

# Measuring and Monitoring Music, Society and Citizenship Data with Open Source Technology and Data Sharing Within the Digital Music Observatory

DOI 10.5281/zenodo.6435530

Daniel Antal, CFA, Reprex & University of Amsterdam  
Andrés García Molina, PhD, Reprex

2022-04-10

## Abstract

The *Feasibility study for the establishment of a European Music Observatory* (in short: EMO Feasibility Study)<sup>1</sup> has identified four critical data gaps related to the diversity and circulation of European music. This is a key business planning and policy problem, and of course, a serious shortcoming for better music research in the Europe.

**The identified data gaps of the EMO Feasibility Study**<sup>2</sup>. This document has three parts:

### I. Task list

1. Methodology Issues

### II. Filling the Data Gaps

1. Training schemes for music professionals;
2. Training schemes for artists; 2. Music education; 4. EU consumers and music; 5. Social networks and music
3. Consumer patterns regarding piracy and its impact on the music sector; 7. Scope of the not-for-profit sector in Europe; 8. Social impact of music in communities

Furthermore, since the *EMO Feasibility Study* was published the sustainability of the music industry became an important issues. Therefore, we modify the definition of 8. *Social impact of music in communities* to Environmental, social, and governance impacts of music in communities

**Existing data sources** 1. Music schools and conservatories 2. Music education 3. Consumer patterns regarding piracy and its impact on the music sector

### II. The Diversity & Circulation Pillar of the Digital Music Observatory

1. From CEEMID to the Digital Music Observatory *This can be used in excellence / Objectives and WP Implementation.*
2. Cultural and Music Policy Relevance *This can be used as state-of the art in Objectives.*
3. Open Collaboration, Open Policy Analysis, and Open Data *This overlaps with our general WP Implementation.*

### III. References

The *EMO Feasibility Study* defines the general Music, Society and Citizenship Pillar of the future European Music Observatory that it “. . . has a wide outlook in that it consists of measuring the interactions between individuals and music, from learning to play music to consumer behaviour with regards to music, such as listening habits, live event attendance etc. Many of these questions will find answers via surveys that can be commissioned by a European Music Observatory and through reports on specific topics.”

<sup>1</sup>Feasibility study for the establishment of a European Music Observatory (European Commission et al. 2020).

<sup>2</sup>Feasibility study for the establishment of a European Music Observatory (European Commission et al. 2020, pp31–38).

The Digital Music Observatory (formerly CEEMID) has been conducting such harmonized surveys, and developed methodologies and open source software to recycle pan-European surveys commissioned by the European Commission or the national statistical offices.

Please find the authoritative copy of this document (or later versions) on Zenodo. Subjects: Music audiences; Musicians; Music–Instruction and study; Music in education; Surveys.

## Task list

### Methodology Issues

CEEMID and later the Digital Music Observatory has been following the methodological guidelines of the former *ESSNet-Culture* statistical working group. These methods were synthesized from the best practices found by ESSNet-Culture, a working group set up by Eurostat and 15 member states' national statistical offices to measure cultural and creative industries (Bína, Vladimir et al. 2012; Haan and Adolfsen 2008; Haan and Broek 2012).

The ESSNet-Culture working group recommends the measurement of cultural access and participation (including market- and non-market forms) on the basis of the ICET model (Bína, Vladimir et al. 2012, pp 237-239). Because copyright (and neighboring rights) are territorial, prices differ country-by-country, and our data collection strategy mainly must follow national borders (territories.) (This is the case in live music, too, although mainly for different reasons, as live performances have only a small royalty component, if at all.)

- **Information:** to seek, collect and spread information on culture;
- **Communication and community:** to interact with others on cultural issues and to participate in cultural networks;
- **Enjoyment and expression:** to enjoy exhibitions, art performances and other forms of cultural expression, to practice the arts for leisure, and to create online content;
- **Transaction:** to buy art and to buy or reserve tickets for shows.

The ICET model is based on a long history of quantitative sociology and media research which has almost 50 years of research history. It is a well-established methodology. For more details on the ICET model and conducted Cultural Access and Participation surveys with it see (Haan and Adolfsen 2008; Haan and Broek 2012). The ICET model is particularly well suited for our needs, because the music sector has very large transactional datasets, and the model allows the collection of missing, complementing information to existing data. We will employ ICET surveys with special features to collect information mainly from the music audience, the participants of events, and to some extent, market practitioners.

The benefit of the ICET model is that it connects well with transactional data. In music streaming, transactions, at least partially, can be observed. Almost all recorded industry transactions have full transactional detail (use, licensing data, price) and to a lesser extent, live music performances have rich transactional data. Live music data is recorded at least for licensing, and repertoire use, except for liturgical, amateur practices, and some early, classical, and authentic folk music that requires no licensing (as the music has no protected rights anymore.) is available. But even these practices have very significant data trail. The problem with this data is that it is usually transactional, and it is linked to various data that is connected to the protection of personal data (both rightsholder and often user data) and to business confidentiality.

The retroharmonize R package allows us to retrospectively harmonize survey data for the music industry (Antal 2020b). It was originally developed for the Hungarian, Slovak, and Croatian music industry reports, and the Central European Music Industry Report (Antal 2020a) to provide comparable pan-European indicators about concert demography and amateur music practices demography.

### Survey harmonization and recycling

Please review (Antal 2022a, 2022b) and join writing the publication. - The first description of the harmonized dataset - You can download the data from [here](#)

## Playing An Instrument

Percent of respondents who played a music instrument in 2012

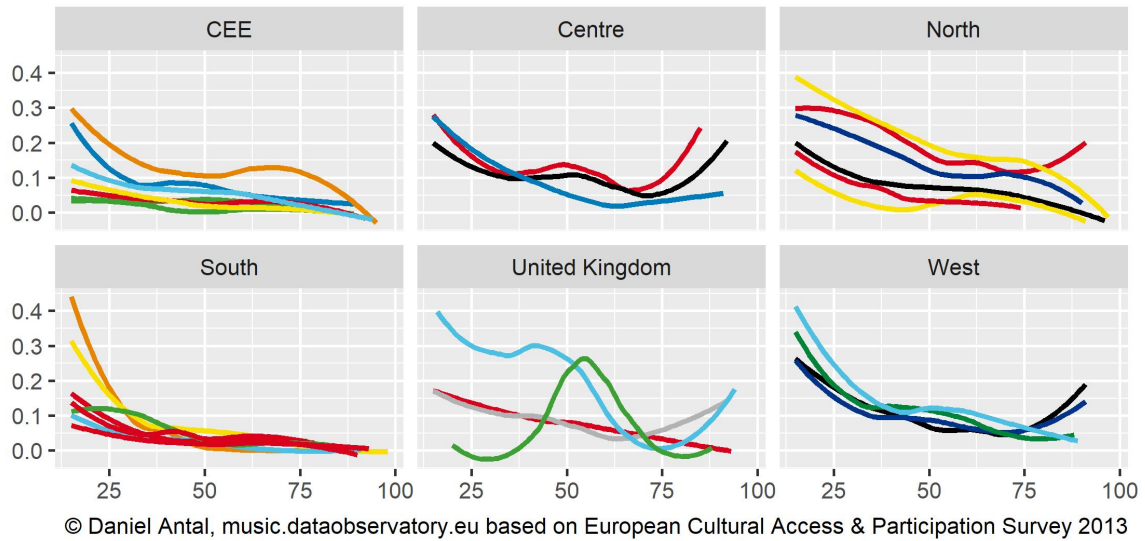


Figure 1: Survey harmonization and recycling with music access and participation data.

### Environmental, social and governance sustainability

From 2023 under the European Green Deal, and particularly the sustainable finance package, organizations that engage in sustainable activities in their entire value chain will receive more favorable bank financing, insurance, and investment opportunities. Other organizations, that are not sustainable, or cannot report their sustainability policies in a credible way, will get funding with less and less favorable ways.

Our aim is to create a tool that helps music organizations to create loan applications, insurance application for favorable financing, and support the sustainability reporting of music organizations following the relevant EFRAG (IFRS), GRI and GHG protocols on reporting environmental, social and governance disclosures, with a particular focus on greenhouse gases, and some focus on sustainable water use, the gender paygap (social factor) and transparency risks (governance.)

While the CSRD Directive only makes IFRS-compliant accounting and sustainability reporting of factors relevant for carbon emissions, environmental sustainability, and the social development goals for large corporations, listed SMEs and the financial industry, indirectly all organizations, including the SME driven music industry can benefit from voluntarily applying these standards, as that will open their way for financing their way to zero emissions.

### Work Package Tasks

This is a part of our Proposal to the *Towards a competitive, fair and sustainable European music ecosystem* grant call.

## Cultural and Music Policy Relevance

### Filling the Data Gaps

Pillar 3 - Music & Society					
pillar	Topic	problem	availability	Description	
					feasibility
Pillar 3	Music schools and conservatories		Data gap		National statistical institutes, government data
Pillar 3	Music education - Formal practices		Data gap		National statistical institutes, government data, European Association for Music in Schools.
Pillar 3	Music education - informal practices		Data gap		The Feasibility Study did not address this, but in popular music, informal learning practices are far far more important. We will address this issues.
Pillar 3	Training schemes for music professionals		Data gap		Lack of European data on the state of training for music professionals.
Pillar 3	Training schemes for artist		Data gap		Lack of European data on the state of training for artists.
Pillar 3	Music education		Data gap		Lack of European data on the state of music education.
Pillar 3	Consumer patterns regarding piracy and its impact on the music sector		Available		Some countries like France with Hadopi have attempted to evaluate the way consumers access legally music while setting up educational campaigns on piracy, similar to the UK initiative Get it Right. Materials/studies are also provided by EUIPO.
Pillar 3	EU consumers and music		Data gap		No authoritative assessment of the relationship between consumers and music at pan-European level
Pillar 3	Social networks and music		Data gap		No authoritative assessment of how European consumers interact with music on social networks
Pillar 3	Consumer patterns regarding piracy and its impact on the music sector		Available		Limited pan-European data on the impact of piracy but also on the motivations to consumer music content via legal sources. EUIPO does have some data on the economic cost of IPR infringement in the recorded music industry.
Pillar 3	Scope of the not-for-profit sector in Europe		Data gap		No mapping of the not-for-profit music sector in Europe, in particular in exposing new talent and forging social cohesion.
Pillar 3	Social impact of music in communities		Data gap		Although there is some academic research available, there is no co-ordination of research on the social impact of music in Europe.

#### Training schemes for music professionals

#### Training schemes for artists

#### Music education

#### EU consumers and music

#### Social networks and music

#### Consumer patterns regarding piracy and its impact on the music sector

#### Scope of the not-for-profit sector in Europe

#### Social impact of music in communities

### The Music, society and citizenship Pillar of the Digital Music Observatory

According to the *EMO Feasibility Study*, "there is already an existing pool of data that would allow the European Music Observatory to start compiling information about the European music sector. Various potential sources and providers of data are ... [available, such as our *Digital Music Observatory*]. Many of these providers have already indicated support for a future European Music Observatory, and are willing to collaborate and provide data. However, some data is not collected or is not aggregated in a way that it can be compared across Europe<sup>3</sup>.

#### From CEEMID to the Digital Music Observatory

The Digital Music Observatory (formerly CEEMID) has been identified among these data sources<sup>4</sup>. CEEMID was originally an acronym for a data integration project that aimed to *Create a Regional Music Database to Support Professional National Reporting, Economic Valuation and a Regional Music Study*<sup>5</sup>. According to the "CEEMID can transfer thousands of indicators that are reproducible and verifiable, open-source software that creates them to a European Music Observatory. In particular, CEEMID provides a useful and interesting approach to harnessing the possibilities of open data in Europe in

<sup>3</sup>Feasibility study for the establishment of a European Music Observatory (European Commission et al. 2020, pp31–34).

<sup>4</sup>Our observatory is mentioned to be able to participate with "data collection and integration system based on open data, opensources and online surveys" in all pillars of the future European Music Observatory, including Diversity & Circulation (European Commission et al. 2020, p40.)

<sup>5</sup>The original aim of CEEMID was *Measuring and Reporting Regional Economic Value Added, National Income and Employment by the Music Industry in a Creative Industries Perspective* Three national collective management societies and their consultant signed Memorandum of Understanding about this in 2014 (Artisjus et al. 2014).

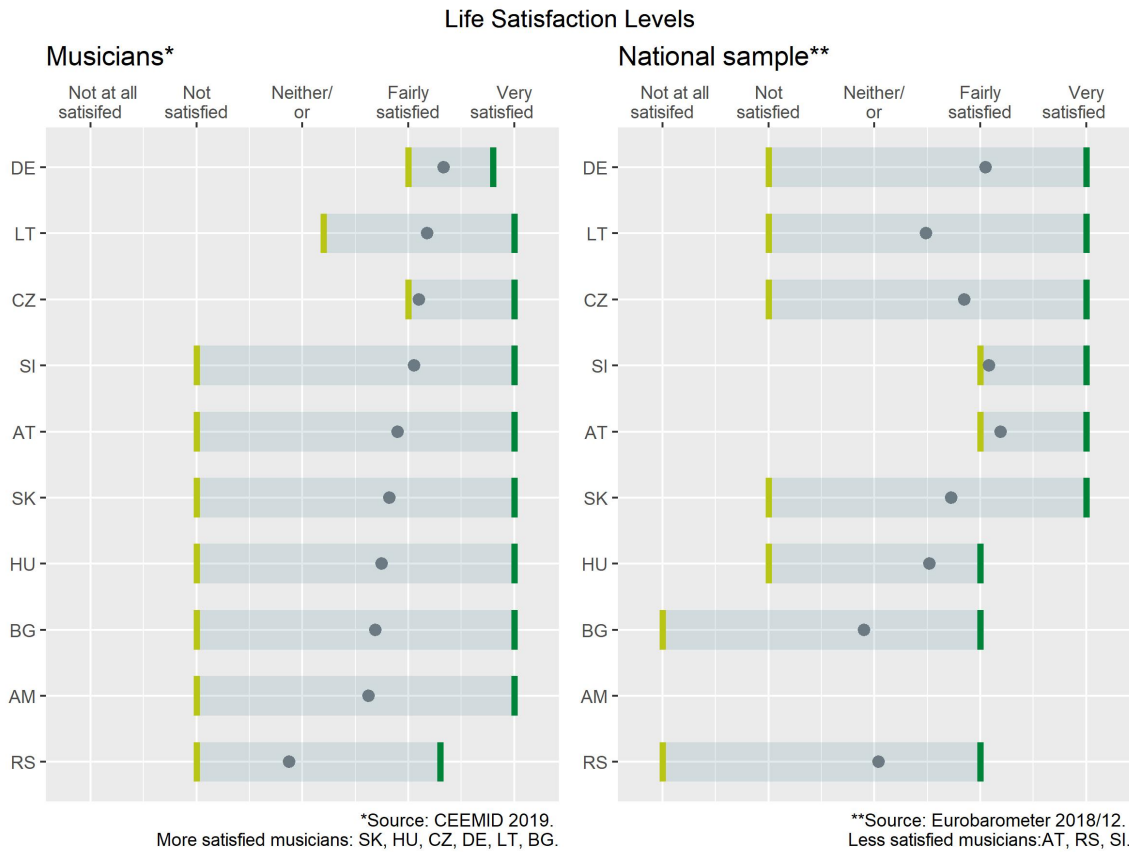


Figure 2: Comparison of Life Satisfaction levels among musicians and the general public

relation to the music sector, which should be further explored by the European Music Observatory in its start-up phase.”<sup>6</sup>

The Digital Music Observatory is built on the gradual, and open extension of the original CEEMID consortium, and builds on practical research and innovation that contributed to many music policy goals in an increasing number of countries since 2014. The original CEEMID consortium delivered the first Hungarian music industry studies (followed by several subsequent ones), the Slovak national music industry study, *Private Copying in Croatia*, and eventually the regional Central European Music Industry Report.<sup>7</sup> All of these industry studies addressed the problem of shrinking competitiveness in of the small language repertoire in the streaming era.

The Feasibility Study is built on a consensus of many European music organizations “that a European Music Observatory should act as a centralised music data and an intelligence hub at European level.” However, as a pilot project and policy brief carried out in Finland<sup>8</sup>, or the CEEMID project in Central and Eastern Europe has shown, has its limits. We believe that the existing data availability is better than that described in the *Feasibility study*, and since the creation of this report, it has only got better.

Since 2014, the Digital Music Observatory (former CEEMID) successfully piloted data collection, standardization and harmonization procedures that can fill all the data gaps identified in the music diversity and circulation pillar of the future European Music Observatory. CEEMID was transformed into a “Demo Music Observatory” on 15 September 2020<sup>9</sup> and eventually named *Digital Music Observatory* in 2021. Its policy relevance was also recognized in the United Kingdom after Brexit<sup>10</sup>.

<sup>6</sup> Feasibility study for the establishment of a European Music Observatory (European Commission et al. 2020, pp147–148).

<sup>7</sup> A ProArt zeneipari jelentése (Antal 2015) and *The Growth of the Hungarian Popular Music Repertoire: Who Creates It And How Does It Find An Audience* (Antal 2017); *Správa o slovenskom hudobnom priemysle* (Antal 2019b), *Private copying in Croatia* (Antal 2019a), *Central European Music Industry Report* (Antal 2020a).

<sup>8</sup> See the Policy Brief *A Symphony, not a Solo* (Osimo et al. 2019).

<sup>9</sup> Antal-Szentirmay: *Launching Our Demo Music Observatory* (blogpost)

<sup>10</sup> Written evidence submitted by The state51 Music Group. Economics of music streaming review. Response to call for evidence (state51 Music Group 2020).

The Digital Music Observatory follows the *Open Policy Analysis Guidelines*<sup>11</sup> The OPA Guidelines give practical guidance on how to improve the transparency, replicability, and as a result, the reusability of the policy-making work with a scientific underpinning.

The *EMO Feasibility Study* acknowledges the importance of open data. The “EMO should also take advantage of open data where possible. Open data is data that can be freely used, re-used and redistributed by anyone. [...] Using some form of open source software where relevant would allow an EMO to access a continuous peer-review of data ingestion, processing, corrections and indicator creation by statisticians, data scientists and academics.”<sup>12</sup>

As stated in this final report, the 2019 Open Data Directive further extended the availability of re-usable public sector information (PSI) with *open science data*. In both PSI, as open government data, and in open science data, there is a huge potential to fill in the data gaps without new data collection—the fact that data can be reused instead of being recollected is the main aim of the directive. However, open data does not mean *public data*. Open data means that taxpayer funded research data can be repurposes, reprocessed, and reused—the Digital Music Observatory is an expert on such data science techniques.

The *Digital Music Observatory is not an alternative to the future European Music Observatory*, just its open source, open data driven voluntary, based on open collaboration with music industry stakeholders, music policy makers and users, academic researchers, individual and citizen scientists, and individual artists. Because we create fully automated research tools that are creating open datasets, and open source software, even our research infrastructure can be fully transferred to a future European Music Observatory<sup>13</sup>.

We are not planning to make a competing data observatory. We want to provide a minimum viable model of creating at least a hundred useful indicators—selected from hundreds of indicator-candidates with user feedback—that goes through the unit-testing of data science and computer science, the peer-review of open-source scientific algorithm/software development, the methodological peer-review of science, and eventually user verification from music industry users. This will make sure that the indicators can be reproduced, refreshed, and placed in a future European Music Observatory with at least as good data quality as one would expect from a governmental statistical source or Eurostat.

The aim of the Digital Music Observatory is to maximize transparency by introducing to the policy context of Music Moves Europe, and the wider European music ecosystem the Open Policy Analysis framework. (See Open Collaboration, Open Policy Analysis, and Open Data.)

## Open Collaboration, Open Policy Analysis, and Open Data

We aim to maximize transparency by introducing to the policy context of Music Moves Europe, and the wider European music ecosystem the Open Policy Analysis framework. (BITSS 2019; Hoces de la Guardia, Grant, and Miguel 2020b).

Our policy tools will make possible the first, large scale European application of the Open Policy Analysis, which grew out from several initiatives in research transparency, such as the Berkeley Initiative for Transparency in the Social Sciences, the Data Access and Research Transparency (DA-RT) group, the Center for Open Science and their TOP Guideline, the Meta-Research Innovation Center at Stanford University. Globally, the World Bank promotes this framework (Hoces de la Guardia, Grant, and Miguel 2020b; Berkeley Initiative for Transparency in the Social Sciences et al. 2020) and they are fully in line with the Open Science objectives of the European Union (Commission et al. 2020).

We believe that existing data availability is better than that described in the *Feasibility study*. As stated in this final report, the 2019 Open Data Directive further extended the availability of re-usable public

---

<sup>11</sup>The Open Policy Analysis Guidelines which grew out from several initiatives in research transparency, such as the Berkeley Initiative for Transparency in the Social Sciences, the Data Access and Research Transparency (DA-RT) group, the Center for Open Science and their TOP Guideline, the Meta-Research Innovation Center at Stanford University (BITSS 2019; Hoces de la Guardia, Grant, and Miguel 2020a).

<sup>12</sup>In the EU, open data is governed by Directive (EU) 2019/1024 on open data and the re-use of public sector information (EUR-Lex 2019), which replaced the Public Sector Information Directive, also known as the ‘PSI Directive’ which dated from 2003 and was subsequently amended in 2013. Feasibility study for the establishment of a European Music Observatory (European Commission et al. 2020, p38).

<sup>13</sup>In other words, our aim, fully in line with the intentions of the Commission expert who were encouraging us to make this proposal, and with the Feasibility Study, is to create open source scientific/statistical software and pilot open data that can be utilized in 4/4 identified data gaps related to music diversity and circulation in the European Music Observatory.

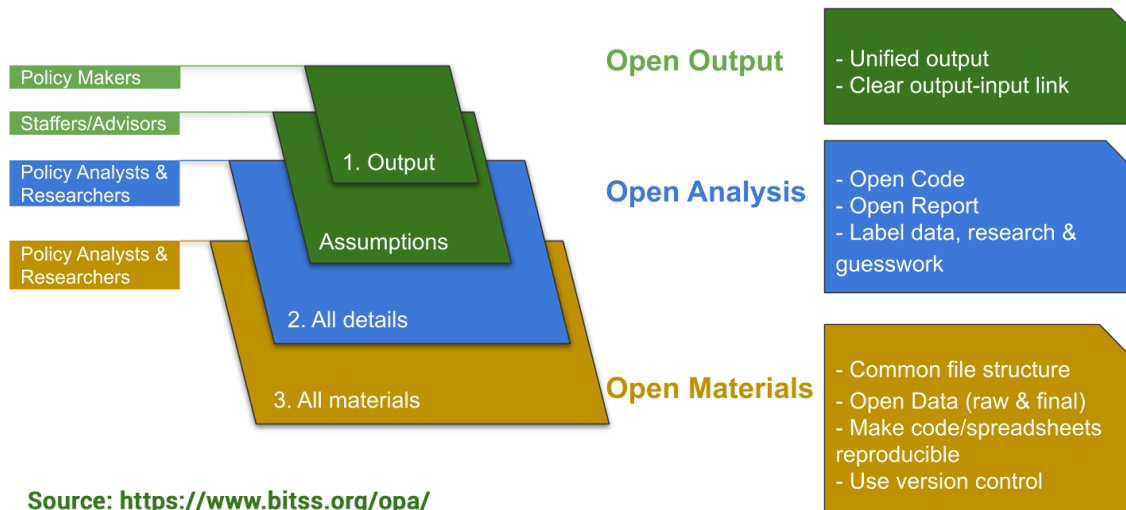


Figure 3: Our ambition to increase transparency with introducing the Open Policy Analysis into the European music policies and collaborative data use in the European industry.

sector information (PSI) with open science data. In both PSI, as open government data, and in open science data, there is a huge potential to fill in the data gaps without new data collection—the fact that data can be reused instead of being recollected is the main aim of the directive. These open data sources are legally open but are not accessible without further investment, and our Consortium wants to make this investment, and produce about 50% of all the data needs of the future European Music Observatory.

It also mentioned the work CEEMID, a bottom-up initiative originally started by three collective management societies, and eventually joined by more than 60 stakeholders in 12 European countries to fill in some of these gaps with a) voluntary data integration among partners b) open data re-processing c) co-financed data collection. Our proposal wants to put the former CEEMID, currently named Digital Music Observatory, a more solid scientific and methodological foundation, to make it more user-friendly, and to exploit state-of-art statistical, data science and computer science methods to provide more comprehensive, timely, and accurate services for the European music sector.

## References

- Antal, Daniel. 2015. “A Proart zeneipari jelentése. [The Music Industry Report of Proart].” ProArt Szövetség a Szerzői Jogokért Egyesület. <http://zeneipar.info/letoltes/proart-zeneipari-jelentes-2015.pdf>.
- . 2017. “The Growth of the Hungarian Popular Music Repertoire: Who Creates It And How Does It Find An Audience.” In *Made in Hungary*, 1st ed. Studies in Popular Music. New York, NY: USA: Routledge.
- . 2019a. “Private Copying in Croatia.” [https://www.zamp.hr/uploads/documents/Studija\\_privatno\\_kopiranje\\_u\\_Hrvatskoj\\_DA\\_CEEMID.pdf](https://www.zamp.hr/uploads/documents/Studija_privatno_kopiranje_u_Hrvatskoj_DA_CEEMID.pdf).
- . 2019b. “Slovak Music Industry Report [Správa o slovenskom hudobnom priemysle].” <https://doi.org/10.17605/OSF.IO/V3BE9>.
- . 2020a. “Central And Eastern European Music Industry Report 2020.” CEEMID, Consolidated Independent. <https://doi.org/10.13140/RG.2.2.21450.31686>.
- . 2020b. “retroharmonize R package for ex post survey harmonization.” <https://doi.org/10.5281/zenodo.3825700>.
- . 2022a. “Creating a Harmonized Cultural Access & Participation Dataset for Music.” Zenodo. <https://doi.org/10.5281/zenodo.5917714>.

- . 2022b. “Harmonized Cultural Access & Participation Dataset for Music.” Zenodo. <https://doi.org/10.5281/zenodo.5917742>.
- Artisjus, HDS, SOZA, and Candole Partners. 2014. “Measuring and Reporting Regional Economic Value Added, National Income and Employment by the Music Industry in a Creative Industries Perspective. Memorandum of Understanding to Create a Regional Music Database to Support Professional National Reporting, Economic Valuation and a Regional Music Study.”
- Berkeley Initiative for Transparency in the Social Sciences, Aleksandar Bogdanoski, Carson Christiano, Joel Ferguson, Fernando Hoces de la Guardia, Katherine Hoerberling, Edward Miguel, Emma Ng, and Lars Villhuber. 2020. “Guide for Accelerating Computational Reproducibility in the Social Sciences.” Berkeley Initiative for Transparency in the Social Sciences. <https://bitss.github.io/ACRE/intro.html>.
- BITSS. 2019. “Guidelines for Open Policy Analysis.” Berkeley Initiative for Transparency in the Social Sciences. <http://www.bitss.org/wp-content/uploads/2019/03/OPA-Guidelines.pdf>.
- Bína, Vladimir, Chantepie, Philippe, Deboin, Valérie, Kommel, Kutt, Kotynek, Josef, and Robin, Philippe. 2012. “ESSnet-CULTURE, European Statistical System Network on Culture. Final Report.” Edited by Frank, Guy. [https://ec.europa.eu/assets/eac/culture/library/reports/ess-net-report\\_en.pdf](https://ec.europa.eu/assets/eac/culture/library/reports/ess-net-report_en.pdf).
- Commission, European, Directorate-General for Research, Innovation, L Baker, I Cristea, T Errington, K Jaško, et al. 2020. *Reproducibility of Scientific Results in the EU : Scoping Report*. Edited by W Lusoli. Luxembourg: Publications Office of the European Union. <https://doi.org/doi/10.2777/341654>.
- EUR-Lex. 2019. “Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on Copyright and Related Rights in the Digital Single Market and Amending Directives 96/9/EC and 2001/29/EC (Text with EEA Relevance).” *Official Journal of the European Union OJ L* (130): 92–125. <http://data.europa.eu/eli/dir/2019/790/oj>.
- European Commission, Directorate-General for Education, Youth, Sport and Culture, M Clarke, P Vroonhof, J Snijders, A Le Gall, B Jacquemet, et al. 2020. *Feasibility Study for the Establishment of a European Music Observatory : Final Report*. Publications Office of the European Union. <https://doi.org/doi/10.2766/9691>.
- Haan, Jos de, and Anna Adolfsen. 2008. *De Virtuele Cultuurbezoeker - Publieke Belangstelling Voor Cultuurwebsites*. SCP-Publicatie 2008/9. Den Haag, the Netherlands: Sociaal en Cultureel Planbureau. <https://archieff18.archiefweb.eu/archives/archiefweb/20200311100055/https://www.scp.nl/dsresource?objectid=5c6903f1-e6ae-4e62-9a9b-6d5e1529756a&type=org>.
- Haan, Jos de, and Andries van den Broek. 2012. “Nowadays Cultural Participation - an Update of What to Look for and Where to Look for It.” In *ESSnet-CULTURE, European Statistical System Network on Culture. Final Report.*, 397–417. Luxembourg. [https://ec.europa.eu/assets/eac/culture/library/reports/ess-net-report\\_en.pdf](https://ec.europa.eu/assets/eac/culture/library/reports/ess-net-report_en.pdf).
- Hoces de la Guardia, Fernando, Sean Grant, and Edward Miguel. 2020b. “A framework for open policy analysis.” *Science and Public Policy* 48 (2): 154–63. <https://doi.org/10.1093/scipol/scaa067>.
- . 2020a. “A framework for open policy analysis.” *Science and Public Policy* 48 (2): 154–63. <https://doi.org/10.1093/scipol/scaa067>.
- Osimo, David, Pujol Priego Laya, Turo Pekari, and Ano Sirppiniemi. 2019. “A Symphony, Not a Solo. How Collective Management Organisations Can Embrace Innovation and Drive Data Sharing in the Music Industry.” Teosto. <https://www.teosto.fi/app/uploads/2020/10/27134714/a-symphony-not-a-solo-policy-brief-final-09012019.pdf>.
- state51 Music Group. 2020. “Written Evidence Submitted by The state51 Music Group. Economics of Music Streaming Review. Response to Call for Evidence.” UK Parliament website. <https://committees.parliament.uk/writtenevidence/15422/html/>.