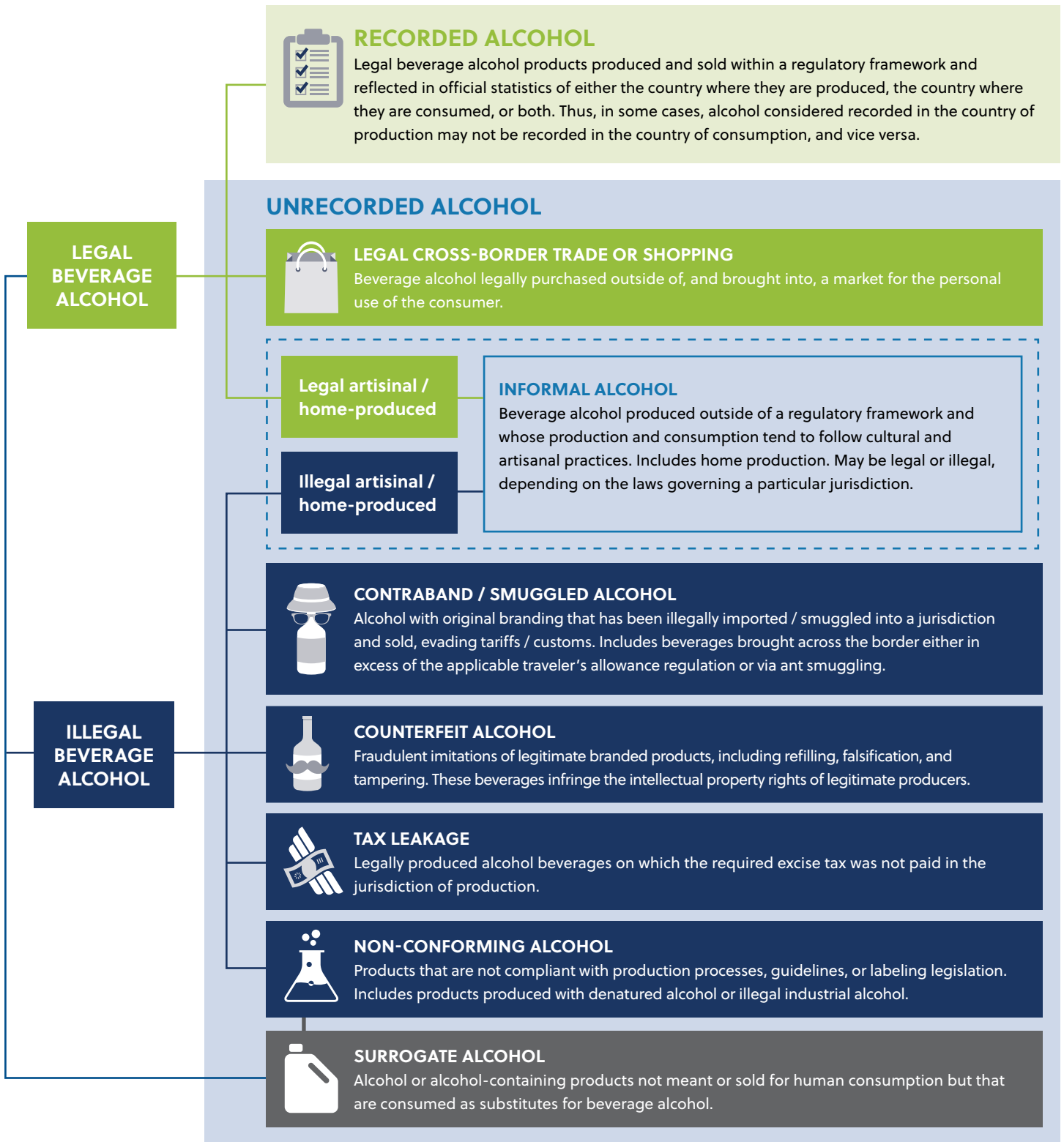
For governments, unrecorded alcohol represents fiscal and social challenges in the form of:

- lost revenue from excise and sales taxes;
- costs associated with enforcement, including crime prevention, detection, regulation, and deterrence;
- threats to public safety and national security arising from the involvement of organized crime in the unrecorded market;
- public welfare costs, such as medical costs associated with consumption of hazardous products; and
- the disruption of local economies - for example, through the distortion of the tax-paid market.

For the alcohol beverage industry, the unrecorded market poses both economic and reputational threats, including:

- lost revenue for legitimate industry actors;
- threats to brand integrity and reputational challenges; and
- erosion of consumer confidence.

FIGURE 2. A Taxonomy of the Unrecorded Alcohol Market



Source: This taxonomy was developed as part of a collaborative effort among the following organizations: Anheuser-Busch InBev (ABI), Associação Brasileira de Bebidas (ABRABE), Brown-Forman, Cámara Nacional de la Industria Tequilera, The Commission of the Wine and Spirit Industry (CIVYL), Diageo, Euromonitor International, Heineken, The International Alliance for Responsible Drinking (IARD), Pernod Ricard, SABMiller, and spiritsEUROPE.

The unrecorded market also has problematic implications for consumers, most notably in the form of:

- threats to health from poisonings and low-quality products;
- loss of confidence in branded products; and
- threats to personal safety related to crime associated with the production and sale of unrecorded alcohol.

While many assessments of the unrecorded market focus on its negative aspects, it should be acknowledged that unrecorded alcohol often has a number of positive attributes and associated outcomes. Often, it is closely linked to culture and tradition and provides economic benefits to individual producers and their communities. Despite occasional problems, such unrecorded products are largely of high quality since many producers rely on a loyal customer base and are therefore motivated to maintain the quality of their products.

Understanding the size, composition, drivers of, and outcomes associated with the unrecorded market is of common interest to governments, consumers, and the private sector. However, because researching this market is challenging, our understanding of the unrecorded market is poor in most parts of the world. Globally, attempts to estimate the size of the unrecorded alcohol market have been carried out without consistency in either definitions or methodologies, yielding data of variable quality and comparability.

1.4 Challenges to Studying the Unrecorded Market

Some of the main challenges to understanding the unrecorded market include the following:

- Unrecorded alcohol typically evades regulatory frameworks and is not explicitly captured by official statistics, which make assessments of the size of this market segment difficult.
- Further complicating matters, traces of “unrecorded products” may be captured in some official statistics. Some products start in the legitimate and recorded supply chain but later exit, as is the case with products intended for duty-free shops that are diverted and sold elsewhere. In addition, some products are produced outside of the recorded supply chain but then enter into it when sold, as is the case, for example, with so-called “third shift”¹ alcohol in Russia.
- Countries with larger unrecorded alcohol markets generally fall into the low- and middle-income categories, and tend to have less developed infrastructures for data collection and analysis. In many cases, the infrastructure for enforcement, which can also generate data, is similarly weak. Additionally, these countries might also have complicated alcohol tax structures, which often make both monitoring and enforcement difficult.
- Even in countries with well-developed data collection capabilities, the types and quality of data collected and available for use by researchers can differ widely, making a comprehensive assessment of the size of the market and comparisons across countries difficult and unreliable.
- Not all of the approaches to measuring the unrecorded market segment

¹ In Russia, the term “third shift” is used to describe alcohol that is illegally produced by otherwise legitimate manufacturers. It is not reported to authorities in order to evade taxes.

are equally well suited to capturing its various sub-segments, the proportional share of which may differ substantially from country to country.

- Finally, the terminology and definitions used by governments, intergovernmental organizations, the private sector, and researchers to describe the unrecorded market and its sub-segments are often inconsistent.

1.5 How to Use this Toolkit

This toolkit has three main aims:

- to serve as a resource for those interested in gaining a better understanding of the issue of unrecorded alcohol;
- to provide a menu of approaches that can be used to investigate the unrecorded alcohol market, depending on the research question, context, and existing data and resources available; and
- to provide a roadmap for achieving, to the greatest extent possible, consistency and uniformity across studies so that results can be compared in a sound manner.

[Part 2](#) is organized around core research questions pertinent to the unrecorded market. Methodological approaches that either have been or could be used to answer each research question are identified, and their strengths and limitations and other relevant considerations discussed. Illustrative Examples, which describe actual studies that have examined the unrecorded alcohol market, are included for a number of approaches.

Many approaches are applicable to multiple research questions. When an approach is first introduced, a “Quick-Look” box is provided that summarizes its strengths, limitations, and requirements. Readers are encouraged to refer back to this box when an approach is discussed again later in relation to other research questions. Quick-Look boxes are not presented for approaches whose applicability is limited to a single research question for which alternative approaches are not provided.

[Part 3](#) provides recommendations for determining the best approach or approaches given available resources, expertise, and other constraints. The approaches included in this toolkit reflect the expertise of organizations with experience in the measurement and investigation of the unrecorded alcohol market in countries around the world. No one methodological approach is recommended over others. Each has strengths and limitations and will be appropriate under some circumstances but not in others. Where feasible, the integration of approaches is encouraged.

Toolkit for Assessing the Unrecorded Alcohol Market

PART 2: RESEARCH QUESTIONS AND METHODS FOR ANSWERING THEM

Research on the unrecorded market within a particular national or regional context often involves not only quantifying this market, but also describing its composition, and identifying its drivers, associated outcomes, and relationship to policy measures and the recorded market.

The first step in planning a research project on the unrecorded market is to determine the research question(s) of interest, such as:

- What is the size and / or composition of the unrecorded market?
- What are the characteristics of the consumers, producers, and / or distributors of unrecorded alcohol?
- What is the economic impact of the unrecorded market on the public and / or private sector?
- What drives the production and consumption of unrecorded alcohol?
- What is the composition and safety of unrecorded products?
- What health outcomes are associated with the consumption of unrecorded alcohol?

Next, it is important to identify the data required and whether or not they (i) already exist or (ii) may realistically be collected. Although data come in many different forms, a few key data dichotomies are described below.

- **Primary data** are data that researchers collect themselves. **Secondary data** are existing data, which can come in the form of government statistics, industry data, and data collected by academic researchers, intergovernmental organizations, and nongovernmental organizations (see [Annex A](#)). While helpful as a starting point, the secondary data available for many countries is insufficient to provide a complete picture of the unrecorded market. Primary data, however, can be expensive and time consuming to collect.
- **Supply-side data** are data that describe one (or more) supply chain activities such as production or distribution. **Demand-side data** are data that capture the behavior or preferences of consumers, and include purchasing, consumption, and other behavioral information collected via surveys. Because each type of data can yield insights into the market that are difficult or impossible for the other to capture, it is recommended that both supply- and demand-side data – which can come in either primary or secondary formats – be collected wherever possible.
- Finally, data on market size can be collected and analyzed in either **volume** or **value** terms. Often both metrics are informative. Volume can be reported as either final product volume or pure alcohol volume. Volume is often converted into value terms, and vice versa, although care should be taken to ensure that such conversions are done in an appropriate way. For example, when calculating value, legal or illegal prices may be applied to volumes, depending on the research objective. If values are reported in, or calculated from, different currencies, the currency exchange rates used should be carefully selected.

Following the identification of the research question(s) and the required data, the feasibility of carrying out field research, desk research, or a combination of the two, should be assessed.

Field research involves the collection and analysis of **primary data** and can take many forms, including:

- population-based or consumer surveys;
- surveys of experts, including government officials, academics, and medical professionals who have specialized knowledge of the topic area; key informants involved in the recorded and unrecorded supply chains; and members of industry trade bodies; and
- observational retailer (store) visits.

Field research can yield more fine-grained information than desk research; however, it typically requires greater time and financial investment than the latter.

Desk research involves the collection and analysis of relevant **secondary data** that already exist, such as:

- regulatory or administrative records;
- official statistics from national governments and intergovernmental organizations;
- industry / market data; and
- data collected and published as part of other studies.

Desk research is often less time and resource intensive than field research, but it may require data that are simply not available for some countries.

Both field and desk research approaches require methodological expertise. It is recommended that both types of approaches be employed when financial resources, time, expertise, and available secondary data allow.

In the remainder of this section, a number of specific desk and field research approaches are discussed. The suitability of each particular approach will vary based on:

- the specific research question or questions of interest;
- the type(s) of data desired, as well as the data already available;
- the time and financial resources available for collecting new data; and
- local conditions and circumstances.

Strengths, limitations, and practical considerations of each approach are also discussed. In some cases, approaches may be combined, allowing the strengths of one approach to compensate for the limitations of another. Ultimately, the decision of which approach or approaches to use should be driven by both theoretical and practical factors.

2.1 What is the Size and / or Composition of the Unrecorded Market?

Methodological approaches to quantifying the unrecorded market and / or determining its composition may rely on direct approaches, indirect approaches, or a combination of the two. **Direct approaches** involve the collection and analysis of data on the actual variable(s) of interest – i.e., the production or consumption of unrecorded alcohol. **Indirect approaches**, on the other hand, use proxy variables to estimate variables of interest that may be difficult to measure directly. For example, disease-specific mortality (e.g., liver cirrhosis mortality) is often used to estimate alcohol-related harm which, in turn, may be used to estimate total consumption in a population (see [Section 2.1.2.2](#)).

Often, but not always, direct approaches to investigating the unrecorded alcohol market require primary data collection through field research, whereas indirect approaches require only desk research using secondary data. Because the required resources and expertise often differ substantially for field and desk research, we have organized approaches to determining the size and / or composition of the unrecorded market by whether they involve field research, desk research, or both.

2.1.1 Field Research Approaches

2.1.1.1 Population-based surveys

One approach to sizing the unrecorded market is through **population-based surveys** (typically household surveys) that inquire into respondents' unrecorded purchase and consumption habits. In addition to estimating total unrecorded consumption, survey instruments can also provide estimates of the prevalence, frequency, and distribution of consumption across different categories of unrecorded alcohol by including specific questions that inquire directly about the different unrecorded beverage types. These questions are likely to yield more reliable data for types of unrecorded alcohol that are easier for consumers to identify – namely, homemade, surrogate, and products acquired through cross-border shopping (as compared to contraband, counterfeit, and tax leakage alcohol). Although factors such as price may signal to a consumer that a product is illicit or unrecorded in nature, it may be hard for the consumer to differentiate, for example, between contraband and tax leakage products. Counterfeit alcohol may be easier to differentiate from other types, depending on how well it imitates the genuine product in packaging and taste and the nature of the counterfeiting. For example, refills that occur on premise are typically harder for consumers to identify as counterfeit.

The strengths and weaknesses of survey approaches to measuring unrecorded consumption have been well summarized by others (e.g., [Bloomfield, 2013](#); [Greenfield & Kerr, 2008](#); [Sobell et al., 1995](#)). Links to existing survey items and instruments used to investigate unrecorded alcohol consumption and / or alcohol consumption more generally are also provided in [Annex B](#).

Although surveys can provide valuable information by going directly to the consumers themselves, a major limitation is that some respondents will not be forthcoming in their responses. This is especially true for behaviors that are stigmatized within a given socio-cultural context, such as the consumption of certain types of unrecorded alcohol (e.g., surrogate alcohol, illicit alcohol) or consumption of alcohol more generally by members of certain groups (e.g., women, underage individuals). One strategy for combatting the underreporting of stigmatized behaviors is to embed questions about general alcohol consumption and unrecorded consumption, in particular, within a larger survey containing less sensitive questions. Researchers may also use **uplift factors** to adjust consumption estimates derived from surveys in order to correct for underreporting. These are often taken from studies that seek to estimate the magnitude of underreporting of alcohol consumption in a given population.

Another challenge for population-based surveys is that heavy drinkers, who often consume more unrecorded alcohol relative to the rest of the population, tend to be underrepresented. Typically, these surveys are conducted at the household level, an approach that fails to capture individuals who are homeless or institutionalized. This is particularly problematic when the special populations excluded from the sample exhibit different drinking patterns – for example, contain higher numbers

of heavy or problematic drinkers and / or consumers of unrecorded alcohol – than the rest of the population. Heavy drinkers may also be less likely to agree to participate in surveys that include questions about alcohol consumption. Thus, survey researchers should always carefully evaluate the potential for undercoverage and put in place strategies aimed at minimizing or eliminating it.

When looking at change over time, the challenges posed by underreporting of consumption or undercoverage of specific consumer populations are somewhat mitigated if it is assumed that the error in estimates obtained from population-based surveys due to underreporting, undercoverage, and other sources of bias remains constant over time. This simplifying assumption has been used by researchers to justify the utility of population-based surveys for identifying trends in unrecorded consumption.

QUICK LOOK



Population-Based Surveys

STRENGTHS

- May yield a more complete picture of consumption by collecting information only consumers themselves can know (e.g., surrogate consumption, motivations for drinking, perceptions of the unrecorded market)
- Provides individual and / or household-level data

LIMITATIONS

- Consumers may be unable to accurately identify certain types of unrecorded products (e.g., contraband, tax leakage)
- Responses may be biased because of intentional underreporting and / or inaccurate recall
- Heavy and problematic drinkers, particularly those who are socially marginalized, may be underrepresented in the sample

REQUIREMENTS

- Primary data collection (i.e., field research)
- Moderate-to-large financial investment
- Expertise in general survey research and sensitive-subject interviewing

2.1.1.2 Expert and key informant surveys

Expert and key informant surveys can also be used to estimate the size of the unrecorded market. In their simplest form, they involve simply asking individuals with extensive knowledge of the unrecorded market to provide an estimate of its total size. Alternatively, interviewees may be asked to provide estimates of, or other information about, the component parts of the unrecorded market, which are then pieced together to derive an estimate for the total market.

Expert surveys may include interviews with:

- government officials and authorities;
- members of the medical community;
- trade associations;
- NGOs; and
- academics.

They may also take the form of trade interviews with individuals located

throughout the supply chain whose sales may have been directly affected by the presence of unrecorded – and, particularly illicit – products. Such individuals include:

- producers;
- importers;
- wholesalers; and
- retailers.

A particularly systematic approach to the use of expert opinion is the Delphi method – a structured, iterative communication technique that asks a panel of experts to respond to questionnaires in a series of two or more rounds, with the goal of converging on a consensus opinion. The WHO currently uses this technique to generate estimates of unrecorded consumption in a number of countries that are included in the [Global Information System on Alcohol and Health \(GISAH\)](#).

Interviews may also be carried out with key informants involved in the production or distribution of unrecorded alcohol. Similar to interviews conducted as part of store visits, eliciting honest responses from key informants may prove difficult, and even dangerous, in some contexts.

Like expert surveys, key informant surveys may be used not only to estimate total unrecorded consumption but also to describe the composition of this market. Different types of experts and key informants will have different areas of knowledge and expertise. For example:

- legitimate producers and importers often have knowledge of the illicit market and can help to explain related fluctuations in the legal market;
- producers and distributors of unrecorded alcohol may be well positioned to estimate the size of the segments in which they are involved;
- customs agents may be useful in quantifying smuggled or contraband products, particularly in countries with weak enforcement or poor-quality data; and
- academics and researchers working in public health may be able to offer useful estimations for various segments of the unrecorded market, such as those for surrogate and artisanal beverages, depending on their specific expertise and experience.

An advantage of expert and key informant surveys over population-based surveys is that they typically require a considerably less intensive investment in time and resources. The main limitation of expert and key informant surveys is that they rely on opinions likely to be of varying accuracy. Where estimates diverge considerably, determining which opinions to weight more heavily may be difficult and introduce the potential for further bias. Even the consensus-seeking Delphi method is not immune to this issue, as high levels of consensus may imply greater accuracy than is the case. Therefore, estimates derived from expert surveys should be cross-checked with estimates from other sources wherever possible.

QUICK LOOK



Expert and Key Informant Surveys

STRENGTHS

- Helpful for collecting information where “hard” numbers are difficult or impossible to come by
- May yield unique and more holistic insights

LIMITATIONS

- Subject to sampling and opinion bias
- Where opinions differ among respondents, it may be difficult to determine which opinions should be weighted more heavily
- Where opinions converge, agreement may engender unwarranted confidence in their accuracy

REQUIREMENTS

- Primary data collection (i.e., field research)
- Modest-to-moderate financial investment
- Expertise in general survey research and sensitive-subject interviewing

2.1.1.3 Store visits

Store visits provide a way to observe how illicit alcoholic beverages are sold in a particular region and can yield insights not only into sales volume but also into:

- beverage type;
- brands;
- packaging;
- price; and
- overall selling conditions.

In some markets, illicit beverages are sold openly, which makes store observations easier. In other countries, illicit beverages are sold in more secluded and dangerous areas. If possible, short key informant interviews (see [Section 2.1.1.2](#)) with store owners can be used to collect information on sales volume, suppliers, and the main consumers of these products. Feasibility assessments of store visits should consider interviewer safety and other security issues specific to each country, as well as whether sellers of illicit products are likely to be aware of their illegal status and, if so, are willing to discuss their activities openly.



Store Visits

STRENGTHS

- May yield unique insights into beverage types, brands, packaging, price, and overall selling conditions of unrecorded products

LIMITATIONS

- Stores selected may not be representative of the entire unrecorded market
- Illicit activities may be intentionally obscured
- Store visits may be dangerous in some areas
- Store visits are insufficient for sizing the entire unrecorded or illicit market and should be combined with other data collection approaches

REQUIREMENTS

- Primary data collection (i.e., field research)
- Modest-to-moderate financial investment, depending on the number of stores sampled
- Expertise in observational research and sensitive-subject interviewing

2.1.2 Desk Research Approaches

Because of the aforementioned challenges and costs of population-based surveys and other forms of field research, a number of approaches have been developed that utilize existing secondary data to estimate the size of the unrecorded market. These approaches include:

- comparing legitimate production or sales to total consumption;
- extrapolating from existing data on alcohol-related harm;
- extrapolating from existing data on the sale of raw materials used in home-produced alcohol; and
- extrapolating from existing data on the search and seizure of illicit alcohol.

2.1.2.1 Estimating the gap between total consumption and recorded supply

In countries where governments provide total consumption estimates based on household surveys, one desk research approach to sizing the unrecorded market – but not describing its composition – is to subtract recorded sales from total consumption. A variant of this approach, as used in the UK to measure the so-called “tax gap,” is described in Illustrative Example A. However, it should be noted that this “tax-gap” approach focuses on the illicit market and explicitly excludes legal cross-border shopping from the final estimate.

The primary advantage of the total consumption less recorded sales approach is that it is relatively straightforward and inexpensive to carry out where the required data exist. However, this approach falls short when the collection and maintenance of sales data are not very systematic or streamlined, or when total consumption has not already been estimated from population-based surveys. Moreover, even when the necessary data inputs exist, this approach may prove inadequate where surrogate and / or home-produced alcohol consumption is more than negligible.

ILLUSTRATIVE EXAMPLE A.



Estimating the Unrecorded Market in the UK to Measure the “Tax Gap”

HM Revenue and Customs (2014)

To estimate the size of the illicit alcohol market in the UK, HMRC first estimates total consumption using household expenditure surveys, adjusting for underreporting using separate uplift factors for on- and off- premise expenditures. Recorded consumption is then calculated from the returns HMRC receives on the volume of alcohol for which duty has been paid. The difference between the two is taken to represent the size of the illicit market, as shown below.

Total consumption = Total consumption of UK purchases + Cross-border shopping

Recorded consumption = UK duty-paid consumption + Cross-border shopping

Illicit market = **Total consumption** – **Recorded consumption**

Finally, because the total consumption estimate is derived from population-based surveys, the previously identified challenges of survey research discussed in [Section 2.1.1](#) remain relevant.

In an approach similar to that described above, the gap between total consumption (also estimated through population-based surveys) and supply (calculated from production, import, and export figures) is used to estimate the size of the unrecorded market. The use of this approach in India is described in Illustrative Example B. Note that India is unusual in that home production is recorded and tracked in official statistics and, therefore, this sub-segment of the market is excluded from the unrecorded estimate arrived at in this application of the method. Many countries have reliable government data sources from which legitimate sources of supply can be extracted. In addition, survey-based consumption estimates are often prepared by governments for various purposes, such as for determining welfare benefits, reducing tax leakages, and planning for growth. In countries where reliable sources of data on legitimate supply (production or sales) and total consumption exist, this methodology is one of the more robust and straightforward methodologies for estimating the unrecorded alcohol market. The main limitation of this approach is that it may not capture the entirety of consumption, particularly consumer-produced (homemade) and surrogate consumption.

ILLUSTRATIVE EXAMPLE B.



Estimating the Unrecorded Market in India via the Gap between Total Consumption and Recorded Supply

Thought Arbitrage Research Institute (TARI)

STEP 1: ESTIMATION OF CONSUMPTION

India's National Sample Survey Organisation (NSSO) of the Ministry of Statistics & Program Implementation (MoSPI) conducts an annual country-wide survey on household consumer expenditure and employment / unemployment. This National Sample Survey is one of the largest surveys of its kind and collects data on such household characteristics as household size; principal and secondary occupation; household type; land ownership / possession / lease; land cultivated / irrigated; primary source of energy; and household ownership. The consumption data extracted from this database is scaled to the whole country based on household size and composition and prescribed uplift factors.

STEP 2: ESTIMATION OF RECORDED SUPPLY

Recorded supply-side data are derived from a variety of data sources, including:

- Domestic factory production data (gross sales value)—India's Central Statistical Organisation (CSO) of the MoSPI collects national data on manufacturing activity for each district (rural and urban) to compile the Annual Survey of Industries (ASI) statistics. Gross Sales Value in ASI data includes product cost, excise duty, sales tax and other distribution expenses.
- Production amounts of micro, small, and medium enterprises (MSMEs)—India places special focus on MSMEs, which are responsible for a large part of the output of the manufacturing sector. A separate database exists in India for such entities, from which data is extracted to enhance the supply-side statistics.
- Imports—The total recorded supply in a country also includes imports through formal trade channels. The value of goods imported into the country is taken from data published by the Directorate General of Commercial Intelligence and Statistics under the Ministry of Commerce and Industry in India.

These figures are added together to estimate total recorded supply.

STEP 3: ESTIMATION OF THE UNRECORDED MARKET

The unrecorded market share is then arrived at using the following formula:

$$\frac{(\text{Total Consumption} - \text{Total Recorded Supply}) \times 100}{\text{Total Consumption}}$$

In India, the difference between total consumption and total recorded supply is primarily attributed to: (i) goods produced within or imported into the country, and sold evading taxes, and (ii) the sale of domestically produced counterfeit (either deceptive or non-deceptive) goods.

QUICK LOOK



Estimating the Gap between Total Consumption and Recorded Supply

STRENGTHS

- May be carried out with existing data

LIMITATIONS

- Total consumption estimates are taken from previously conducted population-based surveys and therefore may be subject to some of the same limitations previously described (e.g., underreporting)
- May prove inadequate where surrogate and / or home-produced alcohol consumption is not negligible
- Cannot be used to investigate the composition of the unrecorded market

REQUIREMENTS

- Secondary data collection (i.e., desk research)
- Modest financial investment
- Accurate and complete sales or production and consumption data
- Expertise in quantitative analysis

2.1.2.2 Extrapolating from alcohol-related harm

Using alcohol-related harm as a proxy measure for total consumption serves as the foundation for another approach to estimating total unrecorded consumption. Various harms – including alcohol-related mortality, violent crime, arrests for alcohol-impaired driving, and suicide – have been used in different countries to estimate unrecorded consumption. This approach compares estimates of the expected alcohol-related harm based on recorded consumption with the actual observed level of alcohol-related harm. The difference between these estimates is used to represent the harms resulting from unrecorded alcohol consumption, which is then used to estimate the quantity of unrecorded consumption (see Illustrative Example C).

ILLUSTRATIVE EXAMPLE C.



Using Alcohol-Related Harm to Estimate the Unrecorded Market in Russia

Nemtsov (2000)

Some research on unrecorded alcohol consumption in Russia has used forensic bureau data on accidental and violent deaths to determine the ratio of blood alcohol concentration (BAC)-positive to BAC-negative cases of these deaths. This ratio was found to be linearly related to total alcohol consumption, which researchers used to estimate total alcohol consumption based on total accidental and violent deaths. Recorded consumption (in the form of sales data) was then subtracted from total consumption to estimate unrecorded consumption.

Using data on alcohol-related harms to estimate unrecorded consumption has several limitations. First, it relies heavily on a number of assumptions, particularly that alcohol-related harms are invariably related to average levels of consumption over time and across alcohol types. This ignores

the role of drinking patterns (e.g., prevalence of heavy episodic drinking) within overall alcohol consumption in observed changes in the incidence of alcohol-related harms.

It also fails to account for changes in policy, treatment, diagnosis, and reporting practices that may influence the proxy harms indicators but not actual consumption. Also problematic is evidence that certain types of unrecorded alcohol may be more dangerous to health than recorded products and other unrecorded products. Thus, the gap observed between expected and actual harm may reflect:

- drinking patterns;
- healthcare policy and practices;
- the size of the unrecorded market and / or the safety of its products; or, most likely,
- some combination of the above factors.

The inability of this approach to differentiate among these factors introduces considerable uncertainty into the resulting estimates. On the other hand, where no evidence exists of substantial changes in drinking patterns, healthcare policy and practices, and the safety of products on the unrecorded market, this approach may prove adequate – if not ideal – or estimating changes in the unrecorded market over time, rather than its absolute size.

QUICK LOOK



Extrapolating from Alcohol-Related Harm

STRENGTHS

- May be carried out with existing data
- Although unreliable for providing absolute estimates (see limitations), may be useful for assessing changes in the unrecorded market over time

LIMITATIONS

- Assumes that the link between alcohol consumption and alcohol-related harms remains constant over time and across product types
- Ignores the role of drinking patterns, as well as changes in policy, treatment, diagnosis, and reporting practices that may influence health outcomes apart from any impact that flows through consumption
- Relies on accurate and complete medical records

REQUIREMENTS

- Secondary data collection (i.e., desk research)
- Modest financial investment
- Accurate and complete data on recorded consumption and alcohol-related harm, ideally in the form of longitudinal data
- Expertise in quantitative analysis

2.1.2.3 Extrapolating from the sale of raw materials

Some studies have utilized data on the sale or production of raw materials – such as sugar, grains, and fruit – likely to be used for the home production of alcoholic beverages, as well as some illegal industrial production and refilling, to estimate the size of the unrecorded market. The primary limitation of this method is that it will not capture the raw ingredients for all unrecorded products, such as smuggled alcohol, surrogate alcohol, and alcohol purchased through legal cross-border shopping. Therefore, this approach is best when combined with other approaches, such as tracing ethanol through the value chain to capture other unrecorded products (see [Section 2.1.3.1](#)), or in countries where homemade alcohol accounts for a very large portion of the unrecorded market. This approach is not recommended as a stand-alone approach for sizing the entire unrecorded market.

QUICK LOOK



Extrapolating from the Sale of Raw Materials

STRENGTHS

- May be carried out with existing data

LIMITATIONS

- Not well suited for sizing the entire market
- Relies on accurate sales or production data

REQUIREMENTS

- Secondary data collection (i.e., desk research)
- Modest financial investment
- Accurate and complete data on raw materials
- Expertise in quantitative analysis

2.1.2.4 Extrapolating from search and seizure records

Extrapolating from search and seizure records is another desk research approach that uses proxy measures to size the unrecorded market. In theory, because search and seizure data should include all categories of illicit alcohol, this approach may yield more complete data about the unrecorded market than the two previously discussed methods that extrapolate from raw materials or alcohol-related harms. However, in practice, this approach requires stringent laws, consistent and strict monitoring and enforcement, and robust records, whereas countries with large unrecorded alcohol markets typically have weak laws and / or enforcement and inconsistent, incomplete, or altogether non-existent records. Furthermore, licit unrecorded products are not captured by this approach. Thus, although search and seizure data may serve as an input to a more holistic approach to measuring the unrecorded market, it is not recommended as a stand-alone approach to sizing the market.



Extrapolating from Search and Seizure Records

STRENGTHS

- Combines top-down and bottom-up approaches
- Use of multiple data sources and estimation approaches allows for cross-checking of estimates
- Mapping the supply chain provides information on both market size and composition and may also yield unique insights on how unrecorded products reach consumers

LIMITATIONS

- Reconciling conflicting data and estimates obtained from different sources may require judgment calls
- Emphasis on supply-side data may make capturing homemade and surrogate consumption difficult
- Data collected through expert surveys and store visits are subject to previously discussed limitations

REQUIREMENTS

- Both primary and secondary data collection (i.e., field and desk research)
- Moderate financial investment
- Variety of secondary data
- Expertise in observational research, sensitive-subject interviewing, and quantitative analysis

2.1.3 Combination Approaches

Because estimating the size and / or composition of the unrecorded market often involves conjecture and assumption-based modeling, it is typically preferable to use a combination of field and desk research approaches to validate both the data inputs and the modeled outputs.

2.1.3.1 Combining expert surveys, store visits, and desk research (value chain analysis)

A combination of desk research (which gathers available information that includes industry and government data on the legal market, international trade, and raw materials production) and field research (in the form of store visits and trade, or expert, interviews), **value chain analysis** is a supply-side method that uses direct / indirect and top-down / bottom-up approaches to size the unrecorded market (see Illustrative Example D).

ILLUSTRATIVE EXAMPLE D.

The Value Chain Approach to Sizing the Unrecorded Market

Euromonitor International (EMI)

STEP 1: DESK RESEARCH

EMI's approach to sizing the unrecorded market begins with culling publicly available materials on:

- the legal market size (volume and value), distribution shares, company / brand shares, market growth rates, global and regional consumption trends (typical sources: EMI Passport, other industry data);
- international trade data (typical sources: customs agencies, national statistics, UN Comtrade, consolidated regional databases such as SIECA);
- information on methanol intoxication, drug and alcohol abuse, searches and seizures, and pertinent laws and tax structure information (typical sources: national statistics agencies, ministries of health, agriculture, and finance, national authorities such as police, prison and customs officials); and
- ethanol and raw materials production figures (typical sources: ministries of agriculture or production, national statistics agencies).

STEP 2: FIELD RESEARCH

Next, a network of in-country analysts gather information through:

- store visits, which are used to collect insights regarding packaging and beverage types, brands, price, overall selling conditions, and, where possible, main consumers, sales volume, and suppliers;
- trade interviews, or extended interviews with individuals throughout the supply chain (see Section 2.1.2); and
- interviews with other experts, such as those from governmental agencies, trade associations, NGOs, the press, and academia.

Typical data collected during the field research phase include:

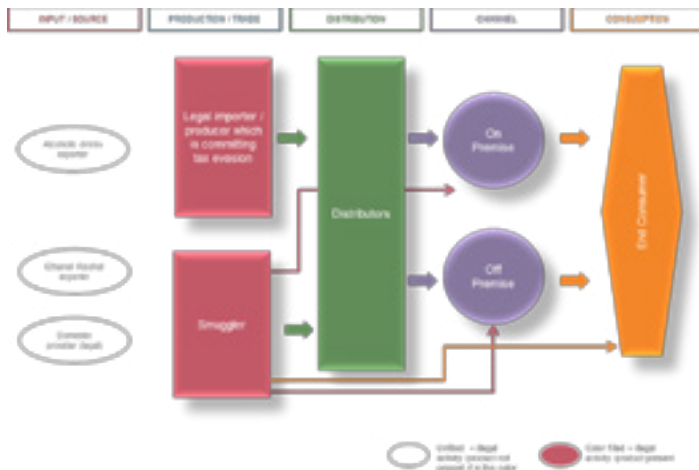
- the presence of illicit alcohol beverage categories in the market;
- the percentage of pure ethanol found in unrecorded products;
- per capita consumption of certain consumer profiles (such as surrogate users);
- estimates on numbers of illicit producers;
- the share of local legal production that remains in stock (for consumption calculations); and
- information relating to the distribution process.

STEP 3: ANALYSIS AND VALIDATION

The analysis phase consists of establishing assumptions derived from Steps 1 and 2. The unrecorded market is then sized both from the top down (using a total unrecorded market perspective) and the bottom up (by piecing together the sub-categories of this market). The estimates arrived at during the analysis are then validated through consultation with a variety of sources.

As with all approaches to measuring the unrecorded market, lack of data and knowledgeable sources can pose a challenge. For this reason, the bottom-up approach of piecing together each category to estimate the total market can be desirable. Top-down inputs from external sources on the unrecorded market's share of the total market tend to be more difficult to gather and may not include all segments of the unrecorded market. Speaking with both legal and illegal operators across the supply chain may allow the researcher to fill in data gaps, although feasibility assessments should consider interviewer safety and other security issues specific to each country when considering interviewing illegal actors. By mapping the entire supply chain, this approach provides detail on how unrecorded products reach consumers (see Figure 3).

FIGURE 3. Mapping the Supply Chain for Unrecorded Alcohol



Source: Euromonitor International

Limitations of value chain analysis include those inherent in expert surveys and store visits. Also, it may be harder for this methodology to capture parts of the unrecorded market for which the demand side (i.e., consumer population) is likely to have more complete information compared to the supply side – such as homemade and surrogate consumption.

👁️ QUICK LOOK

Combining Expert Surveys, Store Visits, and Desk Research (Value Chain Analysis)

STRENGTHS

- Combines top-down and bottom-up approaches
- Use of multiple data sources and estimation approaches allows for cross-checking of estimates
- Mapping the supply chain provides information on both market size and composition and may also yield unique insights on how unrecorded products reach consumers

LIMITATIONS

- Reconciling conflicting data and estimates obtained from different sources may require judgment calls
- Emphasis on supply-side data may make capturing homemade and surrogate consumption difficult
- Data collected through expert surveys and store visits are subject to previously discussed limitations

REQUIREMENTS

- Both primary and secondary data collection (i.e., field and desk research)
- Moderate financial investment
- Variety of secondary data
- Expertise in observational research, sensitive-subject interviewing, and quantitative analysis

2.1.3.2 Combining population-based surveys and desk research

A second combination approach is similar to the total consumption minus recorded supply approach described in [Section 2.1.2.1](#). However, instead of relying on government data from household expenditure surveys to estimate total consumption, a population-based survey is designed expressly to measure consumption of unrecorded alcohol. This approach is recommended over those relying solely on official statistics where:

- reliable estimates of total consumption are not available;
- the composition of the unrecorded market, in addition to an estimate of its size, is desired; or
- one wishes to collect additional demand-side data, such as consumer perceptions of, and motivations for consuming, unrecorded alcohol products.

QUICK LOOK



Combining Population-Based Surveys and Desk Research

STRENGTHS

- Combines supply- and demand-side approaches
- Inclusion of a population-based survey may provide a more complete picture of the composition of the market and consumer motivations, perceptions, and preferences

LIMITATIONS

- Subject to previously discussed limitations of population-based surveys and desk research

REQUIREMENTS

- Both primary and secondary data collection (i.e., field and desk research)
- Moderate-to-large financial investment
- Accurate and complete supply data
- Expertise in general survey research, sensitive-subject interviewing, and quantitative analysis

QUICK LOOK



Combining Population-Based Surveys and Value Chain Analysis

STRENGTHS

- Combines top-down, bottom-up, supply-side, and demand-side approaches, which facilitates cross-checking of estimates
- Allows for in-depth exploration and sizing of the unrecorded market and its sub-segments, as well as demand-side (consumer) insights

LIMITATIONS

- Subject to previously discussed limitations of population-based surveys and value chain analysis, although these may be somewhat mitigated through extensive cross-checking and reconciliation of estimates arrived at from the various approaches

REQUIREMENTS

- Both primary and secondary data collection (i.e., field and desk research)
- Large financial investment
- Variety of secondary data
- Expertise in general survey research, sensitive-subject interviewing, and quantitative analysis

2.1.3.3 Combining population-based surveys and value chain analysis

This approach combines expert interviews, store visits, and desk research (via value chain analysis) with a population-based survey – typically a household survey – tailored to investigate the unrecorded market. Here, data are collected from a combination of supply- and demand-side sources through both field and desk research, and all data are cross-checked. A unique strength of this approach is that it allows for in-depth exploration and sizing of the unrecorded market and its sub-segments from both the supply and demand side.

2.2 What are the Characteristics of Consumers, Producers, and / or Distributors?

Identifying characteristics of consumers, producers, and / or distributors of unrecorded alcohol typically requires the collection of primary data through field research methods such as population-based surveys and / or key informant interviews.

2.2.1 Population-Based Surveys

Population-based surveys are well suited for gathering information about the consumers of unrecorded alcohol on a number of dimensions, including:

- behavioral (e.g., consumption patterns);
- socio-demographic (e.g., age, sex, income, employment / occupation status);
- attitudinal / perceptual (e.g., regarding the safety of unrecorded products and the social acceptability of consuming unrecorded products);
- motivational (e.g., reasons for consuming unrecorded products);
- social / contextual (e.g., consumption habits of friends and acquaintances); and
- knowledge (e.g., about the products that are consumed and the relevant policies).

It is important to recognize that the value of information gleaned from such surveys is diminished when consumers of unrecorded alcohol in the sample are not accurately identified (e.g., due to deceptive responding) or

are underrepresented in the sample because of characteristics that make them more difficult for survey researchers to reach (e.g., homelessness when conducting a household survey). The more closely the sample of unrecorded consumers included in a survey approximates the entire population of unrecorded consumers, the more accurate the conclusions drawn from the data obtained.

2.2.2 Interviews with Key Informants

Interviews with key informants such as producers and distributors of unrecorded alcohol can yield insights into the characteristics of these groups. However, because reaching these individuals may be difficult – and potentially dangerous – appropriate caution should be taken when deciding whether and how to engage in such activities. Potential interviewees may be identified through store visits, by consumers of unrecorded alcohol, or by other producers or distributors. Key informants should not, however, be assumed to be representative of producers and distributors as a whole since it is likely that the characteristics that make them easier to locate, or more willing to be interviewed, also distinguish them in one or more ways from the larger population of those involved in producing and distributing unrecorded alcohol.

Interviews with key informants may also generate information about consumers, particularly those with whom they regularly interact. Again, considerable caution should be exercised when extrapolating information from these interviews to an entire population of unrecorded consumers.

2.3 What is the Economic Impact of the Unrecorded Market?

The existence of the illicit portion of the unrecorded market imposes several costs or losses on both the public and private sectors.

2.3.1 What is the Profit Loss for Legitimate Producers?

Calculating the total revenue losses created by the illicit sector begins with analyzing the private sector. The economic costs of illicit alcohol for legitimate producers and distributors stem largely from the creation of an uneven playing field in the competitive environment. Damage to brand reputation from counterfeit products is also a concern, although this is difficult to quantify.

Every unit of alcohol sold in the unrecorded market implies loss of revenue for the legitimate producer. Steps for calculating the loss incurred by the beverage alcohol industry are described below.

It should be noted that the approach outlined above only quantifies loss at the production (vs. distribution) stage. Although this is a limitation, production loss typically constitutes the larger proportion of total loss. Furthermore, loss at the distribution level (wholesale, retail) typically relates to mark-up, which is often difficult to ascertain. Loss related to retail sales is factored in to some extent in the form of loss of value-added tax (VAT) when calculating loss to government (see [Section 2.3.2](#)).

Step 1: Estimating the size of the licit and illicit market segments

The size of the licit and illicit market segments can be estimated from consumption data (see [Section 2.1](#)) for the reference year. When there is a time lag between available consumption data and the year for which lost revenue is being estimated, a compounded annual growth rate may be applied to the consumption data. In this case, the size of industry arrived at must be independently corroborated by reliable industry sources.

Step 2: Calculating the loss of sales to legitimate industry

Loss of sales to legitimate industry can then be calculated by applying the "grey" or unrecorded market percentage to the size of legitimate industry, as determined in Step 1.

Step 3: Calculating the average profitability of the alcohol sector

The next step is to calculate the average profitability of the alcohol sector to estimate loss of profits for the industry. Depending on data availability, profitability of genuine producers can be calculated within a country or geographical region. This should factor in all costs that a producer incurs to operate a legitimate business. Costs of production, sales, and distribution should be subtracted from aggregate industry-level sales or revenues. The difference between revenues and costs will determine average profits of the industry.

Step 4: Calculating the net profit loss for industry

In the final step, net profits lost by legitimate industry, before taxes, are calculated by multiplying the profitability percentage arrived at in Step 2 by Step 3.

Source: TARI

2.3.2 What is the Revenue Loss for Governments?

Revenue loss for governments includes both direct and indirect tax revenue loss. Direct taxes are paid by firms and individuals on their income. The rate of direct tax is usually determined by the government every year and is often uniform within certain income bands. Indirect taxes are taxes imposed on transactions and include excise tax, VAT, customs duties, entry tax (in India), and similar levies. Indirect taxes on alcohol in most countries are complex, with differential taxation across the types of beverages, alcohol content, geographic boundaries, etc.

The cost of illicit alcohol for governments can be calculated by summing together direct and indirect tax losses, as described below. It should be noted that this approach does not account for potential additional costs to governments – which include enforcement costs, increased expenditures on healthcare and public welfare, and fiscal costs such as borrowing costs incurred to cover budget deficits due to lower tax revenue – and, therefore, may underestimate the true costs of the illicit market borne by governments.

It is more difficult to quantify economic loss attributable to some categories of unrecorded alcohol than to others. This is particularly true of surrogates, where there is no legal equivalent beverage to which legal prices can be applied. Thus, an assumption needs to be made for what beverage the surrogate may be a substitute. For example, in Colombia prior research ([Euromonitor International, 2014](#)) has assumed that surrogates replace the most common and cheapest spirit in the legal market (aguardiente), and applied the average price of aguardiente to surrogate volumes. One limitation of this approach is that it relies on the assumption that consumers of surrogate alcohol will, in the absence of surrogate products, substitute a legal product like aguardiente.

Step 1: Calculating direct tax loss

- Determine the tax rate or rates for the given country of geographic region.
- Estimate the net profits lost to legitimate industry (see [Section 2.3.1](#))
- Apply the relevant rate of tax to the estimated net profit loss to industry such that:

$$\text{Direct tax loss} = \text{Net profits lost} \times \text{Applicable rate of tax}$$

Step 2: Calculating indirect tax loss

- Determine various indirect tax rates for domestic production of alcohol within a country of geographic region
- Determine indirect taxes on imports
- Estimate loss of sales to industry (see [Section 2.3.1](#)), calculated separately for domestic production and imports. This loss must be estimated for different kinds of alcohol corresponding to different tax rates (for instance, wine, beer, and spirits)
- Apply the relevant rate of indirect tax and import duty to the corresponding segment of lost sales such that:

$$\text{Indirect tax loss} = \text{Loss of sales to legitimate industry (by segment)} \times \text{Relevant tax rate}$$

Step 3: Calculating loss of total revenue for governments

$$\text{Total revenue loss} = \text{Direct tax loss} + \text{Indirect tax loss}$$

Source: TARI

2.3.3 What is the Wider Economic Impact beyond Lost Profit and Revenue?

In addition to estimating lost government revenue attributable directly to decreases in sales by legitimate industry, it is also possible to calculate further losses by combining forecasted changes in the quantities of duty-paid alcohol (see [Section 2.3.1](#)) with economic impact studies of the legal alcohol market. These typically demonstrate the employment, gross value added contribution to GDP, and tax receipts that flow from the industry. In this context, losses in these areas may variously include, depending on the country, the growing of agricultural raw materials, as well as the manufacture of alcohol or other alcohol products and their distribution and retailing.

A number of economic impact studies have been conducted on the alcohol industry (see [Annex A.5](#)). Where existing economic impact studies are not available, national statistical agencies in most countries publish data on the production of alcohol by brewers, distillers, and wine producers. These statistics are likely to capture estimates of employment, the value of turnover, and the gross value added contribution to GDP. Where there are large agricultural raw material sectors (e.g., grape growing), this also may be recorded by the statistical agencies.

Data are also likely to be available from national statistical agencies on the size of the on-trade and off-trade. However, this still requires a method to estimate the share of on-trade and off-trade economic activity attributable to the sale of alcohol. This is often estimated by calculating the share of the particular distribution channel's turnover that is due to the product's sale, then multiplying this by the agencies' published data on employment, gross value added, etc. in the most relevant industrial sector within the retail and hospitality industry.

Alcohol trade bodies often also provide a rich source of statistics on the growing and production stage of the industry.

Economic impact studies may also examine the alcohol industry's contribution to the remainder of the economy. This contribution is composed of two types of expenditures that stimulate activity elsewhere:

- the alcohol industry's procurement of inputs of goods and services from domestic suppliers; and
- wages paid to industry staff and to the staff of firms in its direct supply chain, a portion of which is spent by the recipients, in turn generating economic activity at retail and leisure outlets and in domestic supply chains.

Both are possible to calculate using multipliers, which quantify the further economic activity associated with additional wage income and supply chain purchases. Some national statistical agencies publish multipliers; others only publish input-output tables from which multipliers can be derived.¹

The multipliers for both supply chain and wage consumption are then typically combined with other data from national statistical offices to calculate the three metrics economic impact analyses present:

- gross value added;
- employment; and
- tax receipts.

1. [Miller and Blair \(2009\)](#) provide a comprehensive introduction to input-output tables and the construction of multipliers.

It should be noted that this approach does not quantify economic activity that the unrecorded market stimulates in other sectors, such as transport and travel activity emanating from cross-border shopping.

2.4 What Drives Unrecorded Production and Consumption?

A number of factors have been proposed as drivers of the unrecorded alcohol market. These can be grouped into three broad categories: characteristics of individual consumers, socio-cultural and contextual factors, and policy drivers.

2.4.1 What Individual-Level Factors Influence the Unrecorded Market?

2.4.1.1 Population-based surveys

Individual-level drivers can be identified via the same methods used to explore characteristics of unrecorded consumers – namely, population-based surveys.

These surveys can, but need not necessarily, inquire explicitly about motivations for consuming unrecorded alcohol, such as a lower price or the social environment. Potential individual-level drivers may also be gleaned by identifying characteristics that distinguish unrecorded consumers from the rest of the population, such as:

- education and income levels;
- race / ethnicity; and
- rural versus urban dwelling status.

Considerable caution should be exercised with this latter approach, however, as an association between variables does not provide conclusive proof that one causes, or drives, the other.

2.4.2 What Country-Level Demographic, Economic, and Socio-Cultural Factors Influence the Unrecorded Market?

Other potential drivers of the unrecorded market include socio-cultural and other contextual factors, such as social norms concerning the acceptance of unrecorded products. For example, consumption of licit unrecorded alcohol, such as licit home-produced wine, is often seen as more socially acceptable than consumption of illicit unrecorded or surrogate alcohol. Moreover, independent of actual legal statutes, some illicit products may seem more or less “illicit” in the eyes of society. For example, contraband products, given that they involve the original product, may not be viewed in the same way culturally as counterfeit products. And illicit artisanal beverages may have premium connotations because of the unique rustic image and taste that make them aspirational for some consumers.

Country-level demographics are also likely to influence the unrecorded market. For example, unrecorded alcohol consumption tends to be more heavily concentrated in poorer countries. As incomes rise, total alcohol consumption tends to increase while the relative proportion of unrecorded alcohol consumption tends to decrease ([WHO, 2011](#)).

2.4.2.1 Population-based surveys

Surveys can be used to identify collective attitudes about unrecorded products and their consumption.

2.4.2.2 Store visits

Sales practices can serve as a proxy indicator of the cultural acceptability of these types of products. Store visits can provide information on whether unrecorded products are sold openly, which suggests greater cultural acceptance.

2.4.2.3 Official statistics

National statistics on average income, as well as data from national expenditure surveys, may also be helpful for understanding economic drivers.

2.4.2.4 Expert interviews

Experts such as cultural scholars, anthropologists, and other academic researchers may also be able to provide insights into the socio-demographic and cultural drivers of the unrecorded market. For example, patriotic festivities (such as independence days) and local festivals often cause a spike in the production and consumption of artisanal beverages. These occasions may be specific to certain ethnic groups and regions of a country (for example, the Afro-Colombian community on the Pacific Coast of Colombia) where specific beverages are consumed during certain times of the year to mark the local cultural heritage.

2.4.3 How Do Pricing and Availability Policies Influence the Unrecorded Market?

Governments often use taxation, pricing, and availability policies targeting the recorded, or formal, market as tools for raising revenue, curbing overall alcohol consumption, or both. Because unrecorded alcohol falls outside the regulated market directly affected by these policies, it is likely that such policies have a differential impact on recorded and unrecorded alcohol products.

Taxation and pricing may vary by type of beverage, ethanol content, and price per unit. The law of demand inversely links a product’s price to its demand, *ceteris paribus*. Accordingly, increasing the price of alcohol (i.e., through tax increases) is often expected to lower alcohol consumption and potentially reduce its adverse consequences. However, an important question regarding the impact of pricing policies is the extent to which an increase in the price of recorded products simply encourages substitution within the larger alcohol market, shifting some formerly recorded consumption to the unrecorded market.

Policies that influence the availability of licit and / or illicit products – such as laws surrounding the production, purchase, and sale of ethanol, as well as dry laws and import restrictions – may also effect a growth or decline of the unrecorded market.

2.4.3.1 Population-based surveys

Surveys can be useful tools for examining the impact of pricing and / or availability policies on the unrecorded market. A main advantage of survey data is that it allows for examination of outcomes by sub-groups of interest, a level of data often not provided by national statistical agencies. Examples of groupings include drinker type (e.g., abstainers, light, moderate, heavy, binge), socio-economic status, age, and gender. Because surveys can col-

lect information from a large number of people, they may be particularly useful in countries where there is limited data on the alcohol market. And, as previously discussed (see [Section 2.1.1.1](#)), surveys are particularly useful for collecting consumption information on beverage categories not typically covered by official statistics, such as homemade and surrogate beverages.

Survey approaches to examining the impact of policy changes can be broken down into two main types:

- **single-wave surveys** that ask respondents how they either did or would react to a specific policy change; and
- **multiple-wave surveys** that collect data both before and after a policy change in order to observe changes in (reported) behavior over time.

With a single-wave survey, respondents may be asked about their reactions to various hypothetical policy changes, such as:

- the introduction or raising of the minimum legal age to purchase alcohol;
- active enforcement of the minimum legal age for alcohol purchase;
- the management of the sale of alcohol to intoxicated individuals in the on-trade; and
- changes in licensing hours or days on which alcohol is on sale.

Respondents might also be asked how they would react to price changes affecting the beverages they drink, such as changing the quantity of alcohol consumed or brand or product switching. This can yield often hard-to-find information on how price changes in the recorded market may affect the unrecorded market (see Illustrative Example E).

ILLUSTRATIVE EXAMPLE E.

Using Survey Research to Assess Price Responsiveness across the Total Alcohol Market

International Alliance for Responsible Drinking (IARD)

IARD has used single-wave surveys to examine how drinkers might respond to changes in alcohol prices in a number of countries. After IARD collected “baseline” data on respondents’ consumption habits, respondents were asked how their consumption habits might change if the price of their preferred beverage increased by a certain percentage. To be more specific, respondents were asked if they would: (i) do nothing, (ii) decrease consumption of their preferred beverage, (iii) increase consumption of other beverages, or (iv) quit drinking altogether. In each country, three different percentage changes (e.g., 5%, 10%, 20%) were included for each respondent. In some countries, predicted changes in the quantities consumed of different beverages were recorded to allow for the estimation of own- and cross-price elasticities. Links to the survey items used are provided in Annex B.

Finally, single-wave surveys can also ask respondents to reflect on a recent policy change. For example, one study surveyed residents of Scotland regarding their views on whether the changes in licensing laws encouraged increased consumption, and the numbers of drunken people they could recall seeing before and after the licensing changes ([Duffy & Plant, 1986](#)).

Even when respondents are motivated to respond truthfully – which cannot be assumed when sensitive subject matter is involved – the ability of respondents to accurately recall how they changed their behavior or predict how they would react (as in Illustrative Example E), is often questioned. This can pose a problem for the interpretation of data collected through single-wave surveys.

Using a multiple-wave design in which data are collected both before and after the implementation of a policy and changes in relevant behaviors (e.g., overall and beverage-specific consumption) between the waves are identified, eliminates such concerns associated with errors in prediction. These before-after survey designs can be cost prohibitive, however, because of the multiple waves of data collection required. Another limitation of before-after designs is that if other policy changes or major events occurred around the same time as the policy change of interest, it may be difficult to discern what changes – if any – in unrecorded consumption can be attributed to the policy change itself rather than to one or more confounding variables. Limitations of both one-wave and multiple-wave surveys include the potential for inaccuracies introduced either through honest recall errors or intentionally misleading responses, and / or because of undercoverage of special populations.

2.4.3.2 Quantitative modeling

Often, the preferred approach to examining the predicted impact of policies – particularly pricing and taxation policies – is quantitative modeling.

The starting point of any modeling exercise on reactions to policy changes based on price is to collect data on the price of the duty-paid product and the unrecorded segments, as well as data on distributors’ and retailers’ margins. The aim is to collect data on prices at various points of the alcohol supply chain, particularly those at which taxes are applied. This allows for modeling of the impact of a particular tax change on the retail selling price the consumer pays.

In practice, because of limited data availability, most modeling exercises begin with data on the retail price of the duty-paid product, broken down into its various components. These include the pre-tax price of the product, the current rate of excise duty, and the VAT. In most countries, the price is likely to vary for the same product across the off-trade and on-trade distribution channels. In other countries, tax rates vary across these channels, as well. Because of these differences, it is ideal to collect data for off- and on-trade distribution channels for each type of drink.

Retail price data on the duty-paid market can be obtained from a variety of sources, including:

- market research firms;
- alcohol trade bodies;
- store visits; and
- websites of on- and off-trade firms.

The price of cross-border personal imports can be obtained through this same approach, collated for the countries from which the imports originate.

Data on prices in the unrecorded market are more difficult to ascertain. Because sellers in the unrecorded market tend not to advertise prices openly, prices can only be obtained by someone making test purchases or by asking consumers directly through surveys. The appropriateness of the former approach will vary from country to country depending on the laws in place locally.

Once price data is collected, it is necessary to calculate how much of a duty change is passed through to the pre-VAT price. This may vary across distribution channels. For example, in some countries some supermarkets may absorb, or do not fully pass through, tax increases and instead use alcohol as a loss leader for sales of other products. Conversely, in on-trade channels, it is often argued that “over pass-through” occurs, as publicans and hoteliers use the timing of an excise duty change to increase their prices. Pass-through rates may also vary across product categories and over time.

A number of options exist for modeling pass-through rates. Deciding which is most appropriate will depend on the data available, knowledge of the market, and the extent to which the issue has been previously analyzed in that market.

The simplest approach is to assume full pass-through and undertake sensitivity analysis around it to determine if the issue is important.² A second option is to take the findings of an academic study on pass-through rates.³ And a third is to undertake a regression of the price of the drink type on constituent costs (e.g., unit wage costs and input costs) and excise duty in order to estimate the relationship between the variables (see Illustrative Example F).

ILLUSTRATIVE EXAMPLE F.



Using Regression Analysis to Estimate Tax Pass-Through in the Alcohol Market

Oxford Economics (2011)

Oxford Economics has used regression analysis to estimate the rate at which tax changes are passed through to on-trade and off-trade retail prices in the UK. This involves collecting data on the retail price of alcohol, the pre-tax price, taxes, and other factors thought to drive price changes. The latter will depend on the available data, but is likely to include the prices of inputs of raw materials and fuels that are bought by alcohol retailers in each distribution channel, as well as an estimate of the cost of labor in each channel. This may be unit wage costs, which control for productivity, or average earnings, which do not. The generic form for the regression for each channel is:

$$\text{Pre-tax prices}_i = f(\text{Wage costs}, \text{Input costs}, \text{Taxes})$$

Attention focused on the scale of the regression coefficient on taxes. Oxford Economics (2011) found pass-through in the on-trade in the UK was 1.7 times between 2001 and 2010. However, the analysis did suggest that the rate of tax pass-through (including both excise duty and VAT) varied considerably over time.

Whatever the approach taken to modeling the pass-through of changes in excise duty to the retail price, the new retail prices obtained must be combined with those of unrecorded products, including products purchased through cross-border shopping, to obtain an estimate of the new total market price after the duty change. A complicating factor is that little is known about how unrecorded prices change in response to excise changes (or even what initial unrecorded prices are, for that matter), although it is assumed that the cross-border prices of personal imports do not change as

2. Full pass-through is consistent with the market being perfectly competitive. Under or over pass-through is consistent with sellers having some market power.

3. For a range of academic studies on pass-through rates for alcohol see the references in [Ally et al., 2014](#).

a result of the duty changes.

The analysis requires two estimates of the responsiveness of sales volumes to changes in price (i.e., price elasticities) for duty-paid and total consumption. By combining these price elasticities and the projected price changes after a duty change, it is possible to forecast total consumption of alcohol and of the duty-paid segment. This can then be subtracted from the base forecast (the projected consumption absent a tax / price increase) to investigate the impact of the policy change on the amount of duty paid and the combination of cross-border and unrecorded products that are consumed.

Potential sources of price elasticity estimates include:

- ministries responsible for tax collection;
- research papers (by academics, alcohol trade bodies, etc.), including original empirical studies and reviews of the literature (e.g., [Gallet, 2007](#); [Wagenaar et al., 2009](#)); and
- an original regression analysis.

The main challenge encountered when attempting to estimate the impact of a price or tax policy on the unrecorded market is that price elasticity estimates are often very difficult to obtain for the total (recorded and unrecorded) market. In some cases it may be possible to derive elasticity estimates from consumer surveys (see [Section 2.4.3.1](#)).

Typically, to discern the wider economic impact of a price (or availability) policy, the percentage change in duty-paid consumption resulting from the policy is applied to the results of an economic impact study (see [Section 2.3.2](#)). This method has its weaknesses because some of the economic activity in the industry itself, its purchase of inputs, or wage expenditures may not vary with production levels.

While this analysis allows the investigator to estimate the effect of a price or availability-based policy change on the activity the duty-paid alcohol industry supports throughout the economy, it will not show how the policy affects the economic impact of different parts of the unrecorded market. For example, it will not reflect the boost to the transport and travel industries resulting from a policy that increases the demand for personal imports of cross-border alcohol (either through relative price changes or increases in personal allowances).

Harder to quantify are some of the other economic costs associated with duty changes that impact the size of the unrecorded market. Such economic costs that are not readily amenable to measurement may include:

- medical costs from the damage to health from the consumption of unrecorded alcohol;
- decreased investment incentives for legal alcohol manufacturers and retailers; and
- diminished value of manufacturers’ brands and intellectual property due to counterfeit products.

2.5 What is the Composition and Safety of Unrecorded Products?

2.5.1 AMPHORA Guidelines for Chemical Testing of Unrecorded Alcohol

Chemical analysis procedures may be used to:

- determine and describe the composition of unrecorded alcohol products;

- test the authenticity of beverages based on chemical profiles;
- identify individual problematic substances;
- identify categories of unrecorded beverages with problematic chemical profiles; and
- identify particular locations, regions, or countries with unrecorded alcohol products that pose a health risk.

The most comprehensive methodology for testing the chemical composition of unrecorded alcohol products was developed as part of the Alcohol Measures for Public Health Research Alliance (AMPHORA) project, a collaboration among 13 European Union member states funded by the European Commission. This methodology has been fully described by others (e.g., [Lachenmeier et al., 2010](#)) and provides a model protocol for evaluating the ethanol content and safety of unrecorded alcohol products. This approach – which involves (1) the identification of potentially harmful substances likely to be encountered in the region, (2) the sampling of unrecorded alcohol products, and (3) analysis – is summarized below.

The identification of potentially relevant contaminants should focus on substances that are most likely to present a health risk in the country or region of interest. In addition to reviewing substances regularly tested for in recorded alcohol beverages, a literature search for papers with information on the chemical composition of unrecorded alcohol and / or toxicological results from individuals in the geographic area of interest, as well as toxicological evaluation of unrecorded alcohol found in the geographic area of interest, will provide information on other potential substances to test for.

The AMPHORA methodology suggests testing for:

- ethanol content;
- methanol and higher alcohols;
- esters;
- ethyl carbamate;
- diethyl phthalate;
- heavy metals;
- flavorings and food additives (when relevant); and
- water quality.

A minimum volume of 100ml per sample is required, but a sample volume of 300ml or more is ideal to allow for a fuller range of chemical analysis. Chemical analysis procedures and quality assurance principles should follow the International Organization for Standardization 17025 ([ISO, 2005](#)). A full testing list and the maximum limits adopted by the AMPHORA project are provided in [Annex C](#). Specific protocols for analyzing each substance can be found in the publicly available [AMPHORA guidelines](#). Researchers may also want to set their own maximum limits or limits for additional substances not included in the AMPHORA methodology. However, this should only be done by individuals with the required expertise.

There are two main limitations of chemical testing to determine the composition and safety of unrecorded products. First, collecting and testing samples is prohibitively expensive for most study budgets. Second, the samples collected necessarily make up a convenience sample and, as such, cannot be expected to be representative of all unrecorded products in a given market.

2.6 What Health Outcomes are Associated with the Unrecorded Market?

Previous research has suggested the existence of potential links between unrecorded alcohol consumption and certain negative health outcomes. The elevated health concerns associated with some types of unrecorded alcohol stem from the potential for compromised quality and the presence of contaminants as well as higher than acceptable levels of naturally occurring compounds (see [Section 2.5](#)) compared to recorded alcohol. Health outcomes of particular concern include:

- alcohol poisoning;
- methanol poisoning; and
- liver disease; and
- liver cirrhosis.

The type of unrecorded product typically consumed will also inform which health outcomes should be examined. For example, in Sub-Saharan Africa, home-produced beer is brewed in iron pots or drums, resulting in high concentrations of iron in the beer itself. Consumption of these products has been linked with dietary iron overload, which may result in fibrosis or cirrhosis of the liver and potentially hepatocellular carcinoma ([Kew & Asare, 2007](#)).

The risks associated with unrecorded products vary among sub-segments of the unrecorded market, with counterfeit, non-conforming, and surrogate alcohol more likely to be associated with elevated health risks. Although its quality can vary greatly, home-produced alcohol is often artisanal in nature and of high quality. And unrecorded but genuine commercial and branded products, such as contraband and tax leakage alcohol, do not pose an elevated risk to human health relative to recorded products.

2.6.1 Official Statistics

Official health statistics on mortality and / or morbidity from alcohol-attributable health outcomes can be correlated with unrecorded alcohol consumption to examine the association between the two variables. However, the presence of an association between two variables does not provide conclusive evidence that one causes, or drives, the other; thus, alternative explanations may pose a problem for interpretation. For example, both higher unrecorded consumption and poorer health outcomes might be driven by a country's income level.

Moreover, longitudinal data on unrecorded consumption is difficult to come by for the vast majority of countries / regions, as is comparable data for conducting a cross-sectional analysis across countries.

2.6.2 Population-Based Surveys

Items designed to screen for symptoms of methanol poisoning may be included in population-based surveys. This information, combined with data collected through questions addressing consumption of different types of alcohol products, may then be used to investigate the association between possible methanol poisoning and the consumption of certain unrecorded products (e.g., counterfeit or surrogate alcohol) in a geographical area. However, as with the health statistics approach to correlating unrecorded consumption and adverse health outcomes, any associations must be probed for alternative, third-variable explanations and presented with the appropriate caveats regarding possible confounding.

Toolkit for Assessing the Unrecorded Alcohol Market

PART 3: DISCUSSION AND RECOMMENDATIONS

Discussion and Recommendations

Each methodology presented in this toolkit has its inherent strengths and weaknesses, and the appropriateness of each will vary based on the particulars of a given research project. Before selecting an approach, it is important to carefully consider a number of factors.

The first of these is the research aim or aims of the project. Multiple research aims are likely to winnow the set of acceptable methods available. For example, although the *total consumption – recorded supply* approach may be suitable for sizing the unrecorded market as a whole, a population-based survey and / or value chain analysis would be more appropriate when another aim is to determine the composition of the market. In some cases, multiple research aims may necessitate the implementation of multiple approaches.

In addition, it is important to identify available and *reliable* secondary data. In many cases, this alone will dictate whether desk research, field research, or both are necessary.

Another consideration concerns the relevant market, socio-cultural, and economic aspects of the geographical locality to be studied.

A final, but far from trivial, consideration is the resources available in terms of time, budget, and relevant methodological expertise. Field research approaches often require greater time and budgetary commitments, which may rule out their appropriateness for certain projects. That said, where desk research is not a suitable option given the research question(s) and contextual considerations, it should not be viewed as a viable substitute for field research. Regardless of the approach or approaches selected, it is crucial to enlist the necessary expertise to implement the methodology if it is not available in house.

Unfortunately, a single “gold standard” approach to measuring the unrecorded market is not feasible. Wherever possible, combining methodological approaches – particularly when attempting to determine the size and composition of the unrecorded market – is strongly encouraged, as the strengths of one approach may help compensate for the weaknesses of another. Moreover, to allow for greater comparability of findings, researchers should seek to use existing protocols for a given approach or approaches wherever possible. For example, looking to items that have already been implemented in numerous parts of the world is strongly recommended when carrying out a population survey (see [Annex B](#)).

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ANNEXES

Annex A. Secondary Data Sources

A.1 Intergovernmental and Multi-Lateral Organizations

Source	Information available	Public domain
Datur	International trade data	Yes ✓
Food and Agriculture Organization of the UN	Estimates of production and trade	Yes ✓
SIECA	International trade data	Yes ✓
UN Comtrade Database	International trade data	Yes ✓
WHO Global Information System on Alcohol and Health (GISAH)	Consumption estimates, alcohol-related harms, drinking patterns	Yes ✓
World Customs Organization	International trade data	Yes ✓

A.2 Private Databases

Source	Information available	Public domain
Canadean	Consumption estimates, and detailed information on the formal market	Some *
Euromonitor International Passport	Legal market size volumes and values, distribution shares, company / brand shares, market growth rates, global and regional consumption trends	No ○
IFSP	Data on counterfeit spirits	No ○
The IWSR	Consumption estimates, and detailed information on the formal market	Some *

Notes: Additional sources may include trade associations and importers. Some consumption data from IWSR and Canadean can be found in the public domain on [IARD.org](#). More detailed information requires subscription.

A.3 Non-Governmental Organizations, Academic Institutions

Source	Information available	Public Domain
IARD International Alcohol Information Database (IAID)	Searchable alcohol-specific database of research study abstracts	Yes ✓
International Alliance for Responsible Drinking	Consumption data (from IWSR, Canadean)	Yes ✓
PubMed	Database of research study abstracts, links to full article text	Yes ✓

A.4 Governments

Potential sources of government data include:		
Chambers of commerce	Ministries of finance	National statistics agencies
Customs agencies	Ministries of health	National surveys
Ministries of agriculture	Municipalities	Police and other law enforcement

A.5 Economic Impact Studies

Study	Country	Sector(s) and activities
American Beverage Licensees (2014) (available to members only)	United States	Sale of beer, spirits, and wine
Distilled Spirits Council of the United States (DISCUS)	United States	Distilled spirits industry
Ernst & Young (2010)	27 EU member states	Production and sale of spirits
Ernst, Young, & Regioplan (2013)	31 European countries	Production and sale of beer
Oxford Economics (2015)	United Kingdom	Beer and pub industry's impact on individual parliamentary constituencies, local authorities
4-Consulting & Scottish Whisky Association (2015)	United Kingdom	Scotch whiskey production

Annex B. Existing Survey Instruments for Measuring Consumption

IARD questionnaire
SMART questionnaire
WHO STEPS questionnaire

Annex C. AMPHORA Chemical Testing Limits

Substance	Maximum limit chosen by AMPHORA project
Ethanol content	
Methanol	1000 g / hl pure alcohol
Higher alcohols (Sum)	1000 g / hl pure alcohol
Ethyl acetate	1000 g / hl pa
Benzaldehyde	500 g / hl pa
Diethyl phthalate	120 g / hl pa
Coumarin	15 g / hl pa
Acetaldehyde	50 g / h
Ethyl carbamate	0.4 mg / L
Aluminum	2.0 mg / L
Arsenic	0.1 mg / L
Lead	0.2 mg / L
Boron	50.0 mg / L
Cadmium	0.01 mg / L
Copper	2.0 mg / L
Zinc	5.0 mg / L
Tin	1.0 mg / L
Iron	2.0 mg / L
Nickel	0.2 mg / L
Antimony	0.05 mg / L
Mercury	0.01 mg / L
Flouride	1.0 mg / L
Chromium	0.5 mg / L
Manganese	0.5 mg / L
Selenium	0.1 mg / L
Benzene	0.01 mg / L
Nitrite	2 mg / L
Nitrate	500 mg / L
Chloride	2500 mg / L
Sulphate	1000 mg / L

Glossary

Ant smuggling – The act of licitly purchasing alcohol outside of, and bringing it into, a market for commercial purposes, exploiting applicable traveler’s allowance regulation.

Confounding (variable) – A variable that both influences the dependent variable and systematically covaries with one or more independent variables; also sometimes referred to as a confounder or confound. Confounding variables can give rise to spurious relationships, in which a relationship observed between two variables is entirely explained by each variable’s relationship to the confounding variable. That is, confounding variables can create the appearance of a direct, causal relationship between two variables where none exists.

Contraband alcohol – Alcohol with original branding that has been illegally imported / smuggled into a jurisdiction and sold, evading tariffs / customs. Contraband products include beverages brought across the border either in excess of the applicable traveler’s allowance regulation or via ant smuggling.

Convenience sample – A sampling technique in which subjects are selected into a study by virtue of their accessibility to researchers. With convenience sampling, the researcher does not seek to select a sample that is representative of a larger population.

Counterfeit alcohol – Fraudulent imitations of legitimate branded products, including refilling, falsification, and tampering. Counterfeit beverages infringe the intellectual property rights of legitimate producers.

Cross-sectional analysis – The analysis of data at a single point in time.

Delphi method – A structured communication technique that involves soliciting input from a panel of experts through two or more rounds of data collection in order to produce aggregated, consensus opinions.

Demand-side data – Data that capture the behavior or preferences of consumers, including purchasing, consumption, and other behavioral data collected via surveys.

Desk research – Research carried out through the collection and analysis of pre-existing, secondary data.

Direct approach – A research approach involving the collection and analysis of data on the actual variable or variables of interest.

Disease-specific mortality – The number of deaths attributable to a particular disease.

Expenditure surveys – Population-based surveys that collect information on consumer purchases, typically at the household level.

Expert / key informant surveys – Surveys conducted with government officials, academics, and medical professionals with specialized knowledge of the topic area, as well as individuals involved in the recorded and unrecorded supply chains.

Field research – Research in which new, primary data is collected in a natural (vs. laboratory setting), often through surveys.

Home-produced alcohol – See informal alcohol

Indirect approach – A research approach that uses proxy variables to estimate variables of interest that may be difficult to measure directly.

Informal alcohol – Beverage alcohol produced outside of a regulatory framework and whose production and consumption tend to follow cultural and artisanal practices. This category includes home production and may be licit or illicit, depending on the laws governing a particular jurisdiction.

Legal cross-border shopping – Beverage alcohol licitly purchased outside of, and brought into, a market for the personal use of the consumer. These products are recorded in the jurisdiction where they are purchased, but not where they are consumed.

Multiple-wave survey – A survey in which data are collected at multiple points in time in order to assess change over time.

Multiplier (economic) – Quantifies the effect of a change in capital investment of some kind on national income.

Non-conforming alcohol – Products that are not compliant with production processes, guidelines, or labeling legislation. This category includes products produced with denatured alcohol or illegal industrial alcohol.

Off-trade – Establishments in which alcohol is sold but consumed off-premise.

On-trade – Establishments where alcohol is sold and consumed on-premise.

Parallel imports – Authentic, branded products licitly imported into and sold in a market without the consent of the brand owner.

Pass-through rate (of a duty change) – The rate at which a change in duty is passed through to a product’s pre-VAT price.

Price elasticity – A measure of the change in demand for a product effected by a change in price.

Price responsiveness – The change in demand for a product effected by a change in price.

Primary data – Original data collected by researchers.

Population-based surveys – A survey approach that uses sampling methods to produce a respondent sample that is representative of the general population.

Recorded alcohol – Licit beverage alcohol products produced and sold within a regulatory framework and reflected in official statistics of either the country in which they are produced, the country in which they are consumed, or both. Thus, in some cases, alcohol considered recorded in the country of production may not be recorded in the country of consumption, and vice versa.

Regression analysis – A statistical method used to examine the relationship between two or more variables.

Secondary data – Existing data that may come in the form of government statistics, industry data, and data previously collected by academic researchers, intergovernmental organizations, and nongovernmental organizations.

Single-wave survey – A survey in which data are collected at only one point in time.

Smuggled alcohol – See contraband alcohol.

Substitute alcohol – See surrogate alcohol.

Substitution (of beverages) – When consumers replace consumption of one beverage either fully or in part with the consumption of another beverage.

Supply chain – The series of processes involved in the production and distribution of beverage alcohol.

Supply-side data – Data that describe one or more supply chain activities, such as production or distribution.

Surrogate alcohol – Alcohol or alcohol-containing products not meant or sold for human consumption but that are consumed as substitutes for beverage alcohol.

Tax leakage – Legally produced alcohol beverages on which the required excise tax was not paid in the jurisdiction of production.

Undercoverage (in sampling) – A type of selection bias in which certain segments of the population being studied are not adequately represented in the sample.

Underreporting (of consumption) – Underestimation of their alcohol consumption by interview subjects.

Unrecorded alcohol – Alcohol not reflected in the official statistics of the country of production, the country of consumption, or both.

Uplift factors – Factors used to adjust consumption estimates derived from surveys in order to correct for underreporting.

Value chain analysis – A supply-side approach that uses a combination of desk and field research approaches to size the unrecorded market.



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