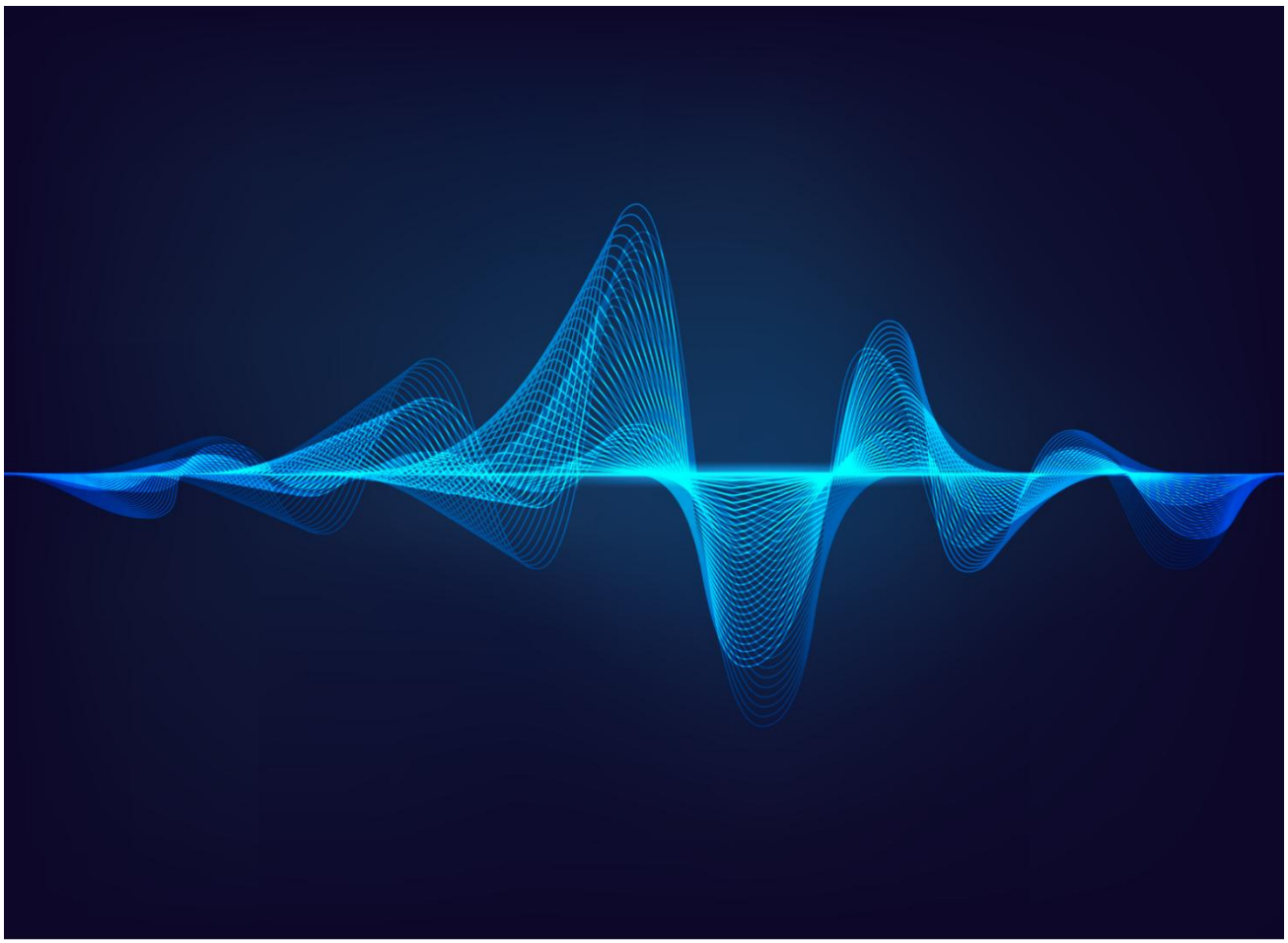

# D1.5 – Report on the Pilot Study on Total Music Values

## *OpenMusE*

***An open, scalable data to-policy pipeline for European music ecosystems***

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# Executive Summary

**OpenMusE T1.6** aimed to implement a pilot study on music valuation in selected target countries, frame the policy relevance of the results, and make recommendations for scaling and transferring the methodology. The task's original focus, inherited from task leader REPREX and participants ARTISJUS and SOZA's prior work, was on use quantities of recorded music.

However, over the course of the OpenMusE project – specifically the Live Music Census (cf. D3.3) – we confirmed the anecdotal insight that live music is as important if not more so, both from the livelihood perspective of music creators and from the broader perspective of societal wellbeing and cultural flourishing. It was decided by the WP leader (UVA) and Coordinator (SINUS) to expand the task to include a live music valuation study as well.

This deliverable thus presents reproducible methods for assessing the total economic value of music across both **live performance** and **recorded consumption**. Responding to the Horizon Europe call objective of developing indicators to "better detect the performance of the European music sector and its contribution to economic and social development," D1.5 demonstrates how fragmented data sources can be integrated into coherent valuation frameworks that link individual-level music consumption to macroeconomic outcomes.

**Section 1 develops a method for estimating the economic contribution of live music**. It extends a mixed-method approach pioneered in the UK Live Music Census, adapting this approach for national and cross-country application. We integrate individual-level survey microdata on concert attendance and expenditure on tickets, transport, hospitality, and merchandise (collected in T3.2; cf. D3.2) with national-level data on total attendance. We then map each category of spending to standard industrial classifications to enable linkage with national accounting data. This provides a basis for estimating the gross value added (GVA) and full-time equivalent (FTE) employment contribution of gig attendance in France, Germany, Hungary, Italy, Poland, Slovakia, and Spain. The analysis reveals consistent expenditure patterns across countries and strong multiplier effects through ancillary sectors including tourism, food services, and retail. The overall GVA and FTE per country are approximately:

- **Germany**: €7.5 billion in GVA, 153,000 FTE jobs
- **Spain**: €2.4 billion GVA, 61,000 FTE jobs
- **France**: €2.6 billion GVA, 46,000 FTE jobs
- **Hungary** (classical music only due to data limitations): €45 million GVA, 1,700 FTE jobs
- **Italy**: €1.7 billion GVA, 35,000 FTE jobs
- **Poland**: €600 million GVA, 38,000 FTE jobs
- **Slovakia**: €160 million GVA, 4,200 FTE jobs

Across the seven-country sample, live music contributes nearly €15 billion in GVA, supporting approximately 340,000 jobs. Scaled to EU level, the direct economic impact is clearly much larger.

**Section 2 presents a market comparator model for valuing recorded music** in contexts where price information is fragmented, proprietary, or otherwise scarce. Rather than conducting empirical analysis of real markets – which would require access to extensive business-confidential data – this section demonstrates the analytical workflow using synthetic datasets for two fictional territories, Livonia and Pomerelia. This enables methodological transparency and reproducibility while respecting the confidentiality obligations of the participating collective management organisations. The market comparator model relates observed or estimated quantities of music use (radio airplay, streaming,

public performance, physical sales) to observed revenues, inferring implicit prices that enable comparison across uses, markets, and territories. This approach is particularly valuable where platform economies dominate and where zero-price or bundled offerings obscure traditional market signals.

Together, the live and recorded music valuation methods provide **complementary perspectives on total music value**. Live music valuation captures audience expenditure and its multiplier effects, while recorded music valuation captures rights-based revenue flows and their distribution across creators, performers, and intermediaries. Both methodologies share core design principles: transparency of assumptions, reproducibility of workflows, alignment with official statistics, and transferability across Member States. Beyond the evaluation exercises, D1.5 also highlights the channels through which improved data collection and valuation methodologies for the live and recorded music ecosystem can be leveraged to improve artists' revenues.

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# Introduction

The deliverable D1.5 presents the results of the Pilot Study on Total Music Values, developed within the OpenMusE framework to quantify the economic contribution and broader social relevance of two of the three key value chains in the European music ecosystem:

- Section 1: Live music
- Section 2: Recorded music

The report builds on the conceptual and methodological groundwork established in D1.1 “Economy of Music in Europe: Methods and Indicators”, D3.1 “Music, Society, and Citizenship: Methods and Indicators“, D3.4 “Comprehensive Indicators for the Assessment of European Music Ecosystems”, and D1.2 “Conceptual and Empirical Framework for the Economic Valuation of Music Ecosystems” and connects these insights with practical, data-driven applications.

**Section 1 describes a reproducible method for assessing the value of national live music ecosystems**, which was conceptualized by SINUS based on the economic methodology of the UK and OpenMusE Live Music Censuses (cf. OpenMusE D3.3), and then developed by UVA, SSSA, and EUBA on the national level in DE, ES, FR, HU, IT, PL, and SK. The method merges representative survey data on live music audience members’ spending at their last gig (cf. OpenMusE D3.2) with statistical and CMO data on how many people attend live music events per year, then utilizes statistical input-output tables to estimate gross-value added (GVA) and impact on full-time employment (FTE).

Section 1.1 and 1.2 outline the existing literature on live music valuation and the overall objectives of D1.5 Section 1. These sections help situating D1.5 within the OpenMusE project’s broader goal of developing an open, scalable data-to-policy pipeline for European music ecosystems. It revisits the conceptual definitions of “total music values”, links them to the Music Moves Europe framework, and explains the methodological innovations tested in the task.

Section 1.3 describes the application of the economic valuation framework. It presents results derived from audience expenditure survey microdata (two versions: computer-assisted web interview [CAWI] conducted in DE, ES, FR, IT, and PL, and computer-assisted personal interview [CAPI] conducted in HU and SK; for details, see OpenMusE D3.2), national attendance statistics, and Eurostat input–output tables. Specifically, the section covers:

- Definition and validation of expenditure categories (tickets, transport, accommodation, food, and merchandise),
- Estimation of national concert attendance and expenditure scaling,
- Calculation of Gross Value Added (GVA) and employment effects (FTE) across key sectors (creative industries, hospitality, retail, and transport),
- Cross-country comparison of methodological consistency and data harmonisation challenges,
- Internal plausibility checks to ensure reliability and comparability of results.

Section 1.4 interprets the empirical findings in the context of European music ecosystems and their policy relevance. The results confirm that live music represents a substantial component of the creative economy, with strong multiplier effects on tourism, hospitality, and retail. The section highlights policy implications related to data harmonisation, labour conditions, and sustainable venue development.

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Section 1.5 presents the macroeconomic implications.

Section 1.6 formulates a set of policy recommendations to strengthen the resilience and sustainability of the live music sector. These include:

- Systematic inclusion of live music in national cultural satellite accounts,
- Support for freelance and volunteer work formalisation within creative industries,
- Adoption of the "Agent of Change" principle in urban planning to protect cultural venues,
- Development of a harmonised EU-level database on music participation, employment, and investment
- Integration of hybrid evaluation models that combine economic, social, and environmental indicators.

Section 1.7 concludes with reflections on how improved data collection and the presented methodology can be leveraged to improve artists' revenues and its limitations, outlining directions for future research and data development. The deliverable proposes the establishment of a European Music Data Observatory to consolidate existing sources, enhance cross-country comparability, and inform long-term cultural policy design.

**Section 2** describes a reproducible method for assessing the value of recorded music, developed by REPREX based on long-term cooperations with ARTISJUS and SOZA and applied to two hypothetical territories – "Livonia" and "Pomerelia" – in order to demonstrate its transferability to any territory in which stakeholders are capable of providing the required data inputs.

Section 2.1, 2.2, and 2.3 describe the context for the recorded music valuation within the project, the data sources required, and the process for generating synthetic data usable to demonstrate the model. In particular, section 2.1 explains the channels through which improved data collection and harmonisation can increase artist revenues related to recorded music.

Section 2.4 describes key decisions made in the model specification: the assessment of total music value vs. rightsholder-specific value; procedures for stock-flow conversion and temporal normalisation of music use; market definition; copyright and neighbouring rights conventions and assumptions; national and domestic revenue assessments; and the problem(s) with streaming data.

Sections 2.5 and 2.6 outline the process for replicating the valuation in countries in which all the data inputs are available, while acknowleding the limitations of the method.

Section 2.7 situates the valuation in the context of a future research and innovation agenda based on transparency, regulatory cooperation, and evidence-based policy design.

The deliverable thus provides a validated empirical foundation for measuring the direct economic impact of live and recorded music in Europe and represents a crucial step toward building an evidence-based framework for data-driven cultural policymaking. Its results are intended for handover to the European Commission Culture Compass implementation team, for potential integration into the planned Reports on the State of Culture in Europe and EU Cultural Data Hub.

# 1 Methods for Assessing the Value of Live Music

## 1.1 Literature Review on the Economic Evaluation of the Live Music Sector in Europe

The live music industry plays a strategic economic and social role in Europe, contributing significantly to GDP, employment, tourism, and urban regeneration. Beyond its direct financial contribution, it supports cultural identity and social cohesion (de Miguel Molina & Boix Doménech, 2021).

The COVID-19 pandemic exposed the economic fragility of live performance ecosystems and highlighted their social importance as spaces of collective experience (Safari & Glow, 2021). Consequently, policymakers increasingly rely on evidence-based evaluation methods to support recovery and ensure the sector's sustainability (Greffe & Pflieger, 2005).

This section summarizes the scientific literature on the economic evaluation of the live music sector in Europe, drawing on contributions from cultural economics and related fields (e.g., Throsby, 2001; Towse, 2010; van der Hoeven et al., 2021). After a description of the changing nature of the live music ecosystem, the review is organized around three building blocks: direct value creation, willingness-to-pay (WTP) studies, and economic impact analyses.

### 1.1.1 The Live Music Ecosystem

The live music sector operates within a complex ecosystem involving multiple interconnected actors and activities (de Miguel Molina & Boix Doménech, 2021). At the core of the system are artists and musicians whose performances constitute the primary creative input. Around them, a network of complementary actors such as managers, concert agents, promoters, venues, production teams, ticketing platforms, and audiences contributes to the organization, delivery, and consumption of live events.

Digitization, platformization, and globalization have blurred traditional boundaries between roles, enabled new forms of intermediation, and strengthened linkages with adjacent sectors such as tourism, hospitality, and urban development (Sacco & Ferilli, 2018). Against this backdrop, the traditional view of the live music sector as a linear value chain from creation to reception has increasingly evolved into a value network (Holt, 2010; Commission & Music Moves Europe, 2025). Furthermore, new tools such as global ticketing platforms, social media, and live-streaming services have reshaped how live music is produced, marketed, and monetized, reinforcing winner-takes-most dynamics and the concentration of revenues among a few artists and promoters.

This ecosystem perspective is essential for economic evaluation, as value creation in live music does not occur at a single point but emerges from interactions among multiple actors. Furthermore, the economic benefits are distributed unevenly across the ecosystem and may extend beyond those directly involved in event organization.

### 1.1.2 Economic Value and Revenue Creation: Direct and Indirect Revenues

Within the live music industry ecosystem, the various actors derive their income from diverse revenue streams. Previous research has explored the relative importance of these revenue sources, shedding light on how each actor's income is structured and the significance of each revenue stream within their total revenue model.

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A relatively straightforward approach to live music valuation is to look at its direct economic value as the revenues generated immediately through live performances and related activities, a trend that has intensified as recorded music revenues have declined (Connolly & Krueger, 2006; Gillon, 2020). Ticket sales represent the primary revenue source for most live events, with prices reflecting artist popularity, venue capacity, location, and pricing strategies such as tiered seating or dynamic pricing. The decline of recorded music revenue has also changed artists' revenue streams, making live performances their central income source. Besides ticket sales, live events also generate other relevant direct revenues streams. These include merchandise sales, premium experiences (e.g. VIP packages, meet-and-greets), food and beverage sales at venues, sponsorships, and broadcasting or streaming rights for live events. Promoters and venues rely on combinations of these sources, while production staff and technical crews are typically remunerated through fixed fees or wages per event. Finally, but not less important, broadcasting and streaming rights are an increasingly important stream of revenues also in hybrid event models (Towse, 2020).

Indirect revenue arises from the broader impact of live performances. For instance, live performances can promote the consumption of complementary goods such as recorded music sales, streaming and physical sales, and merchandising sales, generating more (indirect) revenues (Hogue, 2023). Finally, another relevant stream of indirect revenues are the public performance royalties collected by Collective Management Organizations (CMOs) when songs are performed live. The collection system of public performance royalties collected by CMOs is designed to facilitate the licensing and distribution of royalties for public performances of copyrighted works. This complex system includes steps like registering songs, giving licenses to use the music, keeping track of what's played, collecting fees, and distributing the money to the music creators (MacQueen and Peacock, 2015).

The literature stresses that direct and indirect effects are unevenly distributed and context dependent. Large-scale concerts and festivals tend to generate higher and more diversified revenues, while small venues and grassroots music spaces often operate with narrow margins and heightened financial vulnerability. Also concerning public performance royalties collected by CMOs typically depend on factors such as the type of music, the venue (e.g., large concert halls versus small bars, which usually have different rates due to capacity and revenue potential), and the audience size (MacQueen and Peacock, 2015).

### 1.1.3 Evaluation Approaches in the Literature: Willingness-to-Pay (WTP) Studies

One central strand of the literature focuses on estimating the economic value of live music by assessing individuals' and society's WTP for live music experiences (Andersson & Andersson, 2013; Willis, 2014). This approach treats live concerts as experiential goods whose value is subjective, context-dependent, and not fully observable through market transactions alone.

WTP for live music events has been estimated using a mix of stated-preference, revealed-preference, and hedonic approaches. Stated preference studies, in particular contingent valuation and discrete choice experiments, have been widely used to quantify both use and non-use values, especially for festivals, free events, and grassroots venues. For example, Andersson et al. (2012) and Herrero et al. (2011, 2012) show that audiences and residents are willing to pay beyond ticket prices for music festivals, supporting the case for public funding of cultural events. Similarly, Zarur Guarisa et al. (2024) find significant WTP among both attendees and non-attendees for the preservation of grassroots music venues, indicating the presence of positive externalities and existence values.

Also, revealed preference approaches have been used to infer WTP from observed market behavior, primarily through ticket prices, attendance patterns, and travel costs. Analyses of ticket sales data and

pricing strategies suggest that consumers' implicit WTP varies substantially with artist popularity, venue characteristics, and event attributes, and is strongly shaped by superstar effects and price discrimination practices (Connolly & Krueger, 2006; Rosen & Rosenfield, 1997; Magni, 2023). Travel cost studies further indicate that audiences incur substantial non-ticket expenditures to attend live events, implying a total WTP that exceeds face-value ticket prices, particularly for festivals and destination concerts (Armbrecht, 2014).

Hedonic price approaches provide complementary evidence by decomposing ticket prices into implicit values associated with specific event attributes. Empirical applications show that factors such as artist reputation, career stage, nationality, and venue size significantly affect ticket prices, offering indirect estimates of consumers' marginal WTP for quality and prestige (Decrop & Derbaix, 2014). Although less frequently applied, these methods confirm that a non-negligible share of live music value is capitalized into prices through observable characteristics.

Overall, empirical WTP estimates consistently indicate that the economic value of live music events exceeds what is captured by ticket revenues alone. However, results vary widely across contexts, event types, and methods, and remain sensitive to survey design and data availability. Despite these limitations, WTP studies provide robust evidence of both market and non-market value. They are especially informative for questions related to access, pricing, inclusion, and the justification of public support for live music.

### 1.1.4 Evaluation Approaches in the Literature: Economic Impact Studies

A complementary evaluation to WTP estimation that is the quantification of the economic impact of live music activities, seeking to measure their tangible effects on the economy (e.g. employment, income generation, value added, and fiscal contributions) and therefore the "actual flows of money" in an economy (Thorsby, 2001). For instance, according to Oxford Economics (2020), Europe's broader music industry generated €81.9 billion GVA in 2018. These studies typically rely on expenditure surveys, administrative data, and input–output models, often combined with economic multipliers to trace how initial spending on live music events generates indirect and induced effects across the wider economy, capturing knock-on impacts on output, employment, and income.

Looking more specifically to the financial contributions of live music events, Edwards et al. (2014) analyze the economic impact of the Sydney Entertainment Centre (SEC) using the Inscope Expenditure Method, a revealed preference approach. Based on survey data from 5,300 attendees across 15 events, the study assesses visitor spending in local businesses (restaurants, hotels, retail, transport). Findings show that live music events boost local economies, create jobs, increase tourism, stimulate midweek economic activity, and support investment in live venues for urban growth.

Webster et al. (2018) in The UK Live Music Census 2017 is a comprehensive study that evaluates the economic and cultural impact of live music in the UK. The research collects data from venues, musicians, promoters, and audiences through surveys, interviews, and on-site observations across multiple cities. The study estimates total audience spending, including ticket sales, food, transport, and accommodation, and applies economic multipliers to calculate Gross Value Added and employment effects. It also examines seasonality in venue operations to adjust annual economic contributions. The findings highlight the significant financial role of live music in local economies, with key insights into spending patterns, employment generation, and policy implications for the UK's live music sector.

Carter and Muller (2015) in The Economic and Cultural Value of Live Music in Australia 2014 evaluates live music's financial, social, and cultural contributions through a national cost-benefit analysis. Based

on surveys of 1,488 consumers, interviews with 38 venue operators, and sector data, the study estimates that every $1 spent on live music generates about $3 in community benefit, totaling approximately $15.7 billion in 2014. It measures direct and related spending (tickets, food, travel, merchandise) and identifies three categories of benefits: commercial (profits, employment, productivity), civic (community building, tourism, tax revenue), and individual (wellbeing and social connection). The research emphasizes that traditional economic studies underestimate live music's value by overlooking broader spending patterns and intangible social impacts, supporting more substantial investment in the sector.

Finally, Nosková (2016) analyses the regional economic effects of large cultural events using an input–output framework, focusing on the European Capital of Culture 2015 in the Pilsen Region. Due to the absence of regional input–output tables, the study constructs regional tables from national data using location quotients. The results show that cultural activities, including live music, generate relatively strong output and employment multipliers, reflecting their labour-intensive nature and their linkages with sectors such as hospitality, transport, and retail. The study also highlights the sensitivity of multiplier estimates to data availability and methodological assumptions, particularly in smaller regions, underscoring the need for cautious interpretation.

Table 1 summarizes the key challenges emerging from the literature on the economic valuation of the live music sector and from the empirical evidence reviewed in this section. It highlights how methodological limitations, market structures, and structural features of the live music ecosystem affect both the measurement of economic value and the design of effective public policy. In particular, the table links persistent data gaps, labour informality, ticketing distortions, pressures on small venues, and environmental externalities to their implications for evidence-based policymaking. By synthesizing these challenges, the table provides a structured framework for interpreting valuation results and identifying areas where policy intervention may be required to support a more sustainable, inclusive, and measurable live music ecosystem.

*Table 1 - Key Challenges. Source: own processing (2025)*

| Challenge | Description | Policy Relevance |
|---|---|---|
| **Data limitations** | Lack of harmonised EU-wide datasets on attendance, revenue, and employment | Restricts evidence-based policymaking and benchmarking |
| **Volunteer & informal labour** | Unpaid or underreported work skews employment data | Requires labour formalisation and support mechanisms |
| **Ticketing inequities** | Secondary markets distort accessibility and affordability | Calls for consumer protection frameworks |
| **Venue sustainability** | Gentrification and regulation threaten small venues | Supports "Agent of Change" and cultural zoning policies |
| **Environmental costs** | Touring and festival logistics increase emissions | Aligns with EU Green Deal and sustainability goals |

## 1.2 Objectives

Building on the literature presented in section 1.1.4, the objective of this section is to assess the contribution of the live music sector to added value and employment in the European context. The deliverable's first section represents an analytical and methodological framework that links the individual behaviour of cultural consumption participants with macroeconomic indicators and allows quantifying the economic impact of live music activities at both country and regional levels.

The aim of D1.5 Section 1 was not only to evaluate the available data, but also to verify the methodological applicability of different data sources and to create a practical model that can be applied in future analyses of the cultural and creative sectors. The deliverable thus represents a bridge between empirical research and policy decision-making – providing a framework that is both scientifically valid and politically usable.

To achieve the main objective of the output, the following specific objectives were set, which describe in detail the individual analytical, methodological and interpretative steps necessary to develop an assessment of the economic benefits of live music:

a) Define a methodological framework for the economic evaluation of live music

The first objective was to propose a unified approach to measuring the direct economic impact of live music, based on a combination of microdata (consumer behavior, visitor spending) and macrodata (national accounts, sectoral structure of the economy, Eurostat data).

This framework also includes the classification of expenditure categories (tickets, transport, accommodation, food, goods and services) and their mapping to CPA/NACE industry codes, which allows for a link to official statistics on production and employment.

b) Evaluate and process data on audience participation and expenditure

The output focuses on the analysis of data from sociological surveys (two versions: computer-assisted web interview [CAWI] conducted in DE, ES, FR, IT, and PL, and computer-assisted personal interview [CAPI] conducted in HU and SK; for details, see OpenMusE D3.2) and their statistical processing. The aim was to derive a representative average expenditure per event and then scale it to the national level according to concert attendance data in individual countries.

This step was crucial for a reliable calculation of the total annual audience expenditure associated with attending live music events.

c) Link microeconomic data with macroeconomic indicators

The third objective was to transform the estimated audience expenditure into economic outcomes – namely Gross Value Added and Full-Time Equivalent employment.

For this purpose, Eurostat input-output tables and national value added coefficients were used, ensuring comparability across countries and sectoral accuracy of the estimates.

d) Verify the internal consistency and economic plausibility of the results

The aim was to subject all calculations to ratio, scope and structural checks – to verify the logical connection between expenditure, employment and value added, as well as the realism of the resulting indicators compared to other service sectors.

This step aimed to increase the reliability and credibility of the results before they were used in policy or research practice.

By implementing the above objectives, D1.5 Section 1 creates a reference model for future economic analyses of cultural sectors. It allows not only to quantify the direct economic benefits of live music, but also to capture the wider links between culture, economy and society.

## 1.3 Methodology

This section documents the methodology used to estimate the direct economic contribution of live music, measured in terms of value added and employment. The analysis integrates individual-level survey data on live music attendance and expenditure with national statistics on total concert attendance and official macroeconomic data drawn from Eurostat input–output tables and employment accounts. All analytical steps are fully documented and reproducible through three dedicated Stata do-files, which are available upon request. The approach follows the general logic adopted in previous live music impact studies, such as the Deloitte report and the UK Live Music Census, while being adapted to account for differences in data sources and cross-country data availability.

### 1.3.1 Average Audience Expenditure Linked to Live Music Events

The starting point of the analysis is the calculation of representative average expenses in different categories of consumption related to live music events. These are calculated using individual expenditure data from CAWI and CAPI surveys specifically designed to capture various aspects of cultural consumption. For details, please see OpenMusE D3.2, Section 1.4.1.

From this survey, we used information on the number of live music concerts attended in the previous 12 months, the most recent live music event attended, and respondents' self-reported expenditure for that event. Expenditures were collected across a set of categories reflecting the main channels through which live music generates economic activity. Specifically, the following components were considered:

- **Tickets:** expenditure for admission to the live music event.
- **Transport:** total spending on local and long-distance transportation, where available, particularly for events attended outside the respondent's city of residence.
- **Food and beverages:** expenditure incurred both at the venue and off-site in connection with the event.
- **Merchandise:** spending on merchandise and related items, aggregating all available subcategories.
- **Accommodation:** expenditure on accommodation, where applicable, for respondents attending events outside their city of residence.

These categories closely align with the expenditure classifications used in comparable valuation exercises discussed in Section 1.1.4.

To ensure data reliability, we excluded respondents who did not recall when they attended their most recent live music event or whether they paid for a ticket to that event.[1] This filtering ensures that expenditure estimates are based on respondents who are able to report the relevant spending information with sufficient accuracy.

[1] Respondents whose last live event was before 2023 or earlier are included in the analysis.

As reported expenditures refer to the most recent live music event attended, we derived respondents' annual expenditure estimates by multiplying the spending associated with the last concert by the number of live music events attended in the previous year. This approach assumes that the most recent concert is representative of respondents' average live music consumption over the year. Attendance frequency was reported in intervals rather than as exact counts; therefore, we used the midpoint of each interval as the respondent's total number of visits. Sensitivity analyses using the lower and upper bounds of each interval yield very similar results, reflecting the relatively narrow width of the attendance bins.[2]

To ensure that expenditure figures are representative, individual annual expenditures are weighted using population weights where available. This weighting procedure is applied to the CAWI survey data. By contrast, the CAPI survey data are not weighted, as the sampling design was intended to yield representative estimates without post-stratification adjustments – please see the fieldwork report produced by partner Kantar-Hoffman in the OpenMusE general repository at https://github.com/openmusiceurope.

Weighted expenditures are then aggregated across respondents to obtain total annual expenditure by spending category. Dividing these totals by the total number of reported visits yields representative average expenditure per visit for each category. Given the similarity of results across alternative visit-frequency assumptions, the analysis adopts the average-visit specification as the baseline estimate.

### 1.3.2 Scaling to national attendance

The second step of the analysis consists of scaling per-visit expenditure estimates to the national level. This requires information on annual concert attendance for each of the seven countries included in the analysis. Eurostat does not publish absolute annual figures on concert attendance. While Eurostat collects data on participation in cultural activities, these indicators are not suitable for estimating total concert attendance.

To address this gap, national-level attendance figures were compiled manually from alternative sources, including national statistical offices and collective management organisations. The resulting figures and corresponding sources are reported in Table 2.

*Table 2 - Attendance of concerts in 2023–2024. Source: authors' elaboration (2025).*

| | Types of live music events attended | Attendance in 2023, million | Attendance in 2024, million | Source |
|---|---|---|---|---|
| **France** | Pop, rock, songs | 30 | 31.2 | Ministère de la Culture, Département des études, de la prospective et des statistiques (DEPS) (2025, July 29). Billetterie du spectacle vivant en 2024 [CC-2025-1], pp. 6, 26. Retrieved December 3, 2025. LINK. |
| | Jazz, blues, soul, funk, and related genres | | | |
| | Classical and contemporary music | | | |
| | Electronic music | | | |
| | World and traditional music | | | |
| | Rap, hip-hop, and related genres | | | |
| | Opera and lyric theatre | | | |
| | Other musical genres | | | |

[2] Note that the bins were four: 0, 1-2, 3-5, and more than 5.

| | | | | |
|---|---|---|---|---|
| **Germany** | Concerts | 62 | 70 | GEMA. (2025, May 1). Concerts in Germany 2024 – numbers, facts, background. Retrieved December 3, 2025. LINK. |
| **Hungary** | Classical concerts | 1.8 | 2 | Hungarian Central Statistical Office. (n.d.). ksp0014 — Visits to cultural events, by type of event. Retrieved December 3, 2025. LINK. |
| **Italy** | Classical concerts | 28.2 | 29 | Società Italiana degli Autori ed Editori (SIAE). (2024). Rapporto SIAE 2023 [PDF], p. 142. Retrieved December 3, 2025. LINK. |
| | Classical concerts | | | |
| | Classical concerts | | | |
| | Pop, rock, and light music concerts | | | |
| | Jazz | | | |
| **Poland** | Theatres and music institutions | 12.3 | 12.2 | Statistics Poland. (2024, April 25). Activity of theatres and music institutions in 2023 (PDF). Statistical Office in Kraków. Retrieved December 3, 2025. LINK. |
| | | | | Statistics Poland. (2025, April 17). Activity of theatres and music institutions in 2024 [News release]. Statistical Office in Kraków. Retrieved December 3, 2025. LINK. |
| **Slovakia** | Concerts | 2,2 | 1.4 | Ministerstvo kultúry Slovenskej republiky. (2024). Verejné podujatia profesionálnej hudobnej kultúry – Súhrnná správa SR 2024. Retrieved December 3, 2025. LINK. |
| | Concerts at public musical institutions | - | 2674 | SOZA data (proprietary and confidential – for questions, please contact the authors) |
| **Spain** | Classical music concerts | 28.3 | - | Ministerio de Cultura. (2024). Anuario de estadísticas culturales 2024. Secretaría General Técnica. Retrieved December 3, 2025. LINK. |

*Source: own processing*

This approach introduces an unavoidable limitation: attendance data are not fully harmonised across countries, as definitions and methodologies vary across sources. This limitation is acknowledged, and results are therefore interpreted with caution in cross-country comparisons.

Using these sources, annual expenditure by category is then calculated by multiplying the representative average per-visit expenditures—obtained following the procedure described in Section 1.3.1—by the corresponding annual attendance figures reported in Table 3.

### 1.3.3 Estimating the Contribution of Live Music to Value Added and Employment Using Input–Output Data

Having estimated total national expenditure associated with live music attendance, the next step is to assess its contribution to economic value added and employment. This is achieved by linking live music–related expenditure to national production structures using input–output frameworks. Input–output analysis makes it possible to trace how spending on live music generates demand for goods and services across interconnected sectors of the economy. Through this approach, both direct and indirect effects of live music activity on value added and employment can be quantified. The following subsections describe the individual steps of this procedure.

Eurostat publishes harmonised input–output tables at the European level. For this exercise, we rely on Eurostat symmetric input–output tables at basic prices (product-by-product), available under dataset NAIO_10_CP1700. These tables provide consistent information on output and gross value added by product class using the CPA classification.[3] Product-by-product tables are preferred over industry-by-industry tables because they are available for a larger number of countries included in the analysis. It should also be noted that input–output tables are available only for selected benchmark years, typically years ending in 0 or 5. Accordingly, the most recent available benchmark year, 2020, is used in this analysis.

The CAWI and CAPI surveys collect expenditure information across five broad spending categories. While a more granular mapping between expenditure categories and CPA classes was initially considered—for example, distinguishing between accommodation and food services or between different transport modes—data availability constraints, particularly for France, Germany, and Poland, prevented a consistent disaggregation across countries. As a result, all expenditures are harmonised at the CPA A*10 level, ensuring full country coverage and cross-country comparability. The final mapping used to link yearly expenses to the input-out product table and later to industry is:

- Merchandise → CPA_G / NACE G (retail trade)
- Transport → CPA_H / NACE H (transport and storage)
- Hospitality → CPA_I / NACE I (accommodation and food services)
- Creative industries (tickets) → CPA_R / NACE R (arts, entertainment and recreation).

[3] The Classification of Products by Activity (CPA) is the European statistical classification that groups goods and services according to the economic activity in which they are produced. CPA classes are directly linked to the NACE classification of activities and are used in national accounts and input–output tables to map final demand expenditures to production sectors. This correspondence allows live music–related spending to be consistently allocated across sectors when estimating value added and employment effects.

### 1.3.4 Estimation of the Contribution of Live Music to Gross Value Added

Gross value added (GVA) is estimated using sector- and country-specific GVA coefficients, defined as the ratio of gross value added to total output in each sector:

$$GVA\ coefficient_{c,s} = \frac{GVA_{c,s}}{OUTPUT_{c,s}}$$

where cc denotes the country and ss the sector. These coefficients measure the share of sectoral output that is retained as value added after accounting for intermediate inputs, and thus indicate the direct economic contribution generated per unit of production.

Total live music–related GVA is then calculated by applying the relevant GVA coefficients to the estimated live music–related expenditure mapped to each sector and aggregating the resulting value added across sectors. This approach allows expenditure-based estimates to be consistently translated into value added contributions using national input–output structures.

### 1.3.5 Estimation of Employment Effects

Employment effects are estimated following the same logic applied to gross value added. Employment data are drawn from Eurostat's national accounts (dataset NAMA_10_A64_E) and are based on the total number of hours worked by industry (NACE Rev. 2)[4] and country. To ensure comparability across countries and sectors, hours worked are converted into full-time equivalent (FTE) jobs, assuming 1,720 hours per FTE per year.

Sector- and country-specific employment coefficients are then computed as:

$$Employment\ coefficient_{c,s} = \frac{FTE_{c,s}}{OUTPUT_{c,s}}$$

where cc denotes the country and ss the sector. These coefficients measure the number of full-time equivalent jobs supported per unit of output and capture the direct employment intensity of production in each sector.

Direct employment supported by live music is estimated by applying the relevant employment coefficients to live music–related expenditure mapped to each sector and aggregating across sectors. Employment effects are reported in full-time equivalents and reflect direct employment supported throughout the economy, rather than employment within the live music sector alone.

## 1.4 Results

Table 3 reports the results of the valuation exercise, reporting the total contribution of the live music sector across country. Note that for Slovakia we have two estimations as we have two data sources for yearly attendees (see below for more details about the two data sources coverage and interpretation).

[4] Employment and output data are classified according to the NACE Rev. 2 classification of economic activities. NACE provides the standard framework used in European national accounts to categorize industries and ensures consistency and comparability across countries when linking sectoral employment, output, and value added within the input–output framework.

*Table 3 - Live music contribution to added value and employment by country. Source: authors' calculations (2025).*

| | Value Added Contribution (million Euros) | Employment Contribution (FTE) |
|---|---|---|
| DE | 7,474.46 | 152,992.17 |
| ES | 2,394.22 | 61,443.41 |
| FR | 2,566.50 | 45,796.24 |
| HU | 45.22 | 1,704.51 |
| IT | 1,710.18 | 35,997.81 |
| PL | 598.80 | 38,246.46 |
| SK (KULT) | 85.24 | 2,209.39 |
| SK (SOZA) | 160.50 | 4,160.49 |
| Grand Total (DE, ES, FR, HU, IT, PL & SK KULT) | 14,874.62 | 338,390 |
| Grand Total (DE, ES, FR, HU, IT, PL & SK SOZA) | 14,949.88 | 340,341 |

Germany represents the largest contributor within the sample. The total GVA contribution from live music-related expenditures reaches approximately €7.47 billion, supporting an estimated 152,992 full-time equivalent (FTE) jobs. This dominance aligns with Germany's extensive concert and festival infrastructure (e.g. Berlin, Hamburg, and Munich) and its high purchasing power. Hospitality constitutes the largest categories of expenditure, with hospitality showing the highest labour intensity.

Germany's results demonstrate the strong multiplier effect of live music, as every euro spent by audiences circulates through ancillary sectors such as tourism, food services, and retail. The relative stability and high formalisation of employment also contribute to the efficiency of value capture compared to smaller markets.

France's total GVA from live music is approximately €2.6 billion, with nearly 45,796 FTEs supported annually. The expenditure structure mirrors Germany's but with a stronger emphasis on ticketed events and a comparatively smaller transport component, consistent with France's urban concentration of cultural infrastructure.

France's ratio of gross value added to total expenditure (around 0.5) indicates medium value productivity within the live music sector. Relatively efficient event production, high ticket prices in major metropolitan areas (Paris, Lyon, Marseille), and the integration of live music with other creative industries support value capture, but the share of attendee spending on lower-margin services such as hospitality and transport keeps the overall ratio close to the European average.

However, regional disparities persist, as rural and suburban areas remain comparatively underserved in terms of live music access, a challenge that cultural policy continues to address.

Italy shows a total GVA of €1.7 billion and approximately 36,000 FTEs, placing it among the mid-range economies in this dataset. The Italian market benefits from a strong domestic touring circuit and large-scale festivals, particularly in the north (e.g. Milan, Bologna). The hospitality sector plays a large role, reflecting Italy's integrated tourism economy.

Nevertheless, average expenditure per attendee remains below Western European levels, suggesting potential for revenue growth through price optimisation and improved venue infrastructure.

Spain records a GVA contribution of €2.4 billion, generating over 61,000 FTEs. Despite a smaller GDP base compared to France or Germany, the Spanish live music market demonstrates a high employment intensity, largely driven by the prevalence of small and medium-sized festivals.

Spain's results highlight the labour-absorbing capacity of the live music sector in economies with strong seasonal tourism. Music events play a central role in local economic regeneration and cultural branding, especially in regions such as Catalonia and Andalusia.

Poland contributes a modest but significant €0.58 billion in GVA, supporting around 38,000 FTEs. The data suggests that the Polish live music industry is developing rapidly, albeit from a smaller base. The country's strong domestic demand for local music and increasing international tours point to steady growth potential.

However, Poland's middle range GVA coefficient indicates lower value capture per unit of spending, likely due to lower wages and smaller average event scales.

Finally, Hungary and Slovakia contribute relatively small shares to the total estimated impact. In Hungary, the live music sector generates an estimated €45 million in gross value added, supporting approximately 1,704 full-time equivalent jobs. This result should be interpreted with caution, as the attendance data for Hungary refer exclusively to classical music concerts. Since classical music represents only a subset of total live music activity, the estimated contribution is likely a lower bound on the sector's overall economic impact. For Slovakia, the estimated economic contribution of live music is reported as a range reflecting differences in data coverage across sources. Using attendance figures from KULT, which primarily cover publicly supported cultural events, the estimated contribution amounts to approximately €85 million in gross value added and around 2,209 full-time equivalent jobs. Using SOZA data, which are based on licensed live music events and therefore capture a broader segment of market-based activity, the estimated contribution rises to approximately €160 million in gross value added and about 4,160 FTEs. These two estimates provide lower- and upper-bound indications of the economic relevance of live music in Slovakia. While neither source offers complete coverage of all live music activity, together they suggest that the sector makes a non-negligible contribution to value added and employment. Taken together, these results underline the importance of data source selection in small markets and point to the need for further refinement of national attendance statistics. They highlight the sensitivity of valuation outcomes to data quality and attendance assumptions, while also illustrating structural challenges affecting live music ecosystems in Central and Eastern Europe, including underdeveloped venue networks and relatively high levels of informal employment.

### 1.4.1 Sectoral and Expenditure Patterns

Table 4 presents a detailed breakdown of the economic contribution of live music to national economies, disaggregated across four main channels of audience expenditure: tickets, hospitality, transport, and merchandise. These categories capture the principal direct spending flows associated with live music attendance and are translated into macroeconomic outcomes using gross value added (GVA) and employment (full-time equivalent, FTE) coefficients.

For each country included in the analysis (i.e. Germany, France, Italy, Spain, Poland, Hungary, and Slovakia), the table reports average expenditure per attendee (EUR), total annual expenditure (million EUR), value added contribution (million EUR), and employment contribution (FTE equivalents). For Slovakia, two alternative sets of estimates are reported, reflecting the use of two different data sources for annual attendance figures, as discussed above.

*Table 4 - Live music contribution to added value and employment over country and industry. Source: authors' calculation (2025).*

| Germany | Av. Expenses | Num visits (M) | Yearly tot expenditure (M) | Value added contribution | Employment contribution |
|---|---|---|---|---|---|
| Merchandise | 26.94 | 70 | 1885.86 | 1054.2 | 13370.75 |
| Transport | 53.51 | 70 | 3745.7 | 1393.4 | 20189.34 |
| Hospitality | 89.44 | 70 | 6260.81 | 2710.93 | 86336.57 |
| Tickets | 53.97 | 70 | 3778.03 | 2315.93 | 33095.51 |
| **Spain** | **Av. Expenses** | **Num visits (M)** | **Yearly tot expenditure (M)** | **Value added contribution** | **Employment contribution** |
| Merchandise | 20.53 | 28.3 | 581 | 321.88 | 7895.86 |
| Transport | 31.08 | 28.3 | 879.5 | 357.08 | 6490.73 |
| Hospitality | 81.97 | 28.3 | 2319.69 | 1125.05 | 34864.88 |
| Tickets | 38.06 | 28.3 | 1077.03 | 590.21 | 12191.94 |
| **France** | **Av. Expenses** | **Num visits (M)** | **Yearly tot expenditure (M)** | **Value added contribution** | **Employment contribution** |
| Merchandise | 25.95 | 31.2 | 809.74 | 409.73 | 5862.51 |
| Transport | 41.75 | 31.2 | 1302.68 | 554.94 | 7985.43 |
| Hospitality | 66.3 | 31.2 | 2068.46 | 781.88 | 20126.13 |
| Tickets | 44.32 | 31.2 | 1382.71 | 819.95 | 11822.17 |
| **Hungary** | **Av. Expenses** | **Num visits (M)** | **Yearly tot expenditure (M)** | **Value added contribution** | **Employment contribution** |
| Merchandise | 2.89 | 2 | 5.78 | 2.86 | 153.27 |
| Transport | 9.14 | 2 | 18.28 | 8.54 | 340.08 |
| Hospitality | 25.43 | 2 | 50.86 | 18.51 | 731.81 |
| Tickets | 14.7 | 2 | 29.39 | 15.31 | 479.35 |
| **Italy** | **Av. Expenses** | **Num visits (M)** | Yearly tot expenditure (M) | Value added contribution | Employment contribution |
| Merchandise | 18.64 | 29 | 540.48 | 263.75 | 5529.11 |
| Transport | 29.75 | 29 | 862.72 | 353.72 | 5452.39 |
| Hospitality | 51.95 | 29 | 1506.49 | 723.12 | 18981.83 |
| Tickets | 31.62 | 29 | 917.09 | 369.59 | 6034.48 |
| **Poland** | **Av. Expenses** | **Num visits (M)** | **Yearly tot expenditure (M)** | **Value added contribution** | **Employment contribution** |
| Merchandise | 15 | 12.2 | 183.04 | 107.63 | 4285.08 |
| Transport | 23.62 | 12.2 | 288.2 | 103.75 | 7873.51 |
| Hospitality | 45.21 | 12.2 | 551.52 | 258.66 | 17996.11 |
| Tickets | 21.28 | 12.2 | 259.6 | 128.76 | 8091.76 |
| **Slovakia (KULT attendance data)** | **Av. Expenses** | **Num visits (M)** | **Yearly tot expenditure (M)** | **Value added contribution** | **Employment contribution** |
| Merchandise | 5.4 | 1.42 | 7.66 | 3.74 | 139.94 |
| Transport | 28.67 | 1.42 | 40.71 | 18.2 | 460.85 |
| Hospitality | 51.69 | 1.42 | 73.4 | 38.1 | 1347.7 |
| Tickets | 36.97 | 1.42 | 52.5 | 25.2 | 260.9 |
| **Slovakia (SOZA attendance data)** | **Av. Expenses** | **Num visits (M)** | **Yearly tot expenditure (M)** | **Value added contribution** | **Employment contribution** |
| Merchandise | 5.4 | 2.67 | 14.43 | 7.04 | 263.52 |
| Transport | 28.67 | 2.67 | 76.66 | 34.27 | 867.82 |
| Hospitality | 51.69 | 2.67 | 138.23 | 71.74 | 2537.85 |
| Tickets | 36.97 | 2.67 | 98.85 | 47.45 | 491.3 |

For all the countries, the distribution of audience spending follows a consistent pattern:

- Hospitality (food, accommodation) — The largest single category, accounting for roughly 37–49% of total expenditure across countries and exhibiting the highest employment intensity within the live music supply chain.
- Tickets — Around 20–30%, with the upper end of the range observed in the smaller markets (HU, SK).
- Transport — 17–24%, particularly relevant for larger or rural festivals where audiences travel longer distances.
- Merchandise and retail — 4–15%, the smallest category in absolute terms but with comparatively high GVA coefficients due to retail margins.

The average per-visit expenditure varies considerably between countries, ranging from €50 in Central Europe to over €200 in Western Europe. This gradient reflects disparities in disposable income, ticket pricing, and cultural consumption habits.

### 1.4.2 Consistency and plausibility checks

To assess the robustness of the estimated direct employment and value-added impacts, a series of internal consistency and plausibility checks were conducted.

First, unit consistency was verified across all components of the analysis. Output and value added were expressed in million euros, employment was measured in full-time equivalents (FTE), and both GVA and employment coefficients were defined per million euros of output. Live-music-related expenditure was therefore converted to the same unit (million euros) before applying the coefficients, ensuring dimensional consistency in the impact calculations.

Second, the magnitude of the estimated employment coefficients was checked against expected sectoral ranges. Employment intensities were highest in hospitality, followed by retail trade and creative activities, and lowest in transport. Cross-country variation followed expected patterns, with higher employment per euro observed in lower-income countries, consistent with lower average labour productivity.

Third, the internal structure of results was examined within each country. In all cases, employment impacts were concentrated in hospitality and creative industries, with smaller contributions from transport and retail. This ranking aligns with the composition of live-music-related expenditure and with the labour intensity of the corresponding sectors.

Fourth, implied productivity levels were assessed by comparing estimated value added to employment. The resulting GVA-per-FTE values fell within plausible ranges for service-sector activities and did not indicate implausibly high or low productivity in any country–sector combination.

Finally, country-level totals were evaluated in relation to attendance volumes and overall economic scale. After correcting an identified input error in expenditure data for Hungary, employment and value-added impacts were proportional to the number of visits and broadly consistent across countries, with no remaining outliers.

Taken together, these checks indicate that the estimated direct value-added and employment impacts are internally consistent, correctly scaled, and economically plausible, supporting their use in a policy-

oriented assessment of the direct economic contribution of live music to the economy and to employment.

## 1.5 Macroeconomic Implications

The data underscores the macroeconomic significance of live music as a multi-sectoral driver of value creation. When aggregated across countries, the sample's combined direct GVA is just below €15 billion, with approximately 340,000 FTE jobs supported.

This positions live music as a significant sector. The findings strengthen the case for:

- Including live music within national cultural satellite accounts.
- Recognising its contribution to regional cohesion policy.
- Integrating music within green and digital transitions, given its potential for sustainable innovation in event production and mobility.

Furthermore, the employment intensity of the live music value chain makes it a strategic lever for post-pandemic recovery, particularly in hospitality and tourism. As live performance resumed after COVID-19 restrictions, the sector's rebound demonstrates strong resilience and multiplier effects throughout the service economy.

The analysis offers one of the first harmonised, quantitative insights into the direct economic value of live music across Europe. Germany, France, Italy, and Spain emerge as the sector's economic core, while Central and Eastern Europe remain underdeveloped yet possess significant growth potential.

The findings reveal that live music is not only a vibrant cultural activity but also a key economic driver, capable of supporting thousands of jobs and contributing meaningfully to GDP. Integrating its value into official statistics and policy frameworks will strengthen both the visibility and viability of Europe's cultural and creative industries.

## 1.6 Policy Recommendations

The development and stability of the live music sector requires targeted policy measures that reflect its economic, cultural and social importance. Based on research and analysis, four main areas can be identified where policymakers should take concrete steps: economic policy, the labour and regulatory environment, territorial development and the development of research and data infrastructure.

One of the main obstacles to effective management of the music sector is the lack of harmonised and comparable data. European countries should work together to create a common data collection system on concert attendance, revenues, employment and investment in the live music sector. Such a database would allow for monitoring trends, assessing the effectiveness of public policies and supporting strategic decision-making.

Furthermore, the development of hybrid assessment models that combine economic indicators with indicators of social and cultural well-being should be encouraged. Such approaches will better capture the true value of music – not only its financial contribution, but also its impact on quality of life, community ties and urban identity.

### 1.6.1 Economic policy

Live music should be systematically included in national cultural satellite accounts to accurately track its contribution to the economy and its relationship with other sectors such as tourism, hospitality and

retail. It is essential that policymakers recognise the multiplier effect of this sector, as expenditure linked to concerts, festivals and music events generates additional income in the local economy.

It is also important that public subsidies and grants for the cultural sector are regularly indexed to inflation. Only in this way can they maintain their real value and effectively support music institutions, organizers and artists at a time of rising operating costs.

### 1.6.2 Working environment and regulation

The live music sector is largely built on freelancers, temporary workers and volunteers, who form the backbone of production teams and small music venues. It is therefore necessary to create legal and institutional frameworks that allow for the formalization of these forms of work, ensure social and labor security and prevent the abuse of unpaid work.

It is also necessary to promote social dialogue between musicians, promoters, event operators and public administration. The aim should be to create fair wage conditions, transparent contractual relationships and sustainable touring models that take into account economic, environmental and social aspects.

### 1.6.3 Spatial development and urban planning

Music clubs, concert halls and festival venues are an important part of the urban cultural ecosystem. Spatial planning policies should therefore respect their importance and actively protect them from real estate market pressure. A key tool is the so-called “Agent of Change” principle, which states that if someone brings a new function to an existing environment (e.g. building apartments near a music club), they are responsible for minimizing negative impacts – for example, for soundproofing or modifying the space.

At the same time, it is necessary to integrate live music into urban development strategies and the night-time economy, as recommended by Sound Diplomacy (2020). This means that music should be seen as part of urban planning, mobility, tourism and social inclusion, not as a marginal activity.

## 1.7 Conclusions

The results achieved within the first part of D1.5 represent a significant shift in the assessment of the economic contribution of the live music sector. The main objective of the project was to create a methodologically consistent and empirically based framework for estimating the economic impact of live music activities in the European area. This objective was achieved through a combination of qualitative and quantitative approaches, which included working with data on attendance, audience spending, macroeconomic multipliers and employment indicators

The key contribution of D1.5 Section 1 is the connection of the micro level (visitor behaviour and spending) with the macro level (national accounts, GVA and FTE indicators). This multi-level approach made it possible to realistically capture the economic multiplier of the live music sector and confirm its significant links with tourism, hospitality and retail. The project also contributed to the harmonisation of methodological approaches across countries and highlighted the need for a unified data collection system within the EU.

The presented evaluation exercises and better data on the economic value of live music are essential for improving artists' revenues. The approach used here provides a clear, repeatable, and cross-country estimate of the direct economic impact of live performance. Regularly updated estimates can help artists' incomes through four main channels.

First, evidence-based advocacy is the most direct channel. Estimating the effect of live music on GVA and FTE gives performer organizations, federations, and unions leverage in negotiating sector-wide measures such as reduced ticket VAT, tailored social security, “status of the artist” provisions, and public co-financing for venues and festivals. Regional and municipal administrations may prefer evidence-based requests, so quantifying spillovers in hospitality, transport, and tourism supports venue-protection rules, planning safeguards, business-rate relief, or dedicated cultural budgets. All in all, these actions boost both the volume and quality of paid work for performers.

A second channel involves CMOs. Collecting societies and regulators can use sector valuations to set license fees and allocate distributions. Reliable, updated values help revise tariffs and address the underpricing of live rights.

Third, another channel reduces information asymmetries in contracting. Artists often negotiate with less information than venues and promoters. Public benchmarks of attendee spending and labor income help artists justify their fees and show their value.

Finally, by making revenue leakage visible, the framework spotlights the gap between audience spending and what artists receive. Once measurable, this gap becomes a concrete target for policy and industry self-regulation—tools that boost the volume and quality of paid work for performers.

The empirical exercise offers practical policy recommendations, supports harmonized data collection, and enables long-term monitoring of cultural and creative sectors in Europe. These outputs support all previously described channels.

However, a critical analysis also reveals certain limitations. The most significant of these are related to the incompleteness of data on smaller cultural facilities and the inability to capture non-financial benefits such as social cohesion, community identity or audience psychological well-being. Another challenge is the methodological inconsistency in national statistics, which complicates accurate comparisons of results across countries. Despite these limitations, it can be stated that the project significantly contributed to expanding the empirical evidence on the value of live music and created a basis for sustainable policy decision-making.

While D1.5 Section 1 successfully achieved its objectives and provided a robust methodological framework for the economic evaluation of the live music sector, its results also indicate several areas that deserve further research and development.

Future research should focus on expanding and deepening the data framework. It is recommended to create a central European database on live music, which would regularly collect data on attendance, sales, jobs and public investment in the sector. Such a system should be linked to existing statistical databases of Eurostat and national statistical offices to ensure methodological consistency and international comparability of data.

From a methodological point of view, it is appropriate to further develop hybrid evaluation models that combine economic indicators (e.g. value added – GVA, employment, tax benefits) with social and environmental indicators (e.g. quality of life, cultural participation, carbon footprint of music events). This integrated approach would allow for a more comprehensive understanding of the role of the music sector in sustainable development and better demonstrate its social contribution.

From a research perspective, it would be beneficial to support cooperation between academia, cultural organisations and public administration. It is proposed to create an international working group for the exchange of methodologies and data, which would organise regular expert assessments and peer

reviews between countries. Such a platform would contribute to greater transparency, quality and compatibility of results within Europe.

In the longer term, research should aim at the practical application of knowledge in policy frameworks – in particular, the inclusion of the live music sector in national cultural satellite accounts, the definition of European standards for the economic valuation of culture and the creation of a sustainable support system for small and medium-sized music venues.

Overall, D1.5 Section 1 has laid a solid foundation for a systematic assessment of the economic and social importance of live music. Future research should build on these results, expand their empirical base, and contribute to moving the assessment of culture from a theoretical level to a practical political and institutional context.

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# 2 Methods for Assessing the Value of Recorded Music

## 2.1 Context & Objective

D1.5 Section 2 presents a reproducible method for assessing the value of recorded music, based on valuation models developed by REPREX within the context of the CEEMID consortium, which were peer-reviewed by UVA and SSSA and streamlined for application in data-poor environments. D1.5 Section 2 serves both as a methodological demonstration and as a defensible reconstruction of what can be achieved with limited, fragmented, or incomplete data inputs. The emphasis is therefore placed on transparency of assumptions, reproducibility of methods, and robustness of the analytical framework, rather than on the completeness or authority of any single dataset.

The analytical framework used in the recorded music valuation pilot is the market comparator model. This model relates observed or estimated quantities of use to observed revenues to infer implicit or shadow prices, allowing comparisons across uses, markets, or territories. In music markets, where prices are often unobservable or embedded in bundled and zero-price business models, the market comparator model provides a coherent way to compare value across heterogeneous forms of consumption.

The immediate objective of the recorded music valuation pilot and accordingly of D1.5 Section 2 is to demonstrate the application of this model using a fully specified but synthetic dataset. Rather than relying on sensitive or proprietary data, the study constructs a complete set of revenue and quantity tables for a hypothetical country, Livonia. This allows the full analytical workflow to be shown end to end, including data reconciliation, aggregation, and interpretation, without exposing confidential information or creating incentives for reverse engineering.

A key design goal of D1.5 Section 2 is transferability. The model, data structures, and computational workflows are intended to be reusable in any EU Member State, subject only to limited local reconciliation reflecting national institutional arrangements. The recorded music valuation pilot therefore prioritises stable, internationally comparable categories and avoids country-specific refinements unless they are essential for conceptual coherence.

Throughout D1.5 Section 2, the focus remains on the method and the model rather than on publishing results about any real country, organisation, or market. The synthetic example is used to demonstrate how authorised users, with access to their own national data, can apply the same approach to generate meaningful comparative insights within their own legal and institutional constraints.

The methodological framework presented here is not only intended to support comparative valuation, but also to improve the economic functioning of the recorded music ecosystem. By systematically linking revenues to quantities of use, the model makes it possible to identify where value is created but not effectively captured or distributed.

In practice, improved data collection and harmonisation can increase artist revenues through three channels:

(i) more accurate attribution of uses to rightsholders, reducing unmatched or misallocated royalties;

(ii) better visibility of implicit price differences across use categories, enabling more informed licensing and negotiation; and

(iii) stronger empirical foundations for policy and regulatory interventions addressing structural imbalances in remuneration.

In a data-driven, platform-mediated market, these effects are cumulative: better data reduces revenue leakage, improves allocation efficiency, and enhances the ability of creators to participate in value generation.

The approach demonstrated here is directly grounded in existing European data collection and reporting practices, in particular those of CISAC and IFPI, which already provide harmonised and comparable revenue and market data across countries in and beyond Europe.

While the pilot uses a fully specified synthetic dataset, its structure reflects real-world data availability and reporting conventions and can therefore be applied within any European national ecosystem.

The proposed use is straightforward: by combining harmonised revenue data (e.g. CISAC revenue/collections) and market benchmarks (e.g. IFPI price and revenue indicators), the model enables a simple econometric comparison of observed revenues or implicit prices across use categories. This makes it possible to identify systematically undervalued revenue streams — for example, where revenues from broadcasting, retransmission, or other uses appear disproportionately low relative to macroeconomic conditions, market size, and observed levels of activity when compared to European benchmarks. Applying the same framework to national data allows authorised users to test such discrepancies quantitatively and to support evidence-based adjustments in licensing, negotiation, or policy design.

## 2.2 Synthetic data construction and safeguards

To support reproducibility while fully respecting the confidentiality obligations of participating collective management organisations, all empirical examples in D1.5 Section 2 are based on **synthetic datasets**.

In addition to the fictional territory of Livonia, we introduce a second fictional country, **Pomerelia**, named after a historical duchy that is today fully absorbed into Poland. Neither Livonia nor Pomerelia corresponds to any contemporary state, collecting society, or institutional arrangement.

The authors' rights revenue data for both fictional countries were constructed as **linear combinations of aggregated data patterns** drawn from the 2023 and 2024 annual reports of Artisjus (Hungary) and SOZA (Slovakia), with the explicit purpose of avoiding disclosure of any real society's data. The specific weights used in these combinations are undisclosed, and additional stochastic noise was introduced. This design ensures that the resulting datasets remain economically realistic while preventing reverse inference about the actual strengths, weaknesses, or collection structures of any real collecting society.

As a result, while the synthetic Livonia datasets resemble one real society somewhat more closely and the synthetic Pomerelia datasets resemble another, the combination of undisclosed weighting and random noise makes it likely that an entirely different CISAC member society could exhibit closer similarity. Year-to-year changes between 2023 and 2024 in both fictional cases are **purely random** and do not reflect the actual collection dynamics of either Hungary or Slovakia.

For readability and comparability, total authors' revenues were normalised to approximately **€10 million per year for Livonia** and **€20 million per year for Pomerelia**. These orders of magnitude do not

correspond to the actual scale of either Artisjus or SOZA. The fictional authors' societies are therefore referred to as **LIVA** (Livonia) and **POLA** (Pomerelia).

Neighbouring-rights revenues were constructed using the same synthetic approach, but with lower granularity. For valuation purposes, no confidential data were available from neighbouring-rights organisations such as MAHASZ or EJI in Hungary, or SLOVGRAM in Slovakia. We therefore created simplified but realistic revenue tables for the fictional neighbouring-rights societies **LIVPERF**, **LIVGRAM**, **POLPERF**, and **POLGRAM**, sufficient to support comparative analysis without exposing sensitive information.

The aim of these hypothetical datasets is not to approximate any specific national market, but to provide a **fully reproducible, analytically valid example** that mirrors real CISAC-aligned reporting structures while respecting legal, ethical, and contractual constraints on data disclosure.

### 2.2.1 Livonia and Pomerelia

Livonia is introduced as a fictional territory used exclusively for the purposes of D1.5 Section 2. The name is derived from the historical *Duchy of Livonia*, a former region in the eastern Baltic area, but the contemporary entity described here has **no real-world political, economic, or institutional counterpart**.

The use of a fictional territory is deliberate. It enables the construction of synthetic datasets that closely follow real-world reporting conventions—particularly CISAC-aligned structures—while ensuring that no sensitive data can be inferred, attributed, or reverse-engineered. All revenue figures, quantities, distributions, and growth patterns associated with Livonia are artificial, even where they are calibrated to resemble plausible European scenarios.

This deliverable is supported by several datasets and a data paper; they contain a *Livonian Music Database* for the diversity-related D2.3 deliverable. This actual dataset is not synthetic, it contains recorded music data concerning vocal music in the Liv language, which is the heritage of Livs (in English, often referred to as Livonians), an autochthonous ethnolinguistic group historically associated with the eastern Baltic region. That usage reflects a separate methodological ambition: the development of statistical indicators below the national level, including for sub-national regions, minority cultures, genres, or other specific market segments.

The fictional Livonia used in this section is **not associated** with the Livs, their culture, or their historical territory. The name is employed solely as a neutral, non-identifying label for a synthetic case study designed to illustrate methodology, not to represent any real community or institution.

Similarly, the reference to a historical region of Poland, Pomerelia, only reflects our ambition to extend our Slovak and Hungarian valuation to Poland at one point; no data from Poland was used for D1.5 Section 2.

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#### *2.2.1.1 CAP data example*

Table 1. Small CAP Data Snippet

| source | country | year | hours |
|---|---|---|---|
| background | liv | 2023 | 2823498 |
| background | liv | 2024 | 3130906 |
| download | pom | 2023 | 212628459 |
| download | pom | 2024 | 222132376 |
| stream | liv | 2023 | 266259591 |

#### *2.2.1.2 Single row example*

Each row contains the following information:

Table 02. Example of CAP variable representation in the synthetic data cube

| variable_name | name | value |
|---|---|---|
| authors_performing_radio | label | gross performing royalty revenue from radio use (authors) |
| authors_performing_radio | uri | https://reprexbase.eu/openmusic/Item:Q2056 |
| authors_performing_radio | liv_2023 | 55297 |
| authors_performing_radio | liv_2024 | 62851 |
| authors_performing_radio | pom_2023 | 25085943 |
| authors_performing_radio | pom_2024 | 26081921 |

The uri variable shows the machine-readable variable definition in the OMO; the long-form variable label is omitted to show a few select row's data:

Table 03. Select rows in synthetic authors' revenue table

| | Livonia | | Pomeralia | |
|---|---|---|---|---|
| variable_name | liv_2023 | liv_2024 | pom_2023 | pom_2024 |
| authors_performing_radio | 55297 | 62851 | 25085943 | 26081921 |
| authors_performing_terrestial_tv | 613173 | 710189 | 270847299 | 280889116 |
| authors_reproduction_digital | 222693 | 307208 | 92500296 | 100500823 |
| authors_performing_digital | 47300 | 67367 | 30781356 | 27780154 |
| publicperf_revenue | 1013889 | 1051128 | 397003932 | 408759996 |

### 2.2.2 Using this deliverable as a computational notebook

This part of the deliverable can be used for replication. For that, the easiest way is to fork into your own environment the Open Policy Analysis folder of this work from https://github.com/dataobservatory-eu/openmuse-valuation. Alternatively, if you do not use GitHub, you can download from this location the entire repository as a ZIP file. On the GitHub link, navigate to

the main page of the repository. Above the list of files, click Code, then click Download ZIP. Please refer to the README file of the repository that will open up by default on the link above.

The following R packages need to installed next to the R statistical environment and language:

```
require(here)       # platform independent file paths
require(readxl)     # read xlsx files
require(dplyr)      # data wrangling
require(tidyr)
require(knitr)      # for printing the tables
require(kableExtra) # for printing the tables
```

The ***here*** package is used to establish the root folder of your working repository. Provided that you forded our OPA-compliant GitHub repository, you will find the synthetic data assets in its **data** subfolder that you access on your computer, regardless if you use a Unix, Mac or Windows system with **here()** that will construct a relative path according to the syntax of our operational system.

For loading the synthetic CAP survey data:

```
synthetic_cap <- readxl::read_excel(
  here::here("data", "synthetic_cap.xlsx"))

# ----------------------------------------
# We do not need separate ad-supported and |
# premium stream data so we collapse them  |
# into a single category                   |
# ----------------------------------------

synthetic_cap_reduced <- synthetic_cap %>%
  mutate(source = ifelse(
    source == "ad_stream", "stream", source)
    ) %>%
  group_by(source, country, year) %>%
  summarise(hours = sum(hours, na.rm=TRUE))
```

For loading the synthetic CISAC- and IFPI aligned revenue data:

```
synthetic_revenues <- readxl::read_excel(
  here::here("data", "synthetic_revenues_26.xlsx")
  )
```

## 2.3 Data Sources

Within the Open Music Observatory, we distinguish two subclasses of statistical concepts for revenue-related data.

In the Open Music Observatory data model, these variables are treated as *statistical concepts*. Their primary source, however, consists of *administrative royalty accounting data* provided by collective management organisations (Artisjus and SOZA). As a result, the variables correspond both to statistical concepts and to accounting concepts.

To avoid parallel or duplicated conceptualisations, variable definitions explicitly reference:

- **IFRS** (International Financial Reporting Standards), applicable to accounting data across EU member states; and
- **ESA 2010** (European System of Accounts), which governs statistical variables derived from administrative and accounting data sources in the EU.

CISAC-aligned data (**CISAC-aligned authors' royalty revenue concepts**) used in D1.5 Section 2 originate from authors' royalty collections in Hungary and Slovakia. For methodological testing and illustration, we also generate synthetic data for the fictitious territories of Livonia and Pomerania.

IFPI-aligned data (**IFPI-aligned recorded music revenue concepts**) describe recorded music revenues by market segment and territory, following the classifications and aggregation logic used in IFPI global and territorial reports.

CISAC- and IFPI-algined data are recorded under a common valuation basis (market prices), with source-specific interpretations documented in methodological notes.

### 2.3.1 Authors' Revenues

Authors' revenues in D1.5 Section 2 are represented using CISAC-style royalty tables, which provide a highly standardised view of how authors' rights are collected and accounted for across Europe. These tables are organised by rights category (reproduction and performing rights) such as radio broadcasting, digital uses. They distinguish between gross collections, deductions, and distributable income. The emphasis of the model is on this reporting structure rather than on the absolute levels of revenue, as the structure is what enables comparability across countries.

Artisjus in Hungary and SOZA in Slovakia are used as structural references because their published reports follow the CISAC reporting conventions closely and illustrate the range of categories that typically appear in authors' royalty accounting. They serve as practical examples of how CISAC-aligned data are organised, not as sources of values to be reproduced. In D1.5 Section 2, their structures inform the design of the Livonian authors' revenue table, while the numerical values are altered and synthesised to prevent any inference about the real revenues or internal distributions of these organisations.

Accordingly, the analysis focuses on how revenues are grouped, aggregated, and reconciled within the CISAC framework, rather than on the specific financial outcomes of any collecting society. This allows the market comparator model to be applied in a way that is transferable across countries, while respecting the confidentiality and sensitivity of real-world authors' royalty data.

We treat CISAC-aligned data sources as administrative data sources for statistical aggregation.

CISAC-aligned data (**CISAC-aligned authors' royalty revenue concepts**) used in D1.5 Section 2 originate from authors' royalty collections in Hungary and Slovakia. For methodological testing and illustration, we also generate synthetic data for the fictitious territories of Livonia and Pomerania

The conceptual structure applied to CISAC-aligned variables is:

**CISAC-aligned authors' royalty revenue concepts** (omo:Q2079)
├ **recording context**: accrual basis (omo:Q2082)
└ **valuation context**: market prices (omo:Q2087)

The **recording context** (in these cases, accrual basis), and **valuation context** (in these cases, gross basis) are added with the **has measurement context** property qualified with a subclass of a **recording context**, like **valuation basis (SDMX)** (omo:Q2084)

An example of such variable representation is **gross mechanical royalty revenue from radio use (authors)** (Q2055)

### 2.3.2 Neighbouring Rights Revenues

Neighbouring rights revenues in D1.5 Section 2 are described using IFPI-style market reports, which present the recording-side view of the music economy. These reports focus on revenues accruing to producers and, indirectly, performers from recorded music, typically broken down by format such as physical sales, downloads, subscription streaming, ad-supported streaming, performance rights, and synchronisation. Unlike CISAC-aligned tables, which are organised around uses and rights categories, IFPI reporting is market-facing and format-driven, reflecting how recorded music is consumed and monetised.

The *Global Music Report 2025: State of the Industry* provides a comprehensive global overview of recorded music revenues, trends, and market structures from the perspective of producers and the recording industry. It presents harmonised revenue figures across countries and regions, broken down by major formats such as physical sales, downloads, paid and ad-supported streaming, performance rights, and synchronisation, and highlights long-term structural shifts in consumption and monetisation. While the report focuses on aggregate market outcomes rather than rights-specific accounting, it establishes the global benchmarks, definitions, and classification logic that underpin IFPI-aligned national reports. In D1.5 Section 2, the *Global Music Report* serves as a conceptual and structural reference for how neighbouring rights revenues are categorised and compared internationally, rather than as a direct source of values to be reproduced (International Federation of the Phonographic Industry 2025a). Industry stakeholders typically have access to the full *Global Music Report*, which contains market data for all IFPI national jurisdictions (“territories”).

*Music in the EU 2025: A Growth Engine* provides a European-level perspective on the recorded music sector, situating IFPI-style market data within the broader economic, cultural, and policy context of the European Union. The report complements the global view of the *Global Music Report* by focusing on the role of recorded music in the EU economy, including market size, growth dynamics, employment effects, and the contribution of music to the digital single market. While it draws on the same underlying IFPI-aligned revenue classifications, its emphasis is on regional aggregation, policy relevance, and comparative performance across EU Member States (International Federation of the Phonographic Industry 2025b). In D1.5 Section 2, the report is used to contextualise neighbouring rights revenues within the EU framework and to support the plausibility and scalability of the synthetic Livonian data as representative of an EU-style recorded music market.

The Hungarian and Slovak contexts are used as calibration references rather than as sources of values to be replicated.

In Hungary, Mahasz publishes an extensive historical series of recorded music market data aligned with the figures reported to IFPI for the *Global Music Report*, and has made these data publicly available in spreadsheet form since 2003, albeit with some structural changes over time. This long time series illustrates how IFPI-aligned reporting can be implemented consistently at national level and reused for analytical and modelling purposes.

For the purpose of this analysis, we used the physical sales data *Mahasz 2023. évi fizikai eladás adatok* [Mahasz Annual Physical Sales Data 2023] and the same dataset for 2024 (Mahasz 2024b, 2025d)) and the *Mahasz 2023. évi digitális eladási adatok* [Mahasz Annual Digital Sales Data 2023] and the same dataset for 2023 ((Mahasz 2025b, 2025c).) Mahasz's excellent statistics provide an invaluable panel data, but curiously do not contain the public performance revenues, that we imputed from the annual reports (Mahasz 2024a, 2025a).

In Slovakia, the *Výsledky trhu 2023: Slovensko* [Market Results 2023: Slovakia] and the similar document for the year 2024 provides country-level recorded music market data published by the national IFPI affiliate (ČNS IFPI 2024, 2025), following the same classification logic as the IFPI *Global Music Report*. Unlike global or regional summaries, this document offers direct insight into the structure and scale of the Slovak recorded music market, typically presenting revenues by major format such as physical, digital, and streaming. As a publicly available national annex, it demonstrates how IFPI-aligned data can be accessed at country level even when the full *Global Music Report* is not available. In D1.5 Section 2, the Slovak report functions as an elementary data source that illustrates how national market figures can be used to calibrate and validate the structure of synthetic neighbouring rights revenue tables without relying on confidential or proprietary datasets.

For the purposes of the Livonian example, the emphasis is on the recording-side perspective and its compatibility with the market comparator model. IFPI-style data provide observed revenues by market segment and format, which can be aligned with measured or estimated quantities of use. D1.5 Section 2 therefore applies IFPI reporting logic to construct synthetic neighbouring rights revenue tables for Livonia, ensuring that they are consistent with publicly observable market structures while remaining sufficiently abstracted to avoid disclosure of sensitive or proprietary information.

IFPI-aligned data (**IFPI-aligned recorded music revenue concepts**) describe recorded music revenues by market segment and territory, following the classifications and aggregation logic used in IFPI global and territorial reports.

These variables are also treated as *statistical concepts*, independent of contractual or royalty-based interpretations. Their conceptual structure mirrors that used for CISAC-aligned data:

**IFPI-aligned recorded music revenue concepts** (omo:Q2077)
├ **recording context**: accrual basis (omo:Q2082)
└ **valuation context**: market prices (omo:Q2087)

A key methodological distinction between the two data families concerns the *price reference point*, which is documented at dataset level rather than encoded structurally in the data model:

- IFPI-aligned data reflect retail-level values as reported in IFPI market statistics.
- CISAC-aligned data reflect gross licensing fees collected from users (e.g. broadcasters and venues).

### 2.3.3 Quantities

Quantities in the market comparator model are derived from *Cultural Access and Participation* (CAP) survey data. These surveys are used to approximate how recorded music is consumed across different

contexts and channels, including radio, television, streaming platforms, user-uploaded content services, and listening at home, at work, or while travelling.

CAP surveys are designed to measure participation in cultural activities rather than to capture transaction-based usage. In many areas of music consumption, directly observable quantities are not available. In such cases, CAP surveys provide a structured, well-established, and widely accepted source of information on patterns of use.

In D1.5 Section 2, quantities are operationalised as *nominal listening hours*, derived from survey responses and aggregated to annual values. These measures act as proxies for use intensity rather than as precise estimates of absolute consumption. They are subject to known limitations, including recall bias, survey design effects, and the constraints of self-reported behaviour.

For the purposes of the market comparator model, absolute precision is not required. The model relies primarily on *relative proportions of use across channels and contexts*. There is no strong reason to assume that these proportions are systematically biased across uses within the same survey framework. As a result, nominal listening hours provide a suitable basis for allocating quantities when comparing revenues and inferring implicit or shadow prices.

The CAP surveys used in the *Open Music Europe* project follow design principles established by ESSNet-Culture, namely the ICET model, recognised as a good practice for measuring cultural participation in Europe (for details, see OpenMusE D3.1 and D3.2). This ensures conceptual alignment with official statistics and comparability with other national and European cultural participation surveys. The questionnaires, variables, and harmonisation principles are documented in the Open Music Europe *Data Management Plan* and related methodological deliverables. CAP-derived variables are employed to generate *synthetic Livonian and Pomerelia quantities* that mirror realistic listening patterns, without disclosing or reproducing any sensitive or project-internal data.

### 2.3.4 Synthetic Data

In D1.5 Section 2, the activity of “listening to (recorded) music” is operationalised as notional listening hours. The resulting values are not behavioural measurements of specific individuals, but statistically weighted population estimates suitable for macro-level comparison and modelling.

The synthetic CAP-derived tables express notional listening hours across five dimensions: source, situation, country, year, and hours. Listening sources include ad-supported streaming, premium streaming, downloads, physical formats, radio, television, background music, discotheques, and concerts. Situations distinguish listening at home, during travel, at work, and at events. Country coverage is limited to the synthetic territories of Livonia and Pomeralia, and the temporal scope covers the years 2023 and 2024. The hours variable represents aggregated, weighted notional listening time for each combination of dimensions.

This breakdown reflects the operationalisation of the CAP survey. In response to increasingly ubiquitous smartphone and portable device use, the survey design emphasises listening situations (home, travel, work) and attendance-based contexts (concerts, discotheques, and other venues with background music) to improve recall accuracy and reduce respondent burden. This structure supports realistic consumption patterns while remaining compatible with synthetic data generation and downstream market-level reconciliation.

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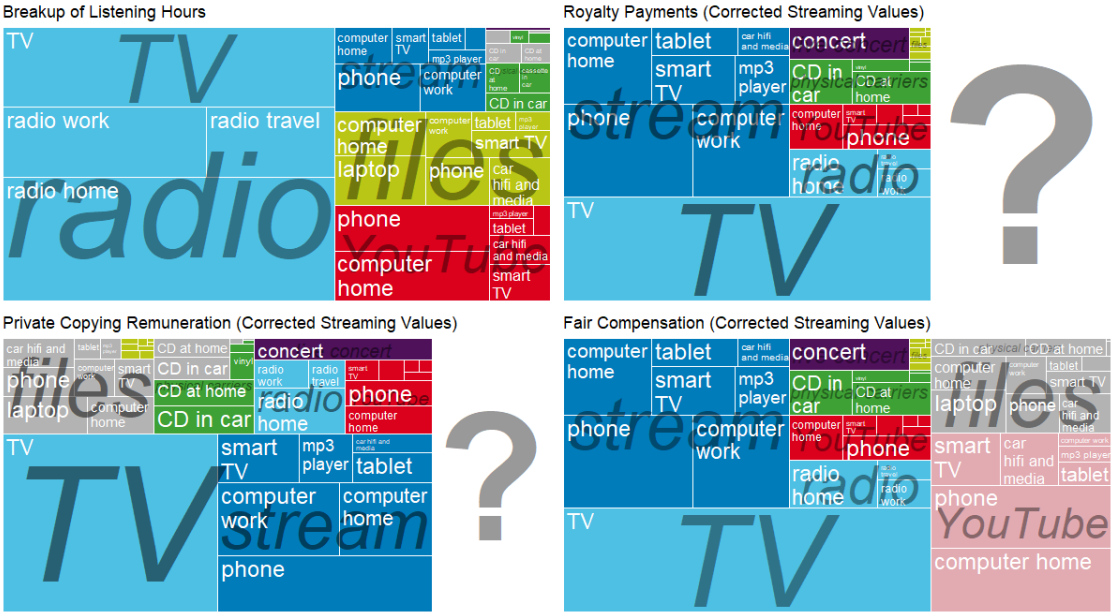
## 2.4 Key Modelling Decisions

The modelling framework was developed within the CEEMID cooperation among Hungarian, Slovak, and Croatian authors', producers', and performers' rights stakeholders, as well as organisations representing audiovisual and image rights[5]. Variants of the framework have been applied in different contexts: publicly and in simplified form in Croatia (Daniel Antal 2019a), in advocacy-oriented industry reporting in Slovakia (Daniel Antal 2019b), and most extensively in Hungary. In the Hungarian case, the framework was implemented under a voluntary commitments procedure with the national competition authority, following a preliminary inquiry into pricing practices. This report is not public[6].




*An example of an analysis in Hungary in 2019.*

The recognised fair valuation principles stipulate that the "most applicable method" must be used in valuations, which almost always leaves out in copyright valuations the (historical) "cost approach" and leaves open the use of the "income approach" and the "market approach". The cost- and income approaches are fundamental valuation techniques and could be used to reset valuations or prices fully.

The *cost approach* is inapplicable because the rightsholders are natural people who do not account for their working time, i.e., the time when they are composing music.

The *income approach* compares the royalty flows of a work of its recording by using an appropriate "discount rate." The income approach is often impractical when we have irregular or annual payments. With annual payments, the valuation's timeframe would be too long. Calculating an appropriate discounting rate would also be practically impossible for many uses. This approach is more suitable for

[5] The Open Music Europe project grew out of the Central & Eastern European Music Industry Databases (CEEMID) initiative in 2014 (Artisjus et al. 2014), in which rightsholders from three countries attempted to solve these data problem, and bring seemingly data poor Central European countries to a level of data availability that allows better price setting or the creation of better creative industry policies or business strategies.

[6] The Competition of Unlicensed, Licensed and Illegal uses on the Markets of Music and Audiovisual Works [original title: *A szabad felhasználások, a jogosított tartalmak és az illegális felhasználások versenye a zenék és audiovizuális alkotások hazai piacán*] (Daniel Antal 2019c)

analysis within a rightholder organisation, such as a music publisher or record label that has long-term, consistent and frequent income data.

The *market approach* tries to identify a payment rate, regardless of if it is made in a lump sum, monthly or annually established, based on sufficiently similar uses. As often seen in various jurisdictions from the EU to Canada or the United States, the market approach is often used in copyright tribunals and other contexts, because the other two approaches are lacking reliable data inputs. It is often used for comparing valuations, or estimating acceptable prices or royalty rates when it can be assumed that at least some of the prices are correct on the market.

The market comparator model presented here, unlike the cost or income approaches, is not a fundamental valuation method, and many modelling decisions, and usability limitations must be considered in use.

### 2.4.1 Total Music Value vs Rightsholder-Specific Value

A central modelling decision in D1.5 Section 2 is to focus on the total value of music, rather than on rightsholder-specific values for authors, performers, or producers. The primary objective of the market comparator model is to relate observed or estimated quantities of use to observed revenues in order to infer implicit prices. From this perspective, the economically relevant object is the total value generated by music consumption, irrespective of how that value is subsequently distributed among different categories of rightsholders.

There is no *a priori* correct or universal split of music value between authors, performers, and producers. The division of revenues reflects legal frameworks, collective bargaining outcomes, contractual practices, and historical institutional arrangements, all of which vary across countries and over time. Even within the European Union, where copyright law is partially harmonised, neighbouring rights and collective management practices differ substantially between jurisdictions. Treating any particular split as normative would therefore introduce assumptions that are external to the market comparator model and not supported by observable market behaviour.

$$R_u = R_u^A + R_u^{PF} + R_u^{PD}$$

where $R_u^A$ denote's the author's, $R_u^{PF}$ the performers' and $R_u^{PD}$ the producer's revenue, the last two taken together as $R_u^N$ neighbouring rights revenue.

$$R_u^N = R_u^{PF} + R_u^{PD}$$

Focusing on total music value has important implications for data aggregation. Revenues from different rights categories and collecting entities must be aggregated across authors' rights and neighbouring rights, and quantities of use must be defined in a way that is consistent across these domains. Prices are then interpreted as average or shadow prices per unit of use, rather than as contractually specified tariffs for individual rights. This approach allows the model to remain agnostic about institutional detail while still producing meaningful comparative results, and it makes the framework more robust and transferable across countries with different rights management structures.

### 2.4.2 Stock–Flow Conversion and Temporal Normalisation of Use

A further central modelling decision concerns the conversion between stock-based and flow-based measures of music consumption and revenues. The market comparator model requires quantities and revenues to be expressed on a common temporal basis. In music markets, however, different uses

generate revenues and are measured over fundamentally different time horizons, creating a stock–flow mismatch that must be addressed explicitly.

Some music uses are naturally observed as flows. Streaming, broadcasting, and most forms of public performance generate revenues that accrue continuously and are typically reported over monthly or annual accounting periods. Corresponding quantities, such as streams, airplay counts, or listening hours, are likewise flow variables that can be aggregated over a year without conceptual difficulty. In these cases, the alignment between quantities and revenues is relatively direct.

Other uses, particularly mechanical reproductions such as physical sales or permanent downloads, generate revenues as one-off transactions, while consumption unfolds over a potentially long period. From the rightsholder's accounting perspective, the relevant revenue is realised at the moment of sale and recognised fully in the accounting period in which it occurs. From the user's perspective, however, the purchased recording may be consumed repeatedly over many years, implying a long-lived stock of listening potential with diminishing marginal use over time.

The modelling choice adopted in D1.5 Section 2 follows a flow normalisation approach. All quantities are converted into notional annual listening hours, irrespective of whether the underlying use is based on a one-off transaction or a continuous service. This reflects the observation that, at the aggregate level, listening in any given year is supported by a mix of newly acquired recordings and recordings acquired in previous years. Purchases made in earlier periods continue to generate listening in the current period, while purchases made in the current period will generate listening in future periods. Under stable consumption patterns, these effects tend to offset each other, allowing annual listening hours to be treated as a consistent flow measure.

This approach is consistent with standard practices in time-use accounting and avoids the need to specify detailed assumptions about asset lifetimes, depreciation schedules, or discount rates for individual recordings. While alternative formulations are possible -- such as explicitly modelling the useful life of recordings and amortising revenues over time -- these would introduce additional parameters that are difficult to observe and would not materially improve comparability for the purposes of the market comparator model.

Different categories of use nonetheless retain distinct economic characteristics and are therefore kept separate at the quantity level. Streaming, broadcasting, public performance, mechanical reproductions, and live performances are each associated with different pricing mechanisms and institutional arrangements. By maintaining separate quantity aggregates for these uses while normalising them to a common annual time basis, the model allows implicit prices to differ across uses in a way that reflects real economic differences rather than artefacts of accounting conventions.

In this sense, the stock–flow conversion is not a technical adjustment but a substantive modelling decision. It enables revenues recognised within a given accounting year to be meaningfully compared to contemporaneous patterns of music consumption, while preserving the heterogeneity of uses that is essential for interpretation and policy relevance.

### 2.4.3 Market Definition

The modelling framework presented in D1.5 Section 2 is informed by analytical traditions that are also used in competition law and regulatory contexts, particularly in assessments of whether prices or remuneration levels can be considered fair, equitable, and reasonable (FER). In several European jurisdictions, market comparator approaches have been employed by collecting societies and

regulators as one of multiple tools to assess pricing practices, often in the context of investigations or negotiated remedies rather than formal infringement decisions.

The CEEMID framework was developed and refined in settings where competition-law considerations were explicitly present, most notably in Hungary, where its most detailed implementation formed part of a voluntary commitments procedure following a preliminary inquiry by the national competition authority. In that context, the model was used to support transparency, proportionality, and consistency in pricing analysis, rather than to mechanically derive or impose tariffs. This history informs the design of the framework but does not define its scope in the D1.5 Section 2.

It is important to stress that the market comparator model, as applied here, is not a legal test and is not intended to substitute for competition-law analysis. Competition law requires case-specific assessment, including consideration of market power, counterfactuals, efficiency justifications, and legal standards that go beyond quantitative comparison. D1.5 Section 2 does not claim that its outputs can be directly used to establish FER compliance or non-compliance in a legal sense.

Nevertheless, the model rests on a shared analytical premise: that meaningful comparison requires a well-defined market concept. This includes clarity about the relevant product or service scope and the relevant geographic scope. Without such definition, prices, quantities, and revenues cannot be aligned in a way that allows economically interpretable comparison. The model therefore adopts an explicit, operationalised notion of the market as a necessary precondition for comparison, even though alternative definitions may be equally valid in other analytical or legal contexts.

From a geographic perspective, the model assumes that meaningful comparisons can generally be made at the level of a copyright jurisdiction, which in most cases corresponds to the territory of a national polity. This reflects the territorial nature of copyright and neighbouring rights and the way in which royalties are collected, accounted for, and distributed. From a product perspective, the model requires explicit decisions about which uses of music are included, such as licensed uses versus exceptions, and how boundaries are drawn between different forms of audio content.

Within these boundaries, the market comparator model provides a structured way to relate revenues to use and to infer implicit prices. These inferred prices are best understood as economic signals, not as normative benchmarks. They can highlight relative differences across uses, markets, or territories and can support discussion about proportionality and consistency, but they do not, on their own, determine what is legally or contractually appropriate.

By making these assumptions explicit, D1.5 Section 2 positions the model as a transparent and adaptable analytical tool. It can inform policy discussions, regulatory dialogue, and internal assessment by stakeholders, while leaving legal interpretation and enforcement to the appropriate institutional frameworks.

### 2.4.4 Copyright and Neighbouring Rights Conventions

A key modelling challenge arises from the fact that authors' rights and neighbouring rights are reported using different conceptual and accounting frameworks. *CISAC-aligned data are organised around legal rights and modes of use, such as public performance, broadcasting, mechanical reproduction, and private copying*. This rights-based logic reflects how collective management organisations account for and distribute royalties to authors and publishers.

In contrast, *IFPI-aligned data adopt a market-based perspective, structuring revenues by product format and channel*, such as physical sales, downloads, subscription streaming, ad-supported

streaming, performance rights, and synchronisation. These two reporting logics are internally consistent but not directly comparable without further reconciliation.

The category commonly labelled as “Digital & Multimedia” illustrates this mismatch particularly clearly. In CISAC-style tables, Digital & Multimedia may appear under both performing rights and mechanical reproduction rights, reflecting the coexistence of communication-to-the-public and reproduction components in digital uses. In IFPI-style reporting, the same underlying consumer behaviour is captured through market segments such as downloads or streaming, without explicit reference to the underlying legal rights. As a result, Digital & Multimedia functions as a cross-right category in rights-based accounting, while appearing as a unified market segment in recording-industry data.

To apply the market comparator model, these differences must be reconciled conceptually. *This does not require a perfect one-to-one mapping between CISAC and IFPI categories*, but it does require a consistent aggregation logic that aligns revenues and quantities at a comparable level.

In D1.5 Section 2, reconciliation is achieved by abstracting from legal distinctions where necessary and focusing on economically meaningful units of use. Rights-based categories are aggregated to match market-based segments, or vice versa, using documented assumptions and, where available, external calibration sources. This approach allows the model to bridge institutional reporting differences while remaining transparent about the assumptions involved.

### 2.4.5 National and Domestic Revenue

A fundamental and often underappreciated issue in applying market comparator models to music markets concerns the territorial interpretation of revenues reported in national datasets. Both CISAC-aligned authors’ reports and IFPI-aligned national market reports are commonly read as describing activity “in” a country. In practice, however, they often reflect a mixture of domestic and foreign consumption, depending on institutional reporting conventions and data availability.

In principle, IFPI national market reports are intended to capture revenues earned in a given market, *meaning revenues generated by consumption within the national territory*. Under this interpretation, streaming revenues would ideally be split between domestic consumption and export revenues generated abroad. In practice, such a distinction is rarely observable in published data. National IFPI affiliates typically aggregate the total revenues reported by their member labels without systematically distinguishing whether streams occurred domestically or in foreign territories. As a result, national market figures for streaming tend to be de facto national-by-affiliation rather than strictly national-by-consumption.

A similar ambiguity exists on the authors’ side. In CISAC-aligned reporting, *revenues from foreign uses are often visible only in aggregated form as royalties received from sister societies, either gross or net of reciprocal deductions*. For domestic uses such as radio and television broadcasting, the territorial logic is relatively clear: usage occurs within the country, is monitored domestically, and is licensed and accounted for accordingly.

By contrast, digital uses—particularly streaming—are less clearly territorialised. When a platform reports streaming data to a collective management organisation, *the reporting may be based on repertoire affiliation rather than listener location*, or on contractual outsourcing arrangements for digital collection. As a result, digital royalties received by a national society may include significant foreign consumption without being explicitly labelled as such.

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From a modelling perspective, this creates a tension between two conceptions of the market: a territorial market defined by place of consumption, and an institutional market defined by affiliation or repertoire ownership. *Publicly available data sources often sit somewhere between these two conceptions*, without fully satisfying either. This is not a flaw of any single dataset, but a structural feature of how digital music markets are organised and reported.

In D1.5 Section 2, the ambiguity is treated explicitly as a limitation rather than resolved through strong assumptions. *Revenues are interpreted as national in the sense of being reported by national institutions, not as strictly domestic consumption measures*. Quantities derived from CAP surveys, by contrast, are inherently domestic, as they measure listening behaviour of residents within a country. The model therefore aligns domestic quantities with institutionally reported revenues under the pragmatic assumption that, at an aggregate level, export and import effects partially offset across uses and periods.

This assumption is more defensible for some uses than others. For broadcasting and most forms of public performance, the territorial alignment between use and revenue is relatively strong. For streaming and other digital uses, it is weaker, and the resulting implicit prices should be interpreted with caution. The model does not claim to measure the value of domestic consumption in a strict economic sense, nor the global value of a national repertoire. Instead, it provides a consistent framework for comparing reported revenues to observed patterns of use within a defined institutional scope.

Recognising this limitation is essential for interpretation. It also points toward possible extensions of the model, where micro-level royalty statement data, platform-side reporting, or distributor datasets could be used to disentangle domestic and export components more precisely. Such extensions, however, require access to data that are not publicly available and are therefore beyond the scope of D1.5 Section 2.

### 2.4.6 The Problem of Streaming

Streaming poses a particular challenge for the market comparator model because the revenues it generates cannot be cleanly split across rights categories without introducing additional assumptions. From the perspective of consumer behaviour, streaming is experienced as a single, integrated mode of access to music. From a legal and accounting perspective, however, the same act of streaming simultaneously involves multiple rights, most notably authors' performing rights, authors' mechanical rights, and neighbouring rights for producers and performers. The way in which the total value of streaming is divided among these rights is not directly observable in public data and depends on contractual arrangements, collective management practices, and national legal frameworks.

This highlights a fundamental distinction between consumer-facing measures and rights-based accounting. CAP survey data, platform usage statistics, and market reports capture how listeners engage with streaming services, but they do not reveal how streaming revenues are allocated internally among different rightsholders. CISAC-aligned reports reflect the outcome of this allocation for authors' rights, but they do so only after internal distributions have taken place and without exposing the underlying splits between different components of digital use. As a result, CISAC public reports do not provide sufficient detail to reconstruct the full streaming value chain, and such information can only be obtained through internal analysis by a CISAC member organisation.

By contrast, IFPI-aligned data provide a clearer public picture of streaming on the recording side. In Hungary and Slovakia, where public IFPI-aligned reports are available, streaming revenues are typically

reported as a distinct market segment, often further divided into subscription-based and ad-supported streaming. These figures reflect the total recording-side revenues generated by streaming services in the national market and are directly comparable across countries. However, they do not distinguish between the various authors' rights components that coexist within the same streaming transactions.

In D1.5 Section 2, the gap between consumer behaviour, market-level reporting, and rights-based accounting is addressed through the use of proxies and external calibration. IFPI streaming revenue shares are used to anchor the recording-side value of streaming, while CAP-based listening proportions provide information on relative usage patterns. Where necessary, informed assumptions are introduced to reconcile these sources at an aggregate level, with the explicit understanding that such assumptions can be replaced by more precise country-specific data if and when authorised internal information from collective management organisations becomes available.

## 2.5 Replication Strategy

D1.5 Section 2 is accompanied by a set of spreadsheets that closely resemble the type of data a national consortium, collecting society, or sectoral organisation would typically have access to. These spreadsheets mirror the structure of CISAC- and IFPI-aligned reporting tables and the derived quantity tables used in the market comparator model. They are designed to function as templates rather than as sources of real data. We recommend that, in practical implementations, such data be placed within a secure data-sharing environment governed by appropriate access controls. Within the Open Music Europe framework, both the Slovak and Hungarian federated modules foresee such data spaces in their data models and are designed to exchange harmonised tabular data, even when the underlying values cannot be publicly disclosed.

The replication strategy therefore separates method from data access. The published materials demonstrate how the model operates, how different data sources are reconciled, and how outputs are produced, while allowing national or sectoral users to substitute the synthetic Livonian inputs with their own authorised datasets. This approach ensures that the computational workflow can be reused without modification, while respecting confidentiality constraints and legal obligations associated with real-world data.

### 2.5.1 CISAC-Aligned Data

For the purposes of replication and cross-country comparability, the individual CISAC-aligned variables listed above are not analysed in isolation, but are grouped into use-based aggregates that reflect how authors' revenues are reported and compared within the CISAC framework. The guiding principle is that functional equivalence across countries is more important than fine-grained national distinctions.

#### *2.5.1.1 Why CISAC alignment matters*

Alignment with CISAC reporting categories is critical because it provides one of the few internationally stable, operationally validated classification systems for music rights revenues that is already embedded in real-world accounting, distribution, and governance processes. From a policy perspective, CISAC-aligned data operationalises several of the core requirements articulated in the Copyright Infrastructure Task Force (CITF) framework: authoritative identifiers, lifecycle-aware aggregation, and auditable provenance of rights-related data.

At the same time, CISAC alignment makes music data legible to cross-domain initiatives such as the EU Culture Data Hub, where comparability, transparency, and methodological consistency across Member States are prerequisites. Rather than introducing a parallel or music-specific accounting logic, CISAC

alignment allows music-sector data to plug into emerging European data infrastructures using categories that are already recognised by collective management organisations, statistical offices, and policymakers, thereby reducing translation costs and governance friction.

#### *2.5.1.2 Radio use*

For authors, the economic value of radio use is represented as the sum of:

Table 04. Radio-related royalty revenue variables (authors)

| concept_variable | description |
|---|---|
| gross performing royalty revenue from radio use (authors) (omo:Q2056) | Gross revenue from performing rights royalties generated by radio broadcasting, attributable to authors. |
| gross mechanical royalty revenue from radio use (authors) (omo:Q2055) | Gross revenue from mechanical rights royalties generated by radio broadcasting, attributable to authors. |
| gross royalty revenue from radio use (authors) (omo:Q2054) | Gross royalty revenue generated by radio broadcasting, attributable to authors, combining mechanical and performing rights royalties. |

The performing and reproduction streams together capture the total value of radio exploitation (omo:Q2054) accruing to authors under collective management.

Table 05. Radio use data in the synthetic datasets

| | Livonia | | Pomeralia | |
|---|---|---|---|---|
| label | liv_2023 | liv_2024 | pom_2023 | pom_2024 |
| gross performing royalty revenue from radio use (authors) | 55297 | 62851 | 25085943 | 26081921 |
| gross mechanical royalty revenue from radio use (authors) | 13251 | 13586 | 5343889 | 5650587 |
| gross royalty revenue from radio use (authors) | 68548 | 76437 | 30429832 | 31732508 |

If the analysis is extended beyond authors to include neighbouring rights, additional estimates are required. In that case, radio use must also include:

- gross performing royalty revenue from radio use (performers), and
- gross performing royalty revenue from radio use (producers).

Mechanical royalties do not apply to performers and producers in the context of sound recordings and are therefore excluded on the neighbouring-rights side.

#### *2.5.1.3 Television use*

Television use follows the same aggregation logic as radio. For authors, total television value is constructed by summing:

Table 06. Television-related royalty revenue variables (authors)

| concept_variable | description |
|---|---|
| gross performing royalty revenue from television (authors) (omo:Q2058) | gross royalty income accruing to authors from the public performance and communication to the public of their works in television services, before any deductions; this consolidated category includes royalties from terrestrial television broadcasting, satellite television, cable retransmission, and, where applicable, web-based television services |
| gross mechanical royalty revenue from television use (authors) (omo:Q2059) | gross royalty income accruing to authors from mechanical rights related to the reproduction and fixation of their works for television services, before any deductions; this consolidated category includes revenues arising from terrestrial television broadcasting, satellite television, cable retransmission, and, where applicable, web-based television services |
| gross royalty revenue from television use (authors) (omo:Q2057) | total gross royalty income accruing to authors from the use of their works in television services, before any deductions, consolidation adjustments, or cost offsets; this is a consolidated revenue category covering terrestrial television broadcasting, satellite television, cable retransmission, and, where applicable, web-based television services |

For analytical stability and cross-border comparability, terrestrial broadcasting, cable retransmission, satellite transmission, and web-based television are treated as a single television category. This avoids artificial fragmentation driven by national regulatory or licensing structures rather than by economic substance.

Table 07. Television revenue data in the synthetic datasets

| | Livonia | | Pomeralia | |
|---|---|---|---|---|
| **label** | **liv_2023** | **liv_2024** | **pom_2023** | **pom_2024** |
| gross performing royalty revenue from terestial television (authors) | 613173 | 710189 | 270847299 | 280889116 |
| gross performing royalty revenue from television (authors) | 1021738 | 1206268 | 446956355 | 466621580 |
| gross mechanical royalty revenue from television broadcasting | 106305 | 112677 | 41901819 | 45930975 |
| gross mechanical royalty revenue from television (authors) | 106306 | 112677 | 41908168 | 45931831 |
| gross royalty revenue from television (authors) | 1128044 | 1318945 | 488864523 | 512553411 |

Where neighbouring rights are included, the authors' totals are complemented by:

- gross performing royalty revenue from television use (performers), and
- gross performing royalty revenue from television use (producers),

again excluding mechanical royalties on the recording side.

#### *2.5.1.4 Discotheques and background music*

Public performance outside broadcasting is grouped into two closely related categories. For authors, these uses are covered by:

Table 08. Background and foreground music performing royalty revenue variables (authors)

| concept_variable | description |
|---|---|
| gross performance royalties from background music (authors) (omo:Q2062) | total gross revenue from performance rights collected for authors for the use of music as background sound in public or commercial spaces, such as retail, hospitality, or workplaces, where music is not the primary focus of attention; reported before deductions |
| gross performance royalties from discotheques (authors) (omo:Q2060) | total gross revenue from performance rights collected for authors for the public performance of music in discotheques and similar venues, where recorded music is the primary focus of the performance; includes nightclub, DJ-led, and dance-oriented uses before deductions, costs, or distributions |

Live music requires a specific clarification. While omo:Q2062 and omo:Q2060 have neighboring rights equivalents, live performance royalties (omo:Q2061) apply only to authors, as reflected in:

Table 09. Performing royalty revenue variable from concerts (authors)

| concept_variable | description |
|---|---|
| gross performance royalties from concerts (authors) (omo:Q2061) | total gross revenue from performance rights collected for authors for concert performances, where recorded music may be used but the majority of the performance is live and not pre-recorded; reported before any deductions, costs, or distributions |

Table 10. Discotheques revenue data in the synthetic datasets

| | Livonia | | Pomeralia | |
|---|---|---|---|---|
| variable_name | liv_2023 | liv_2024 | pom_2023 | pom_2024 |
| authors_performing_disco | 335887 | 301617 | 119799969 | 120407040 |

However, the total economic value of concerts extends beyond authors' royalties. Performers' remuneration, technical crew costs, and live production management are typically financed from ticket revenues and are not fully reflected in CISAC-aligned accounting data. For this reason, concert values are treated asymmetrically: authors' royalties are included directly, while neighbouring-rights income requires separate estimation if a full value-chain analysis is undertaken.

Table 11. Concert revenue data in the synthetic datasets

| | Livonia | | Pomeralia | |
|---|---|---|---|---|
| variable_name | liv_2023 | liv_2024 | pom_2023 | pom_2024 |
| authors_performing_concert | 362991 | 326921 | 130796692 | 127524828 |

#### *2.5.1.5 Digital and multimedia uses*

Digital and multimedia uses are captured for authors through:

Table 12. Digital and media royalty revenue variables (authors)

| concept_variable | description |
|---|---|
| gross mechanical royalty revenue from digital and multimedia uses (authors) (omo:Q2070) | total gross revenue from mechanical rights collected for authors for digital and multimedia uses of music, including online reproductions, downloads, ringtones, and other digitally mediated or multimedia forms of reproduction of musical works |
| gross performance royalty revenue from digital and multimedia uses (authors) (omo:Q2071) | total gross revenue from performance rights collected for authors for digital and multimedia uses of music, including online streaming, webcasting, platform-based performances, and other digitally mediated public communication of musical works |
| gross royalty revenue from digital and multimedia uses (omo:Q2089) | total gross revenue from both performing and reproduction rights collected for authors for digital and multimedia uses of music, including online streaming, webcasting, platform-based performances, and other digitally mediated public communication of musical works |

These two revenue streams are aggregated to represent the total value of online and multimedia exploitation for authors.

Digital and media revenue data in the synthetic datasets

| | Livonia | | Pomeralia | |
|---|---|---|---|---|
| label | liv_2023 | liv_2024 | pom_2023 | pom_2024 |
| gross mechanical royalty revenue from digital and multimedia uses (authors) | 222693 | 307208 | 92500296 | 100500823 |
| gross performance royalty revenue from digital and multimedia uses (authors) | 47300 | 67367 | 30781356 | 27780154 |
| gross royalty revenue from digital and media use (authors) | 269993 | 374575 | 123281652 | 128280977 |

On the neighbouring-rights side, the aggregation logic may differ by country and licensing model. Some uses generate performer and producer revenues through collective management, while others are handled contractually. The CISAC-aligned framework therefore treats neighbouring-rights digital revenues as an extension layer that must be harmonised carefully to maintain comparability.

### *2.5.1.6 Phonograms and physical or digital sales*

For authors, revenues from sound recordings are captured through gross mechanical royalty revenue from digital and multimedia uses (authors) omo:Q2065. It is defined as the total gross revenue from mechanical rights collected for authors for digital and multimedia uses of music, including online reproductions, downloads, ringtones, and other digitally mediated or multimedia forms of reproduction of musical works.

Table 14. Phonogram revenue data in the synthetic datasets

| | Livonia | | Pomeralia | |
|---|---|---|---|---|
| label | liv_2023 | liv_2024 | pom_2023 | pom_2024 |
| gross mechanical royalty revenue from phonograms (authors) | 30049 | 26431 | 10280148 | 10399710 |

However, producer and performer revenues from phonograms—whether physical sales or downloads—are not collectively managed in the same way and therefore do not appear in CISAC accounting tables. To approximate the full economic value of phonogram exploitation, authors' mechanical royalties should be combined with producer and performer revenues derived from direct sales, using external industry or statistical sources where necessary.

#### *2.5.1.7 Total cost of use*

Finally, high-level aggregates such as

- gross royalty revenue from digital and multimedia uses Q2089
- gross royalty revenue from radio use (authors) omo:Q2054
- gross royalty revenue from television (authors) omo:Q2057

are used for analytical purposes within the market comparator model.

In this model, these aggregates can be compared directly with observable indicators of radio or television use. From the perspective of the end user (the radio listener or television viewer), or from that of the payer of the royalty (the broadcasting organisation), the legal basis of individual royalty components is irrelevant. What matters is the total cost of lawful use.

Table 15. Aggregated total use data in the synthetic datasets

| | Livonia | | Pomeralia | |
|---|---|---|---|---|
| **variable_name** | **liv_2023** | **liv_2024** | **pom_2023** | **pom_2024** |
| authors_performing_radio | 55297 | 62851 | 25085943 | 26081921 |
| authors_performing_tv | 1021738 | 1206268 | 446956355 | 466621580 |
| authors_performing_digital | 47300 | 67367 | 30781356 | 27780154 |
| authors_performing_disco | 335887 | 301617 | 119799969 | 120407040 |
| authors_performing_background | 266770 | 244362 | 96202416 | 92929250 |

This reinforces our methodological preference for analysing total revenue streams—combining authors', performers', and producers' revenues—wherever all three rights apply. In such cases, lawful exploitation is not possible without securing all required licences, regardless of how the total payment is divided across legal claims. For end users and licensees alike, it is immaterial whether the paid amount is allocated across two, three, or even five separate rights categories. The internal breakdown of revenues reflects the structure of the licensing system, not the economic reality of use. A familiar analogy can be found in cinema production, where producers typically clear a large number of underlying rights, yet cinemas and audiences encounter only a single licence fee or ticket price. The same logic applies to music: the disaggregation of total value is a matter of rights administration, while the market comparator model is concerned with the total economic value of use.

### 2.5.2 IFPI-Aligned Data

IFPI-aligned data are used in D1.5 Section 2 to calibrate the recording-side revenues of the music market and to provide a market-based counterpart to CISAC-aligned authors' revenues. Public IFPI reports, including global, regional, and national publications, present recorded music revenues by format and distribution channel, such as physical sales, downloads, subscription streaming, ad-

supported streaming, performance rights, and synchronisation. These data reflect revenues accruing to producers after platform shares and intermediary costs, and therefore correspond conceptually to net distributable revenues on the CISAC side.

For reconciliation within the market comparator model, the key variables required from IFPI-aligned data *are revenue totals by market segment* and, where available, distinctions between major formats or channels. These variables allow recording-side revenues to be aligned with quantities of use derived from CAP surveys and with aggregated authors' revenues. As with CISAC-aligned data, stability and comparability of categories across countries are prioritised over fine-grained detail.

Important differences exist between national, regional, and global IFPI reporting structures. Global reports provide harmonised definitions and benchmarks, regional reports such as those for the European Union place market data in a policy and comparative context, and national reports or country annexes offer more detailed insight into local market structures. The replication strategy presented here accommodates all three levels, allowing users to rely on whichever IFPI-aligned sources are publicly available or internally accessible in their national context.

IFPI-aligned data in the synthetic datasets

| | Livonia | | Pomeralia | |
|---|---|---|---|---|
| **variable_name** | **liv_2023** | **liv_2024** | **pom_2023** | **pom_2024** |
| physical_revenue | 435508 | 429939 | 176068236 | 174612092 |
| download_revenue | 26189 | 22630 | 9474366 | 9226540 |
| streaming_revenue | 1797924 | 2213815 | 789036637 | 868188923 |
| publicperf_revenue | 1013889 | 1051128 | 397003932 | 408759996 |

Our IFPI-aligned synthetic data for the fictitious territories of Livonia and Pomeralia:

IFPI-aligned data in the synthetic datasets

| | Livonia | | Pomeralia | |
|---|---|---|---|---|
| **variable_name** | **liv_2023** | **liv_2024** | **pom_2023** | **pom_2024** |
| physical_revenue | 435508 | 429939 | 176068236 | 174612092 |
| download_revenue | 26189 | 22630 | 9474366 | 9226540 |
| streaming_revenue | 1797924 | 2213815 | 789036637 | 868188923 |
| publicperf_revenue | 1013889 | 1051128 | 397003932 | 408759996 |

For our reports, it would be ideal to have the ratio of domestic and international sales within the territory. Mahasz in Hungary reports this in the already cited statistical datasets, ČNS IFPI for Slovakia does not. In Hungary, depending on the sales format and the year, the domestic sales rate was betwen 29-49% in 2023-2024. For our synthetic data we will use similar rates.

### 2.5.3 Reconciliation Between Rights Groups

Reconciling authors', performers', and producers' data is a necessary step when applying the market comparator model to total music value. Each group is represented through different reporting systems

and institutional arrangements, and their revenues are not observed within a single, unified accounting framework.

Authors' revenues are typically reported through CISAC-aligned collective management data, while producers' and, in part, performers' revenues are captured through IFPI-aligned market reports or neighbouring rights organisations. The reconciliation task therefore consists of aligning these perspectives at an aggregate level, rather than attempting to replicate contractual or legal distributions in detail.

A central concern in this process is the avoidance of double counting. Certain uses of music generate revenues for multiple rightsholder groups from the same underlying act of consumption, most notably in digital uses such as streaming. In D1.5 Section 2, overlaps are handled by clearly separating revenue sources by reporting origin and by aggregating only once at the level of total value. Rights-based categories are first harmonised within their respective domains and then combined using a consistent aggregation logic that ensures each revenue stream enters the model a single time. Where categories overlap conceptually, they are reconciled through documented assumptions rather than through mechanical summation.

Institutional differences across countries are acknowledged but not modelled in detail at this stage. The number of collecting societies, the degree of fragmentation between authors' and neighbouring rights, and the scope of collectively managed versus individually managed rights all vary by jurisdiction. The reconciliation approach adopted here abstracts from these differences and focuses on the economic function of each revenue stream. This allows the model to remain transferable and comparable across countries, while leaving room for users to introduce country-specific refinements when authorised data and detailed institutional knowledge are available.

### 2.5.4 Using a CAP Survey

Cultural access and participation (CAP) surveys are used in the valuation framework to construct consistent quantity measures of music use across market and non-market contexts. The surveys applied in this project build on the ICET model recommended by the ESSNet-Culture statistical working group, which was established by Eurostat together with the national statistical offices of 15 Member States to develop harmonised approaches for measuring cultural and creative industries. The ICET model structures cultural participation into four dimensions—Information; Communication and community; Enjoyment and expression; and Transaction—and explicitly covers both market-based and non-market forms of cultural engagement (OpenMusE D3.1; cf. Bína, Vladimir et al. 2012, pp 237–239). The model has a long tradition in quantitative sociology and media research, with several decades of empirical application (Haan and Adolfsen 2008; Haan and Broek 2012).

ICET-based CAP surveys were also applied by the former CEEMID project in Hungary, Slovakia, and Croatia with the explicit aim of improving the measurement of music use quantities in contexts where transactional data are incomplete or unavailable. Over multiple survey waves, these survey-based quantity estimates were cross-checked against both public and non-public transactional data sources wherever such data were available. These validation exercises indicated that self-reported listening quantities are subject to recall and reporting error but provided no evidence of systematic directional bias across countries, use contexts, or survey waves. In aggregation, the observed errors behaved as non-systematic measurement noise rather than as structural distortion. On this basis, and in line with ESSNet-Culture recommendations, no alternative modelling framework was identified that would offer better coverage of both market and non-market music use while remaining feasible within realistic survey length and respondent burden constraints.

The CAP questionnaire used in OpenMusE was designed as an operational implementation of the ICET framework. The questionnaire design targets the construction of use quantities rather than the inference of prices, preferences, or welfare measures. Questions are formulated to elicit notional listening time, which can subsequently be normalised into annual listening hours and aligned with the quantity definitions used throughout the market comparator framework.

The recall strategy reflects an explicit recognition of the cognitive limits of self-reported listening behaviour. Music listening has become increasingly ubiquitous over the past decade as smartphones and mobile internet access have integrated music into commuting, work, and other everyday activities. This ubiquity reduces the salience of listening events and complicates recall. To mitigate this effect, the questionnaire triangulates different recall horizons, asking about listening behaviour using weekly, monthly, and annualised formulations. In addition, listening time is elicited separately for different contexts—at home, while travelling, and at work or study—not as analytically distinct locations, but as memory cues. These contextual prompts help respondents recall different devices and listening modes, such as turntables or physical media at home, radio listening in vehicles during travel, or streaming services used to mask background noise at work.

Survey responses are mapped from listening behaviour to analytical use categories prior to aggregation. Once classified, listening time across locations is aggregated within the same use category and annualised to ensure consistency with other quantity measures in the model. This approach avoids double counting and ensures that CAP-derived quantities are directly comparable with quantities derived from transactional and administrative sources.

CAP survey data are thus used exclusively on the quantity side of the valuation framework. They provide harmonised measures of music use across market and non-market contexts, but do not contain information on transaction prices, willingness to pay, or welfare effects. Prices enter the model only through observed market data or through revenue–quantity comparisons that yield implicit prices at an aggregate level. Behavioural survey data are not used to infer prices or welfare measures, and their role is limited to supporting consistent and comprehensive quantity estimation.

## 2.6 Known Limitations & Assumptions

The market comparator model applied in D1.5 Section 2 builds on earlier analytical practices developed by organisations such as Reprex, Artisjus, and SOZA, where similar approaches were used in contexts partly informed by competition law. In those settings, the notion of a "*relevant market*" was employed to operationalise the scope within which prices, quantities, and revenues could be meaningfully observed and compared. This tradition informs the present work, particularly in the way uses and revenue streams are delineated and aggregated.

At the same time, D1.5 Section 2 does not assume that this is the only possible or universally valid way to operationalise music markets. Nor do we claim that the results of this methodology, as presented here, can be directly used in competition law–based economic analysis without further assumptions, refinements, and legal interpretation. The focus of D1.5 Section 2 is methodological: to show how a market comparator model can be constructed and applied in a transparent and reproducible way given realistic data constraints.

Nevertheless, we maintain that *some well-defined and operationalised concept of the market is a necessary precondition for applying any market comparator model*. A relevant market definition requires at least two dimensions: product or service homogeneity and geographical homogeneity.

Without clear boundaries defining what constitutes a unit of use, a revenue stream, or a comparable segment, quantities and revenues cannot be meaningfully aligned.

In music markets, both dimensions raise non-trivial issues. Royalty revenues arising from the use of recorded music and from authors' shares in live performances *are territorial in nature*. As a result, it is usually reasonable to assume that meaningful comparisons can be constructed at the level of a copyright jurisdiction, which in most cases corresponds to the territory of a national polity.

The *product dimension is more ambiguous*. It requires explicit choices about whether the analysis is limited to licensed uses of music or also includes exceptions such as private copying, and whether measured illegal use is within scope. Further boundary questions arise around the distinction between audiobooks, podcasts, and music sound recordings, which are all technically audio recordings but are subject to different rights regimes and market practices.

The assumptions adopted in D1.5 Section 2 are therefore explicit and deliberately limited in scope. They are not intended to prescribe a single correct market definition, but to provide a transparent and adaptable framework that can be refined or re-specified when the model is applied in different legal, institutional, or analytical contexts.

### 2.6.1 Individually Managed Streaming Revenues

A key limitation of the model concerns the partial observability of streaming revenues that are individually managed, particularly on the publishing side and, in some jurisdictions, on the neighbouring rights side. Public data sources do not provide a complete view of how streaming revenues are allocated across all rightsholders, as significant portions may be licensed directly rather than through collective management organisations.

For this reason, the model operates primarily on collectively managed shares of streaming revenues, as these are the components that can be observed, reported, and reconciled with reasonable confidence. While this implies that total streaming value may be understated in some contexts, the approach remains suitable for comparative analysis as long as the scope of observation is applied consistently across uses and territories.

### 2.6.2 Publisher Direct Licensing

Publisher direct licensing further affects the visibility of authors' revenues, particularly in digital and streaming markets. Where publishers license rights directly to platforms, the resulting revenues do not appear in CISAC-aligned collective management data and are therefore absent from the observed authors' revenue aggregates.

This limitation does not invalidate the comparative use of the model, provided that it is clearly acknowledged and treated consistently. The market comparator model compares observed revenues to observed or estimated quantities within a defined scope. As long as the scope excludes directly licensed revenues in a systematic way, the inferred prices and comparisons remain meaningful within that scope, even if they do not represent the full economic value of all music uses.

### 2.6.3 Producer / Performer Split

In the Livonian example, a simplified split between producers' and performers' neighbouring rights revenues is assumed, for instance on a 50:50 basis. This simplification is introduced to keep the synthetic example tractable and to avoid introducing country-specific contractual detail that would obscure the methodological demonstration.

It is important to stress that this split is a modelling parameter, not a normative or legal assumption. Different countries apply different rules, contractual practices, and institutional arrangements to the allocation of neighbouring rights revenues. Users applying the model to real data are expected to replace this simplified split with authorised and context-specific information where available.

### 2.6.4 National and Domestic Revenues

Several of the limitations discussed above are not intrinsic to digital music markets, but rather reflect the aggregation level of currently available public data. In particular, national market reports typically do not distinguish between domestic and foreign streaming revenues, nor do they expose platform- or tier-specific price–quantity relationships. A separate methodological preprint explores how these limitations could be addressed using distributor-level reporting, demonstrating that it is, in principle, possible to disentangle territorial revenues and effective prices under appropriate data-access conditions. We return to the implications of this approach in the concluding sub-section.

### 2.6.5 Country-Specific Institutional Differences

Rights management structures vary significantly across countries. Differences include the number of collecting societies, the degree of separation or consolidation between authors' and neighbouring rights, and the balance between collective and individual management. These institutional variations affect how data are produced, reported, and accessed.

In D1.5 Section 2, such differences are deliberately abstracted in order to focus on the core logic of the market comparator model. The synthetic Livonian case represents a simplified but plausible institutional configuration, closely resembling that of Hungary, where each institution with its own separate financial reporting clearly represents a class of rights (authors', producers' or performers' rights.) In Slovakia, SLOVGRAM represents both producer's and performer's rights, but SOZA does not represent literary author's rights that Artisjus represents.

In practical applications, local adaptation will be required to map national data sources into the common structure used by the model. The replication strategy outlined earlier is designed to support such adaptations without altering the underlying analytical framework.

## 2.7 Data Comparisons

This section describes how revenues, quantities, and prices are aligned within the market comparator framework. Two complementary comparison strategies are applied:

- revenue–quantity comparisons used to infer implicit (shadow) prices, and
- quantity–price comparisons used where observable prices exist.

Both rely on *a common normalisation* of use to annual notional listening hours.

### 2.7.1 Conceptual Framework for Comparisons

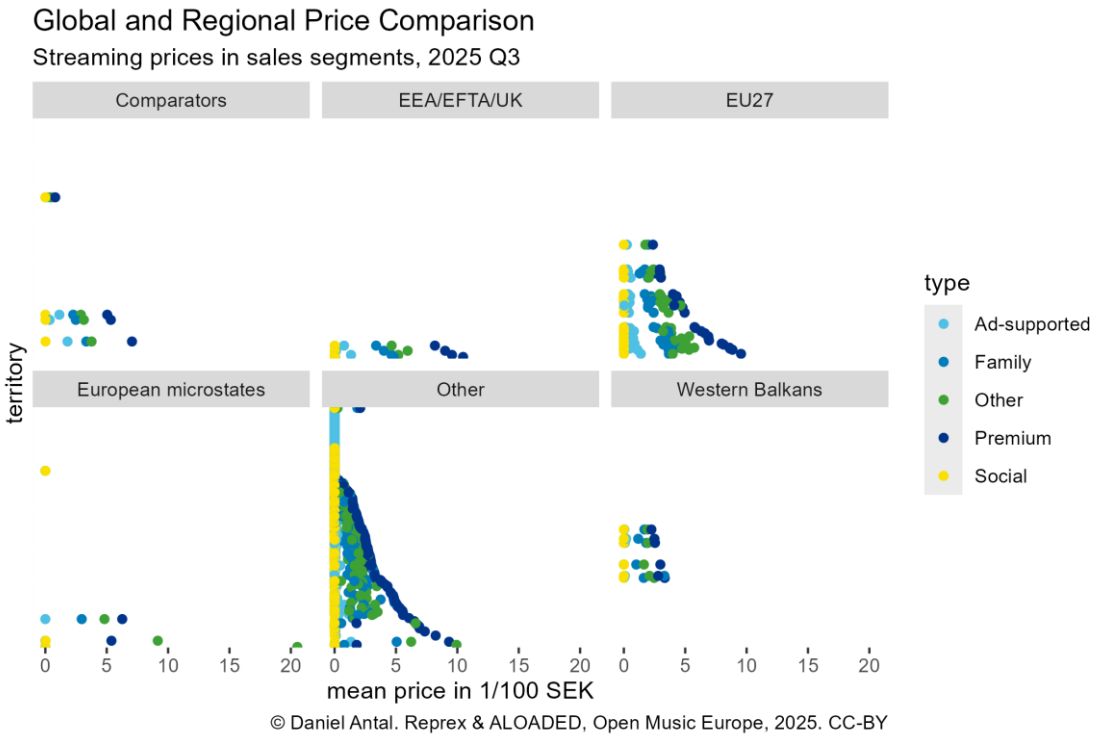
At the core of the market comparator model is the identity

$$R_u = Q_u \times P_u$$

where $R_u$ denotes revenue associated with use category $u$, $Q_u$ denotes the quantity of use, and $P_u$ denotes the unit price. This identity is not a behavioural model but an accounting relationship that must hold by definition once the three elements are measured or inferred on a consistent basis.

The usefulness of this identity in music markets lies in the fact that, for most uses of music, not all three components are observable at the same level of aggregation or from the same data source. In some cases, detailed price and quantity information exists at the level of individual rightsholders or intermediaries, but is not available in aggregated public data. In other cases, revenues are observed while quantities of use must be inferred or normalised.

In *streaming markets*, unit prices are in principle observable for rightsholders. Royalty statements provided by digital distributors typically contain information on per-unit remuneration, quantities of streams, and differentiation by platform and subscription tier, such as premium, family, student, trial, or ad-supported offers. However, this granular information is not available in publicly accessible, national-level IFPI-aligned market reports. At that level, streaming revenues are reported in aggregated form by market segment, without corresponding quantities or effective prices, which necessitates inference when working with public data sources.




In *public performance*, the observability problem is reversed. For broadcasting uses, such as radio and television, quantities of use are in principle observable and often reported through playlists, cue sheets, or monitoring systems, albeit with varying degrees of completeness and accuracy. For other forms of public performance, particularly background music use in hotels, restaurants, catering establishments, retail spaces, and similar environments, actual use is rarely measured directly. Revenues are typically collected on the basis of tariffs or estimated usage profiles, meaning that quantities of use must be approximated rather than observed.

As a result, *the market comparator model does not assume that prices or quantities are inherently unobservable*, but recognises that they are not jointly observable in a consistent, aggregated form suitable for comparative analysis.

The model therefore treats the identity $R_u = Q_u \times P_u$ as an inferential tool. Depending on the use category and data availability, either prices or quantities are inferred from observed revenues and complementary information, using explicit assumptions and documented proxies.

A key distinction in the model is between observed price $P_u$ and *inferred, or shadow, prices* $\hat{P}_u$.

**Observed prices** exist where users pay a directly identifiable price per unit, such as subscription fees, download prices, or physical sales prices.

**Shadow prices** arise where no explicit unit price is observable and must be derived implicitly as

$$\hat{P}_u = \frac{R_u}{Q_u}$$

These shadow prices represent average remuneration per unit of use within a defined category and period. They are not tariffs, contractual rates, or marginal prices, but economic indicators that allow relative comparison across uses, markets, or territories.

The scope of comparison in D1.5 Section 2 is the total economic value of music by use category $u$.

Revenues are aggregated across authors' rights and neighbouring rights to reflect the full value generated by music consumption, irrespective of institutional distribution. Use categories are defined to be economically meaningful and sufficiently stable across countries, such as streaming, broadcasting, public performance, mechanical reproduction, and live performance.

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### 2.7.2 Revenue–Quantity Comparisons (Implicit Prices)

#### *2.7.2.1 Purpose and Interpretation*

When prices are not directly observable, implicit (shadow) prices are inferred by rearranging the market comparator equation:

$$\hat{P}_u = \frac{R_u}{Q_u}$$

This approach allows relative price levels to be compared across uses, markets, or territories, even when no explicit tariff or transaction price exists.

- When and why shadow prices $\hat{P}_u$ are inferred
- Economic interpretation of implicit prices as average value per unit of use
- Limits of interpretation (not contractual or normative prices)

#### *2.7.2.2 Revenue Inputs*

Revenues $R_u$ are constructed from multiple reporting systems and aggregated to reflect total music value.

- CISAC-aligned authors' revenues

- IFPI-aligned neighbouring rights revenues
- Net distributable revenues as the preferred comparison basis
- Aggregation rules and avoidance of double counting

Formally, for each use category $u$:

$$R_u = R_u^A + R_u^N$$

where $R_u^A$ denotes authors' revenues and $R_u^N$ denotes neighbouring rights revenues. The specific computations are reported below.

#### *2.7.2.3 Quantity Inputs*

Quantities $Q_u$ are derived from CAP survey data and expressed as annual notional listening hours.

- CAP-based listening hours
- Mapping of CAP variables to use categories
- Aggregation across locations (home, work, travel)

For a given use category $u$:

$$Q_u = \sum_l H_{u,l}$$

where $H_{u,l}$ denotes listening hours in location $l$.

#### *2.7.2.4 Matching Revenues to Quantities*

- Definition of comparable use categories $u$
- Handling of cross-right and mixed-use categories
- Treatment of residual or estimated uses

The matching process ensures that each $R_u$ is paired with a conceptually consistent $Q_u$. The following sub-sections explain in detail the matching process in each use category.

#### *2.7.2.5 Outputs*

- Implicit price per listening hour $\hat{P}_u$
- Relative price indicators across uses: $\frac{\hat{P}_u}{\hat{P}_v}$
- Cross-country comparability considerations

$$\frac{\hat{P}_u}{\hat{P}_v}$$

### 2.7.3 Quantity–Price Comparisons (Observed Prices)

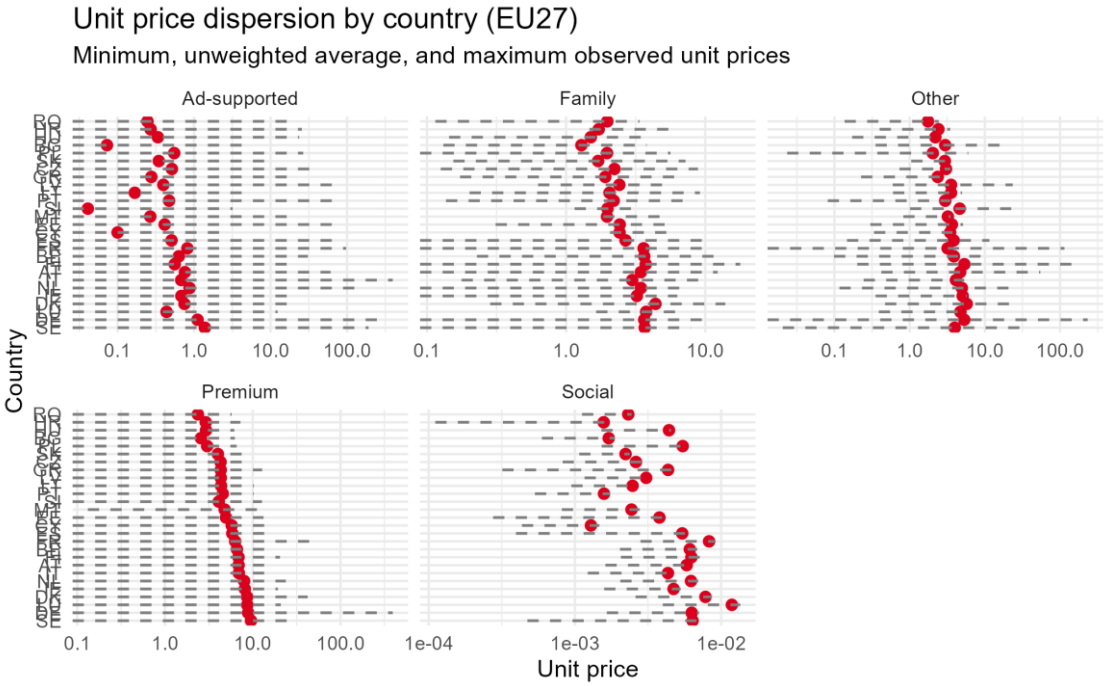
#### *2.7.3.1 Purpose and Role in the Model*

Where prices are directly observable, the model reverses the logic and validates revenue–quantity results.

- Validation and calibration of shadow prices
- Complementarity with revenue–quantity comparisons

#### *2.7.3.2 Observable Price Sources*

Observed prices $P_u$ are available for a limited subset of music uses. Where such prices exist, they can be used either directly in quantity–price comparisons or indirectly as calibration and validation points for inferred (shadow) prices derived from revenue–quantity comparisons.




#### *2.7.3.3 Subscription prices are the most visible and widely observed prices in contemporary music markets.*

Subscription prices are the most visible and widely observed prices in contemporary music markets. Retail subscription fees for streaming services are publicly advertised and vary across subscription tiers, such as individual, family, student, and ad-supported plans. While these prices are not prices per unit of music use, they provide meaningful proxies for relative price differences across platforms and user segments. In D1.5 Section 2, subscription prices are treated as contextual benchmarks rather than as direct unit prices, and their analytical implications are explored further in the following sub-sections.

Download prices are, in principle, observable at the level of individual transactions. Retail prices for permanent downloads are publicly listed by digital stores and platforms, and, when combined with sales volume data, can be used to derive average prices per unit sold. However, download markets are increasingly fragmented and declining in importance, and publicly available aggregate statistics are

often limited. As a result, download prices are treated cautiously and primarily as supplementary calibration points.

Physical sales prices are observable through industry reporting in some countries. In Hungary, Mahasz publishes a long historical series of annual statistics on physical music sales, spanning more than two decades. These data include breakdowns by format and, in some cases, by repertoire categories such as local, international, or classical music. By combining revenues and unit sales, average prices per physical unit can be derived. These prices reflect one-off transactions rather than ongoing use and therefore require stock–flow normalisation when compared to annual listening quantities.

Ticket prices for live performances constitute another category of observed prices. Collective management organisations routinely collect information on average ticket prices for concerts, as these figures are required to calculate authors' and performers' remuneration. Similar information is available for discotheques and other forms of foreground public performance, where remuneration is often linked to ticketed or attendance-based events. These prices can be aligned relatively directly with event-based quantities, although they still require aggregation to an annual basis.

Platform-level pricing for streaming, in the sense of effective price per stream or per listening hour, is technically observable at the level of individual rightsholders through distributor reports. Such reports contain detailed information on quantities and revenues by platform, territory, and subscription tier. However, this level of detail is not available in aggregated national IFPI reports or other public data sources. Consequently, in D1.5 Section 2, platform-level pricing is approximated by dividing total national streaming revenues by notional listening hours derived from CAP survey data. This approach yields an average implicit price per listening hour at the country level, suitable for comparative analysis but not for platform-specific pricing assessment.

Together, these observable price sources provide partial anchors for the market comparator model. They do not eliminate the need for inferred prices, but they support validation, sensitivity analysis, and interpretation of the results derived from revenue–quantity comparisons.

#### *2.7.3.4 Observable Quantity Sources*

- Sales volumes
- Subscription counts
- Stream counts (where available)
- Conversion to listening hours

Observed quantities $Q_u$ are transformed to notional hours to maintain consistency:

$$Q_u = V_u \times \alpha_u$$

where $V_u$ denotes observed volume and $\alpha_u$ is a conversion factor to listening hours.

For example, we assume that concerts are on average 90 minutes or 1.5 hours long:

$$Q_l = V_l \times 1.5$$

#### *2.7.3.5 Price–Quantity Alignment*

Aligning prices and quantities requires careful attention to unit consistency, temporal alignment, and the treatment of bundled or averaged pricing structures. Observed prices rarely correspond directly to the units in which quantities are measured, and both must be normalised to ensure that inferred or observed prices are economically meaningful.

Prices are mapped to quantities at the level of comparable use categories. Subscription prices are aligned with aggregated listening hours associated with streaming use, download prices with listening derived from permanent acquisitions, and ticket prices with event-based listening quantities. Where prices apply to bundles of access or consumption rather than to individual units, quantities are aggregated accordingly before alignment.

Unit consistency is achieved by expressing both prices and quantities in annual terms. Revenues are treated as annual flows recognised within the accounting period, and quantities are converted into annual notional listening hours. This ensures that price estimates reflect an implicit price per hour of use rather than per transaction or per access right.

Temporal alignment is particularly important for stock-based uses such as physical recordings and downloads. While revenues are recognised at the time of sale, consumption may occur over multiple years. D1.5 Section 2 adopts a flow normalisation approach in which annual listening hours are treated as representative of contemporaneous consumption supported by a mix of current and past purchases. This avoids the need for explicit depreciation or amortisation assumptions while maintaining internal consistency.

Bundled and averaged prices are handled through aggregation. Subscription fees, background music licences, and blanket public performance tariffs apply to bundles of music use rather than to individual tracks or events. In these cases, prices are interpreted as average prices over a bundle of listening activity, and quantities are aggregated to the same level. The resulting price–quantity pairs therefore represent average economic relationships rather than marginal prices.

Through these alignment steps, observable prices and quantities can be combined to derive meaningful price indicators or to validate inferred prices obtained from revenue–quantity comparisons. While the resulting prices should not be interpreted as contractual tariffs, they provide a coherent basis for comparative analysis across uses, markets, and territories.

### 2.7.4 Stock–Flow Conversion and Annualisation

All quantities are expressed as annual flows:

$$Q_u^{annual} = \sum_{t=1}^{T} q_{u,t}$$

- Flow normalisation to annual listening hours
- Treatment of legacy consumption
- Rationale for avoiding explicit asset depreciation

### 2.7.5 Use-Specific Treatment

### *2.7.5.1 Radio*

We measured the listening (enjoyment) time of recorded music using a **model survey question** entitled **"Listening duration to recorded music by source and place (last working day)"** (omo:Q2044). This item is classified in the Open Music Observatory (OMO) knowledge base as a member of the **survey question** class, which is defined as an exact semantic equivalent of **disco:Question** in the DDI-RDF Discovery Vocabulary.

The model survey question represents the abstract definition of the question, independent of any specific questionnaire, ordering, or survey instrument. Multilingual versions of the question wording were recorded using the **title** property, qualified by language tags. These title statements correspond directly to **disco:questionText**, enabling lossless export to DDI-Disco–compliant tools.

The model question was then *contextualised through a set of question usage items*, corresponding to *DDI QuestionConstructs*, which represent the concrete use of the question in specific analytical contexts. These QuestionConstruct items bind the abstract model question to particular combinations of listening source and listening place, and to their placement within a questionnaire instrument.

For the measurement of listening time in broadcast media, the model question was instantiated for the sources **radio** and **television**, and for the listening contexts **at home**, **while travelling**, and **at work**. In these instantiations, the same underlying question wording and measurement concept were reused, while the contextual parameters (source and place) were fixed through structured properties rather than through textual variation.

$$R_r = R_r^A + R_r^N$$

If we do not have directly neighboring rights radio revenues, then we use the simplified formula for the total radio use revenue as

$$R_r^T = R_r^A \times \beta_{perf}$$

where $\beta_{perf}$ is the multiplier for increasing the revenue with comparable neighboring rights data.

$$\hat{P}_r = \frac{R_r^T}{Q_r}$$

### *2.7.5.2 Television*

$$Q_r = Q_r^{home} + Q_r^{travel} + Q_r^{work}$$

For reasons of analytical clarity and feasibility, no distinction was made between different broadcast transmission technologies.

In particular, *satellite broadcasting, cable retransmission, and terrestrial broadcasting of radio or television* were treated as a *single radio* and *single television* category. This simplification was adopted to ensure consistency across datasets and to align with the level of detail available in the underlying survey data.

$$R_{tv}^A = R_{tv}^{terr} + R_{tv}^{cable} + R_{tv}^{sat} + R_{tv}^{net}$$

And the total television revenue is: \

$$R_{tv}^{T} = R_{tv}^{A} \times \beta_{perf}$$

where $\beta_{perf}$ is the multiplier for increasing the revenue with comparable neighboring rights data.

This modelling approach allows a clear separation between question definition and question usage, supports multilingual documentation, and ensures full interoperability with DDI-Disco, while remaining compatible with the OMO Wikibase data model and downstream statistical processing workflows.

$$\hat{P}_{tv} = \frac{R_{tv}^{T}}{Q_{tv}}$$

#### *2.7.5.3 Physical and digital records {#sec-pilot-use-mechanical}*

In IFPI-aligned data, we find downloads and physical sales separately; in CISAC-aligned data, we find phonograph-related revenues in a separate line. As we explained, these royalties are lump-sum, one time royalties. For business buyers, for example, radios or libraries, they are expensed in the year of the purchase. Private buyers may use their physical products for a long time, and for simplicity, we assume that they keep renewing their home collection every year. With this assumption we can compare the CAP year use with the same year's phonogram uses.

$$R_{ph}^{T} = R_{ph}^{A} + R_{physical}^{N} + R_{download}^{N}$$

#### *2.7.5.4 Streaming*

Some IFPI members report separately ad-supported and premium (subscription) revenue from streaming. We do not have this separation in the CISAC-aligned data, therefore we add all streaming revenue data in the CAP surveys for quantities, and in the revenue data tables together into streaming aggregates.

$$Q_s = Q_s^{premium} + Q_s^{ad}$$

The other difference is that both CISAC-aligned data and IFPI-aligned data has special multimedia or digital uses, for example, "ringtones", which are less and less used. In CISAC aligned data, they tend to be grouped with streaming, the major "digital" income; in IFPI-aligned data it may appear in "other". In the actual datasets we reviewed these elements were immaterial, so we can claim that in CISAC-aligned data streaming revenues are the bulk of the "digital and multimedia" revenues, even if they are not available as a separate line. In IFPI-aligned data, we find this information under the "streaming category".

$$R_s^{T} = R_s^{A} + R_s^{N}$$

The implicit price of streaming per hours:

$$\hat{P}_s = \frac{R_s^T}{Q_s}$$

### *2.7.5.5 Public Performance*

In IFPI-aligned public data, public performance revenues are reported as a *single aggregate*, without a breakdown by specific use categories such as radio, television, background music, or discotheques. This reflects the market-facing perspective of IFPI reporting, in which public performance is treated as a unified revenue stream rather than as a rights- or use-specific accounting structure. While neighboring rights societies may be able to produce the similar revenue breakup to the CISAC-aligned data, in this case we just use the same proportions that is available for the author's revenues.

CISAC-aligned authors' data provide a detailed breakdown of public performance revenues by use category. Rather than attempting to infer missing neighbouring-rights revenues through fixed multipliers or country-specific ratios, D1.5 Section 2 adopts a *proportional allocation approach* based on observed authors' revenue structures.

The procedure consists of three steps:

1. Calculating the weights.
2. Looking up the available disaggregated IFPI-aligned data
3. Breaking up the IFPI-aligned data with the CISAC-aligned weights.

Let $R^A_{u,c,y}$ denote authors' revenues from public performance use category $u$ (radio, television, digital, background music, discotheques) in country $c$ and year $y$, excluding concerts. For each country–year, we compute the *within-public-performance revenue share* of each use category as:

$$w_{u,c,y} = \frac{R^A_{u,c,y}}{\sum_{v \in U} R^A_{v,c,y}}$$

where $U = \{radio, television, digital, background, discotheques\}$.

These shares (weights) sum to one for each country–year:

$$\sum_{u \in U} w_{u,c,y} = 1$$

They capture the *relative importance of each use category* within authors' public performance revenues.

Let $R^N_{c,y}$ denote total IFPI-aligned neighbouring-rights public performance revenue for country $c$ and year $y$. This value is observed only at the aggregate level and has no internal use-category breakdown.

Neighbouring-rights public performance revenue is then allocated across use categories using the authors' revenue shares as weights:

$$\tilde{R}^N_{u,c,y} = w_{u,c,y} \times R^N_{c,y}$$

where $\tilde{R}^{N}_{u,c,y}$ denotes the allocated neighbouring-rights revenue for use category $u$.

This procedure ensures that total IFPI public performance revenue is preserved:

$$\sum_{u \in U} \tilde{R}^{N}_{u,c,y} = R^{N}_{c,y}$$

This way neighbouring-rights revenues inherit a **structurally realistic distribution** across uses, and no country-specific contractual ratios are assumed.

Concerts are excluded from this allocation. Performers' remuneration for live performances is typically paid directly by organisers and does not flow through IFPI-aligned public performance reporting in a manner comparable to broadcasting or background music uses. Only authors' royalties from concerts are therefore retained in the public performance structure, and neighbouring-rights revenues are not allocated to this category.

This weighting approach treats authors' public performance revenue structures as an *empirical proxy for the distribution of use intensity* across public performance categories. It avoids strong institutional assumptions, remains transparent and reproducible, and can be replaced by country-specific neighbouring-rights breakdowns if authorised data become available.

#### *2.7.5.6 Live Performances*

Concerts are remunerated in two ways: the performers are directly paid, and the composer's share is collected by authors' societies. For the value of concert listening hours, we add the average ticket price for every 90 minutes of the event number.

$$Q_l = V_l^{event} \times 1.5$$

$$R_l = V_l^{event} \times P^{ticket} + R_l^A$$

$$\hat{P}_l = \frac{R_l^T}{V_l^{event} \times 1.5}$$

#### *2.7.5.7 Discotheques and background music*

In the CISAC-aligned data, the public performance fees related to these events are separately reported. In the IFPI-aligned data, in the public releases this information is not available, but internally it may be present. Furthermore, discotheques often ticket for entry.

$$R_d = V_d^{event} \times P_d^{ticket} + R_d^A \times \beta_{perf}$$

$$R_b = R_b^A \times \beta_{perf}$$

$$\hat{P}_d = \frac{R_d^T}{V_d^{event} \times 1.5}$$

$$\hat{P}_b = \frac{R_b^T}{V_b^{event} \times 1.5}$$

### 2.7.6 Outputs

Implied price per listening hour:

$$P_u^* = \frac{P_u}{\alpha_u}$$

- Comparison with shadow prices $\hat{P}_u$
- Sensitivity to assumptions

### 2.7.7 Mapping and Consistency Checks

- Use–revenue–quantity mapping table
- Identification of gaps and overlaps
- Internal consistency checks: $\sum_u \quad R_u \approx R_{total}$

### 2.7.8 Limitations of Comparisons

- Partial observability of prices
- Dependence on proxy measures
- Implications for interpretation

## 2.8 Conclusion and Further Work

D1.5 Section 2 demonstrates how a market comparator model can be implemented using standardised, publicly available, and institutionally familiar data sources, while remaining transparent about assumptions and limitations. In doing so, it deliberately operates at a level of aggregation that reflects what is normally observable to researchers, regulators, and stakeholders. One consequence of this choice is that certain dimensions of digital music markets—most notably the territorial allocation of streaming revenues and the detailed mapping between prices and quantities—remain only partially observable within the model.

Recent methodological work documented in *Microphone Check: What Platform-Level Data Could Change in Music Market Analysis* illustrates that these constraints are not purely technical (Dániel Antal 2025). Using a fictitious sound recording and simulated distributor-level reporting, the study shows how platform-specific prices, subscription tiers, and territorial revenue flows can be reconstructed when more granular data are available. This approach makes it possible to separate domestic and foreign revenues, to identify effective unit prices, and to align consumption volumes more precisely with remuneration outcomes. While such analyses are not currently replicable using public market reports, they point to a feasible direction for future transparency, regulatory cooperation, and evidence-based policy design. Together with the D1.5 Section 2, this work suggests a layered research agenda: robust comparative analysis using standard data today, and progressively richer market insights as data accessibility improves.

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# Conclusion

This deliverable describes the workflows and presents the results of parallel pilot studies on the valuation of live and recorded music, respectively. The methods developed in the two studies provide **complementary perspectives on total music value**:

- The **live music valuation study** merges survey microdata on individual spending behaviour with secondary data on gig attendance and national accounts statistics on flows of economic value. In doing so, it demonstrates the macro-level impact of individual musical engagement, as mediated by multiplier effects in a complex, cross-sectoral economic and cultural ecosystem (cf. D3.4).
- The **recorded music valuation study** demonstrates how empirically grounded data synthesis can circumvent data enclosure to shed light on rights-based revenue flows, their distribution across creators and intermediaries, and their sensitivity to zero-price and bundled use.

Both methods share the fundamental OpenMusE design principles of transparency of assumptions, reproducibility of workflows, the creative merger of numerous data sources and analytical methods, and sensitivity to the rights and needs of data curators and other stakeholders. Both methods are furthermore scalable and transferable to any territory in which:

- Simple, representative audience surveying is possible;
- National statistics institutes, CMOs, venue associations, or other stakeholders collect accurate data on live music attendance;
- National accounts data are openly accessible; and
- CMOs or comparable stakeholders collect data on rights-based revenue disaggregated by channel and use context.

Accessing these data requires some financial investment (e.g., survey fieldwork) and significant stakeholder networking, however, it would in principle be possible in any EU Member State, as well as many other territories. Moreover, the initial methodological design investment made by OpenMusE would *not* have to be repeated: the valuation models, data collection instruments and procedures, and analytical methods are open-source / open-access and documented in compliance with the Open Policy Analysis concept at the project repositories (see Annex 1 and Annex 2). This significantly lowers the barriers to replication.

In addition to proposing the two valuation exercises, D1.5 highlights how improved data and more replicable methodologies can increase artists' revenues. Regarding the valuation of live music, Section 1 identifies four channels through which this occurs: evidence-based policy advocacy, fairer tariff-setting by collective management organizations, reduced information asymmetries in individual contracting, and the diagnostic identification of leakage between audience spending and artists' income. Regarding the comparator model to value the recorded music ecosystem, Section 2 identifies three channels: more accurate attribution of uses to rightsholders, reducing unmatched or misallocated royalties, better visibility of implicit price differences across use categories, enabling more informed licensing and negotiation, and stronger empirical foundations for policy and regulatory interventions addressing structural imbalances in remuneration.

The present work acknowledges several limitations. Live music results are sensitive to attendance data quality, which varies substantially across countries and does not yet follow standardized European methodology. The analysis captures direct economic impacts but cannot quantify social benefits such

as community cohesion, cultural identity, or psychological well-being. Recorded music valuation is demonstrated through synthetic data rather than real market analysis, serving primarily as methodological proof-of-concept.

Future development should thus prioritize establishment of harmonized European data collection on cultural access and participation, the revision of statistical systems to make cultural sectors more visible, and the creation of infrastructures, incentives, and forums for sharing confidential data on live and recorded music alike. To conclude, our core recommendations for uptake, transfer, and scaling are:

- Integration of the findings presented in this report directly into the planned 2027 Report on the State of Culture in Europe (cf. Culture Compass for Europe (COM(2025) 785 final).
- Commitment to yearly or bi-yearly cross-EU surveying on cultural access and participation within the data collection agenda of the planned EU Cultural Data Hub (cf. D3.2).
- Integration of the OpenMusE question batteries on live music attendance, live music expenditure, and recorded music use (cf. D3.2) into the above cultural access and participation survey questionnaire.
- Formation of a stakeholder advisory board for the EU Cultural Data Hub including 1) representatives of Eurostat and major national statistics institutes; 2) curators of data on live music attendance (e.g., CMOs, venue associations); and 3) curators of revenue data (e.g., CMOs).
- Integration into the EU Cultural Data Hub of a data space architecture that would enable the secure and legally compliant sharing of the above proprietary data under a system of variable permissions – e.g., the Open Music Observatory architecture (cf. D2.3, D5.7).

Taking these steps would allow the EU Cultural Data Hub team to conduct comprehensive and accurate yearly or bi-yearly assessments of the economic value generated by both live and recorded music in Europe.

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# Annex 1: Methods for Assessing the Value of Live Music – Supplementary Materials

The source data, code, and documentation necessary to replicate the live music valuation study are available in the project repository at:

https://github.com/openmusiceurope/

# Annex 2: Methods for Assessing the Value of Recorded Music – Supplementary Materials

The source data, code, and documentation necessary to replicate the recorded music valuation study are available in the REPREX repository at:

https://github.com/dataobservatory-eu/openmuse-valuation