Discussion Paper Series

The resilience of in-person cultural activities in face of the Covid-19 shock: Impact and recovery in Italian regions

Discussion Paper n. 07/2025

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This paper explores how various cultural activities, involving in-person attendance, have responded to the restrictions imposed by Covid-19 and how they have recovered following the easing of these restrictions. We use the Italian case study as a reference and rely on both national and regional data. Our analysis includes data related to ticket sales and statements obtained from surveys on cultural participation. Resorting to the concept of resilience, we compute indicators based on simple descriptive statistics and regression analyses. Our study involves the investigation and comparison of resilience measures across different genres of cultural activities and various regions. We also identify socio-economic structural factors associated with varying degrees of resilience of different cultural activities.

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1. Introduction

The aim of this research is to investigate how various cultural activities involving in-person attendance have responded to the Covid-19 lockdown restrictions and how they have recovered after these restrictions were eased. To this end, we resort to the concept of resilience and to the measures developed in the literature on economic resilience. Italy is taken as the case study.

The notion of resilience –introduced by Holling's work (1973) in reference to ecological systems– fundamentally revolves around how complex systems respond to adversities, considering both the initial impact and subsequent phases of recovery. The extension of the concept of resilience to various disciplines, such as physics, biology, engineering, and even social sciences, is quite straightforward. In the context of economics, resilience encapsulates the capacity of an economic system to withstand and rebound from disruptive shocks (see the seminal papers of Fingleton et al., 2012, Martin, 2012, Martin and Sunley, 2015).

Economic resilience has been analysed through comparisons among countries as well as among regions or territorial areas within a country, focussing on the income and/or employment dynamics. Scholars have pursued two primary empirical approaches to assess economic resilience of countries and regions. The first involves a descriptive analysis, employing case studies and basic statistical indicators –see, e.g., Martin (2012), Evans and Karecha (2014), and Lagravinese's (2014) examination of Italian regions. The second approach uses time-series analysis and panel data econometric models, possibly incorporating spatial interactions among neighbouring regions, to identify and elucidate resilience (see, e.g., Groot et al., 2011; Fingleton et al., 2014; Fingleton and Palombi, 2013; Di Caro, 2014b; and Doran and Fingleton, 2014; see also the reviews of Cellini et al., 2017; Pontarollo and Serpieri, 2020).

Notably, several scholars have proposed multifaceted methodologies and distinct approaches to gauge economic resilience in both the impact and recovery phases. Critical components of this empirical analysis include accurately pinpointing shocks, measuring location-specific responses to these shocks, comparing resilience among different territories, and explicating variations in regional resilience. Several contributions highlight the interconnectedness of resilience, change, development and long-run sustainability (see Brown, 2016).

Since the early seminal works, the concept of economic resilience has been employed to assess which sectors are more or less resilient to common macroeconomic shocks. Subsequent studies have focused on specific sectors –see, e.g., Huang and Farboudi-Jahromi (2021) on the service sector and Cellini and Cuccia (2015) on the tourism industry. Other contributions have examined how particular sectors contribute to the macroeconomic resilience of territorial areas. Notably, Cellini and Cuccia (2019) studied the role played by cultural activities –cultural industries and cultural participation– in shaping the overall macroeconomic resilience of Italian regions. The role of sector diversity in shaping territorial resilience has been explored by Brown and Greenbaum (2017). Furthermore, other

contributions examine the varied reactions to different shocks, and recently, whether resilience skills to the Covid-19 shock have differed from reactions to other shocks (see, e.g., Sendroiu, 2024; see also Jackson, 2021).

Here, we characterize the resilience of various entertainment genres involving in-person attendance in Italy and across its regions. This assessment is made in the face of the common adverse impact represented by the lockdown restrictions implemented to curb the spread of Covid-19. There is no doubt that the impact of this adverse shock occurred in 2020 and 2021. Due to the current availability of data, we have to consider the recovery phase as depicted in 2022. It goes without saying that a more extended analysis period would be necessary to draw conclusions applicable in the long run. Therefore, in this study, when referring to the recovery following the Covid-19 lockdown shock, we are addressing an immediate sense of recovery.

The analysis will discern three dimensions. Firstly, we will examine attendance at cinemas, theatres (specifically, drama), classical music, and popular music (i.e., pop, rock, hip-hop, light music) to assess differences in resilience among these four activities, as measured by in-person attendance. Secondly, we will refer to variables reflecting recorded attendance, as well as surveys collecting people's statements about their attendance. This will help evaluate whether and how the official recorded data aligns with the declarations (which may sometimes come from perceptions) of individuals. Thirdly, we will explore how the resilience performance of these cultural activities varies among the twenty regions in Italy, in both the impact and recovery phase. Finally, we aim to investigate whether a correlation exists between the resilience ability of cultural activities across regions and some structural socio-economic characteristics of those regions.

We provide different sets of resilience indicators (both impact-resilience and recovery-resilience), varying across cultural genres and across regions, deriving from both simple statistical measures and from multiple-regression analysis. We also provide some economic interpretations to explain the different resilience abilities of genres across regions. Structural variables related to education, social participation, income, opportunity to access and usage of IT tools are shown to play some role in shaping the resilience of cultural participation across regions.

We believe that studying and understanding the dynamics of cultural participation indicators is important from both a microeconomic and macroeconomic perspective: it is known that cultural participation is a significant determinant of personal happiness (see, e.g., Ateca-Amestoy et al., 2014; Murtin and Zabonetti, 2024) and also a tool to strengthen the social capital of a community (Lizardo, 2013; Cebula, 2024).

The article is structured as follows. Section 2 presents the data used in the analysis. Section 3 presents the resilience measures. Section 4 presents and discusses the resilience of different entertainment forms at the national level. Section 5 focuses on regional differences. Section 6 concludes.

2. Data

We consider data at both the national and the regional level, annually from 2011 to 2022 (included) for Italy. Hence, variables at the national level are simply (short) time series ranging over the period 2011-22, while the regional dataset is a balanced panel constituted by 12 yearly observations for each of the 20 Italian regions, with a total of 240 observations. Data come from different sources.

Firstly, data on attendance recorded at events are gathered from SIAE (the Italian Society of Authors and Publishers). Specifically, to maintain consistency for year-on-year comparisons within each region, we consider ticket sales for cinema, classical music concerts and performances of opera (separately); we consider attendances (inclusive of both paid and free tickets)[1] for theatre plays and popular music concerts. While all these data are downloadable from the website of SIAE (www.siae.it), a consistent dataset is also compiled by the authors of this study. When necessary, data is adjusted based on the population at that time, providing an audience indicator relative to the population. We refer to all the variables based on the registered entries as 'ticket-based' variables.

The second data source stems from ISTAT's (the Italian Statistics Office) survey on aspects of daily life among Italians, considering the percentage of respondents who report having attended at least one performance of the specific genre, i.e., cinema, theatre drama, classical and opera music, popular (pop/rock/light) music, within the last 12 months. We will refer to these variables as 'self-reported attendance based' variables. Moreover, ISAT also provides a composite index of cultural participation, reporting the percentage of people declaring at least two out of the following activities over the past 12 months: (1) attending four or more times cinema; (2) attending one or more times theatre performance, (3) visiting one or more times museum, (4) visiting one or more times monuments, (5) attending one or more times opera or classical music concerts, (6) attending one or more times other music concerts. This composite measure naturally invites critique and refinement, as outlined in studies such as Bologna and Savioli (2020) or Cellini and Cuccia (2024). However, it serves as an initial gauge depicting the landscape of cultural participation outside the home.

Table 1 lists the variables under consideration, and their acronyms (the acronym for the ISTAT composite index of cultural participation, CP_OH, stays for 'cultural participation outside the home').

< Table 1>

It is important to highlight that SIAE's ticket-based data are derived from official records and have a census-like nature, encompassing the entire observed phenomenon. In contrast, ISTAT's self-reported attendance data originate from population surveys and have a sample-based nature. Notably, SIAE data capture the intensity of attendance (e.g., if a person attends a performance five times, they contribute five times to the ticket count), whereas ISTAT data merely indicate the occurrence of at least one (self-reported) attendance. Therefore, self-reported attendance variables reflect the

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[1] In the context of admission to live-performance, 'ticket sales' refer to paid entries, while 'attendances' encompass both paid entries and registered free admissions.

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extensive dimension of in-person cultural participation (i.e., how many individuals participated), while ticket-based variables capture both the extensive and intensive dimensions.

It is also worth reporting that the variable related to theatre ticket sales refers only to drama performances (for example, it does not include opera, whose attendance is recorded separately); while the self-reported attendance to classical music combines classical music with opera, these two genres are separated in SIAE ticket-based variables.

Figures A1 (in Appendix) provide the plot of the national series concerning the attendance at the cinema, the theater, the classical music concerts and the popular music concerts, as measured by ticket sales (panel a) or by the percentage of the population declaring attendance (panel b), while Figures A2 provide the plot of the same variables for the series of the 20 Italian regions.

A clear divergence is observed in the data obtained from the two distinct sources under consideration. In the dataset based on the number of tickets issued, the impact of the Covid shock is evident in the 2020 observation, worsens further in 2021, and shows recovery in 2022. In contrast, the data derived from respondents' answers reflect the shock's impact in the 2021 data, as some respondents in the 2020 survey reported attending events in the previous 12 months; the 2022 data capture the rebound. For most series, the recovery in 2022 remains only partial compared to the 2011–2019 period. This holds true for both the ticket-based and self-reported attendance series, with one exception: ticket-sales data for popular music concerts, which show a significant increase in the recovery year of 2022. Interestingly, however, aside from this exception, recovery appears stronger in the percentage of people reporting cultural participation than in the number of issued tickets. We will return to this point later.

3. Resilience measures

In this paper, we consider measures of resilience, concerning both the impact and the recovery phase, initially basing on simple descriptive statistics and subsequently resorting to regression equations.

We start by considering descriptive-statistics-based indicators. Concerning the impact effect, for each variable at both the national level and for each region in Italy, we assess the ratio between the 2021 data and the average data from 2011-2019 for self-reported attendance variables. For the variables based on self-reported attendance (the CP_* variables), the impact effect is captured by the 2021 data, because –as already mentioned– the 2020 data only partially reflects the imposed limitations constituting the shock. As for the variables measuring actual attendance at events (namely, CIN_POP, THEA_POP, OPERA_POP, MCLAS_POP, MPOPUR_POP), the impact indicator is determined by the ratio between the average data from 2020-2021 and the average data from 2011-2019. We denote as $RIMP$ (resilience to impact) this indicator. In symbol, for each genre i, :

$$RIMP_i = \frac{y_i(2021)}{\bar{y}_i(2011\_19)} \text{ for self-reported attendance-based series}$$

$$RIMP_i = \frac{y_i(2020\_21)}{\bar{y}_i(2011\_19)} \text{ for ticket-sales based series.}$$

The lower the indicator, the heavier the impact effect of the shock, thus indicating less resilience for that specific activity in the region.

Regarding resilience during the recovery phase, we consider the ratio between the 2022 data and the 2021 data (or the average of the 2020-2021 data for ticket-based variables). This ratio indicates how much the variable has changed in 2022 compared to the years affected by the shock-induced decline. Additionally, we examine the ratio between the 2022 data and the 2011-2019 average data to determine the extent to which the "historical" data (referring to the established behavior in the previous decade) has been recovered. These two indicators are labelled as *RRI* and *RRH*, respectively, representing acronyms for recovery-resilience-immediate and recovery-resilience-historical. In symbol, for each genre i (i=cinema, theatre, etc)

$$RRI_i = \frac{y_i(2022)}{\bar{y}_i(2020\_21)},$$

$$RRH_i = \frac{y_i(2022)}{\bar{y}_i(2011\_19)}.$$

Following Martin (2012), we can measure resilience, in an alternative way, by considering the specific effect of the shock in the year(s) of the impact and in the year(s) of the recovery phase *on the variation rate* of the variable of interest. In symbols, let us consider the percentage rate of change of the variable y_t over a temporal interval (in our case t=[2011,2022]) and consider the regression equation

$$\dot{y}_t = a + bS_t + cR_t + \epsilon_t$$

where S is a dummy variable associated to the year when the shock has impacted (in our case, 2020 or 2021), R is a dummy variable associated with the year(s) of recovery (in our case, 2022), and ϵ_t denotes the error term. The estimates of coefficient b (expected to be negative) and c (expected to be positive) measure the impact effect and the recovery ability, respectively, conditional on the average growth rate of the variable, captured by parameter a; they can be considered as resilience indicators. The regression design, in the present case, is very simple and, as a matter of fact, the estimates of b and c coefficients simply measure the *distance* of the variation rate of the variable in the year of the shock impact and in the year of recovery from the average variation rate. We will denote such indicators as *RIMP_B* and *RREC_C*, respectively, and we will refer to them as regression-based resilience indicators. Note also that *RIMP_B* and *RREC_C* are coefficients deriving from a regression, so they have a stochastic nature, and their meaningful interpretation should be contingent upon the consideration of their estimated variance and statistical significance (that is, their *p*-value or *t*-stat). Nevertheless, following an established literature, we interpret them as deterministic indicators, provided that they are statically significant. The larger the algebraic value of *RIMP_B* and *RREC_C*, the stronger the resilience ability, in both the case of impact-resilience and recovery-resilience.

4. On the national data: comparing ticket-based variables with self-reported attendance variables

Basic data referred to Italy are provided in part I. of Table 2. Naturally, the scale of attendance for various genres of cultural entertainment differs significantly, especially concerning observations related to audience numbers in ticket-based variables. In the case of cinema, the ratio between tickets sold and the population –referring to the average of the years 2011-2019– is close to 1.8, corresponding to around 100 million tickets, whereas for lyric opera, it is below 0.04, equivalent to just over 2 million tickets. This represents a magnitude difference of about 50 times. However, this difference is only partially reflected in the percentages of individuals declaring they've attended these different shows at least once over the last 12 months: the percentage for cinema, based on the 2011-2019 average, is just below 50%, while for opera, it is slightly below 10%. This reflects a difference of 5 rather than 50 times. Part of this discrepancy is due to the fact that the ticket-sale based variables capture consumption intensity, whereas the self-reported declaration variables merely indicate whether individuals attended at least once, without accounting for frequency.

< Table 2 >

Resilience indicators are provided in parts II. and III. of Table 2, reporting, respectively, the indicators based on simple descriptive statistics and the indicators deriving from regression equations. Regarding the regression-based resilience indicators in Part III. of Table 2, although we do not report the corresponding p-values or t-stat, we note that all are statistically significant at the 1% level (except for one, significant at the 5% level).

It is immediately apparent that the resilience indicator of the shock's impact yields more stringent measures (i.e., stronger negative effects) in self-reported data compared to ticket sales-based indicators. In other words, the impact appears more pronounced and severe in respondents' answers than in ticket-based data. This holds for all forms of entertainment considered in this analysis, when using simple statistical indicators, and for nearly all forms when using regression-based indicators.

A possible reason why the resilience indicator to impact appears worse in the case of variables linked to individual responses rather than ticket sales data could be due to distortions in perception, where reality was represented worse than what actually happened (perceptual bias). A second, complementary, explanation is that occasional consumers, who participate less frequently (e.g., once or twice a year), may have found it easier to forgo cultural activities due to their lower attachment. In contrast, more frequent participants likely made greater efforts to continue attending, maintaining their participation as much as possible. As a result, the reduction in the self-reported indicator may be disproportionately larger compared to ticket-based data.

Let us now move to the resilience indicators tied to the recovery, and focus on the 2022 performance with respect to 2020-21 (for ticket-based indicators) or to 2021 (for self-reported attendance-based indicators). We note that in the case of cinema, theatre and, to some extent, classical music, the reported attendance recovery is depicted by a larger multiplicative factor as compared to the observed multiplicative factor for ticket sales. The same observation applies also to the indicator deriving from

regression analysis (*RREC_C*). Individuals seem to be more optimistic in reporting their experience than the data describes (or the situation had been perceived as more disruptive during the collapse resulting from the lockdown shock; the latter interpretation aligns with prior observations regarding the impact effect of the shock).

When evaluating how much of the annual attendance from historical data (2011-19) was recovered in 2022, we observe that self-reported attendance-based indicators exhibit significantly less variability across different genres compared to the variability observed in ticket-based data. Specifically, as anticipated, in 2022, there was a significant surge in the number of entries for popular music concerts, almost doubling compared to the historical average from 2011-19. In contrast, cinema sales in 2022 accounted for about less than half of the annual sales in the previous decade.

The pieces of evidence concerning recovery can be summarized as follows: The recovery from the adverse shock for cultural activities, based on ticket data under consideration, reveals an overall rate of approximately 80% when comparing the annual 2022 data with the average annual figures from the period 2011-19; however, cinema stands as a notable exception, with a recovery rate of only about 47%, while live concerts of popular music display an "overshooting" phenomenon, with ticket sales in 2022 roughly doubling the average annual figures recorded from 2011-19. On the other hand, the variability observed in self-reported declarations from interviewed individuals regarding their attendance at live shows (at least once over the last year) does not mirror this range. Instead, it indicates a recovery rate between 58% and 71% for all genres of cultural activities currently under scrutiny.

We can also observe, from a comparative evaluation perspective, that popular music experienced the worst impact reaction to the Covid-19 lockdown shock, but the best recovery with respect to the historical data, in terms of tickets. Theatrical performances and classical music had a milder impact reaction, but also a milder recovery with respect to the historical attendance.

It is worth spending a few words on popular music (encompassing pop, rock and light music concerts): in 2022, Italy experienced an explosion in live popular music events and event attendance. This significant resurgence can be partly explained by rescheduling concerts initially planned between 2020 and 2021, but also by an increasingly extensive and widespread offering, especially during the summer, including major events and festivals. The SIAE data certifies a total of 31-thousand performance concerts of pop, rock, and light music in Italy in 2022, attracting nearly 20.9 million attendees (about 8 million more attendees than the pre-pandemic yearly data). While it is not surprising that the audience grew by 574% compared to 2021 when event recovery was still sluggish, the +66% compared to the last pre-Covid year makes a louder statement. Resilience indicators are consistent with this data.

Furthermore, it is interesting to note that, according to data derived from self-reported attendance, popular music, in particular, exhibits the lowest recovery indicator among various cultural event genres. This might suggest that the remarkable ticket recovery is attributed to a higher intensity of consumption by spectators rather than a recovery in the number of individuals who have decided to resume attending pop music concerts.

We have already mentioned that cinema shows a more difficult recovery as compared to other cultural genres. Let us focus on theatre, in comparison to cinema. Unlike theatre, cinema had already been exhibiting a slight downward trend, both in the statements of the interviewees and in the official data of tickets sold, during the years 2011-19. Therefore, the 2022 data contains, within it, the historical

trend of a slight decrease ongoing for at least a decade. A working hypothesis may suggest that in-person cultural attendance is progressively being supplanted by online consumption (see, e.g., Bakhshi and Throsby, 2014; Bakhshi et al, 2023; Cellini and Cuccia, 2024, among many others; see also the sociological analysis of Putnam, 2020). This shift can be attributed to the widespread use of information technology tools and the online consumption of cultural products, which seem to more readily substitute the experience of watching films (at home instead of at cinema) rather than theatrical performances. During the lockdown, attendance at both cinema and theatre was either prohibited or restricted. Perhaps returning to live performances was perceived as more urgent –and possibly easier– for theatregoers compared to cinemagoers. In conclusion, we can confidently assert that popular music has faced the greatest impact in terms of ticket sales, but it has also shown the most robust recovery. Regarding perceptions (self-reported declaration data), theatre appears to have suffered a more adverse impact, while on the recovery front, differences do not seem markedly different across various cultural entertainment forms –with the same conclusion drawn from indicators based on statistics or regressions. As for the post-Covid-19 recovery, there is no doubt that cinema is grappling with the most significant challenges, yet it is also the genre that exhibited a declining trend even before the onset of Covid-19. In all, the landscape portrayed by indicators based on descriptive statistics is substantially similar to that derived from indicators resulting from regression analyses, when examining national data.

5. Differences across the regions

5.1. Data and simple statistical indicators

The focus in what follows is on the comparison between regions. In this Section, we focus on data and the statistic-based resilience indicators. The regression-based indicators will be presented in Section 5.3. We will proceed to sequentially examine the different genres of cultural entertainment, highlighting the differences across regions within each genre.

It is worth noting that there are significant differences among regions in baseline levels of participation (measured by the annual average of consumers between 2011 and 2019). This is hardly surprising. Income levels –and, more broadly, overall socio-economic development– vary widely across Italian regions, as extensively documented in the literature (to cite just a few recent studies on regional distributive disparities in Italy, see Perchinunno et al., 2024, or Accetturo et al., 2024). These disparities naturally extend to cultural participation as well. In line with this, our present analysis also highlights significant disparities in the capacity for resilience of cultural activities across regions.

Detailed data about cinema attendance at the regional level are provided by Table A1-A in Appendix. Southern regions show a lower inclination to attend cinemas compared to Northern ones. The impact of the Covid-19 lockdown shock, measured by the reduction in moviegoers during the lockdown years, appears less severe, in proportional terms, in the Southern regions compared to the previous historical data. This holds true for both the perceptions declared by the interviewees and the tickets sold. On the contrary, resilience indicators referred to recovery abilities paint somewhat different stories depending on whether we look at data derived from self-reported statements or ticket sales. In general, if we look at resilience indicators during the recovery phase, the emerging picture is rather

confusing. When evaluating recovery in relation to the impact (*RRI* indicator), it emerges that where the impact was more severe, the immediate recovery has been more robust (the cross-sectional correlation between *RIMP* and *RRI* is -0.688, statistically significant at 1%); when assessing recovery in relation to historical attendance data, no robust associations are observed: in all regions, cinema attendance recovery is very partial, but the best data are recorded both in regions characterized by low historical attendance and in regions with high historical attendance.

Some aspects of the story are quite similar when it comes to theatre attendance (see Table A1-B in the Appendix). Southern regions show a lower inclination to attend theatre –specifically drama performances– compared to northern ones. Moreover, the impact of the Covid-19 lockdown appears less severe in areas where attendance was already lower, both in terms of perceptions and ticket sales. However, the story differs somewhat when looking at the recovery. The emerging picture is mixed, with no clear patterns linking performance to the severity of the initial impact. Nonetheless, theatre has experienced a markedly better recovery compared to cinema. In other words, theatre has faced fewer challenges than cinema in regaining the spectators lost during the Covid-19 lockdown period. We will explore this evidence further in the following section.

For classical music (Table A1-C), where –once again– the Southern regions appear lagging behind in attendance compared to the Northern regions, the shock had a less severe impact in the Southern regions, which also appear to recover better than the Northern ones. However, this does not mean that the differences have narrowed. It simply means that the Southern regions experienced a less pronounced contraction as an impact and recovered more quickly, although returning to attendance values that are structurally lower than those in the North. The same holds for opera attendance (not reported for the sake of brevity, and also because the attendance is the smallest, across the genres).

For popular music (Table A1-D), the impact of the shock was clearly less burdensome in the South than in the North, particularly in terms of tickets sold. This could also be linked to more favourable climatic conditions that allowed open-air light music shows to take place more easily in the South than in the North during the months of partial lockdown. The recovery also appears to be easier in the Southern regions compared to the Northern ones. However, considering the significant structural differences in the initial conditions, it needs to be verified whether the impact of the Covid-19 lockdown and the diverse resilience responses exhibited by the regions have resulted in a significant reduction in regional disparities.[2] This issue is addressed in Section 5.2.

5.2 The pattern over time of the differences across regions

In order to ascertain whether the differences in cultural participation across the regions were following a trend of reduction or amplification, and to understand the impact of the Covid-19 shock on this trend, we draw upon the concept of sigma-convergence, borrowed from the economic literature on country and region convergence (Barro and Sala-i-Martin, 1995). Specifically, we examine how the coefficients of variation have changed over time, both before and after the Covid-19 lockdown shock, in reference to attendance to cinema, theatre, classical music and popular music. In particular, we consider the values of the coefficient of variation across regions in 2011, 2019 and

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[2] For the sake of brevity, we omit to report similar Tables for the sport events attendance, and for the aggregate indicator of cultural participation outside the home. They are available from Authors upon request.

2022. A reduction over time of this coefficient corresponds to the occurrence of sigma-convergence among regions. The results of this analysis are presented in Table 3.

< Table 3 >

In the realm of cinema, the Covid-19 shock has led to a slight increase in inequalities among regions. In the case of ticket sales data, this rise in inequalities disrupted a convergence trend that was underway in previous years, although it should be noted that this trend was concurrent with a consistent decline in the number of tickets sold. For theater, the shock appears to have reduced differences, particularly in ticket data, while it seems to have slightly increased them based on respondents' statements. The same pattern emerges for both classical and popular music: the various reactions to the Covid-19 shock have indeed reduced differences between regions in terms of tickets sold, but have slightly widened them in relation to respondents' statements. Not surprisingly, also according the ISTAT aggregate index of cultural participation outside the home, CP_OH, the inequality among regions, declining over the period 2011-19 has increased in response to the Covid-19 lockdown shock.

Our digression on the sigma convergence of cultural participation across the Italian region can be concluded by stating that the Italian regions are characterized by significant differences in cultural participation, as measured by attendance at various genres of performances; These differences are consistently observed in both ticket sales data and people's self-reported attendance in survey interviews. According to ticket sales data, the lockdown shock widened the differences among regions in the case of cinema attendance but led to a reduction of differences for theater, classical music, and popular music. Audience as measured by the percentage of people who reported attending shows, indicates a widening of differences among regions following the Covid-19 shock, in all cases.

Fundamentally, the ticket data reveal more variability among regions than the data stemming from participation declarations. Considering that, on the contrary, the variation over time around the occurrence of the Covid-19 shock, is more pronounced for self-reported declaration data as compared to ticket sales (except for popular music concerts), it seems reasonable to assert that the effects of the shock, and the subsequent recovery, are "amplified" by the data derived from perception declarations, as opposed to the evidence from official data.

5.3 On the resilience indicators from regression analysis

So far, our analysis of resilience indicators has been based on simple statistical measures ($RIMP$, RRI, RRH). We now turn to the estimated coefficients derived from regression equations involving growth rates ($RIMP\_B$, $RREC\_C$). Table A2 in the Appendix presents these resilience indicators for the series based on ticket sales data, offering an interesting comparison with their counterparts derived from simple descriptive statistics.[3]

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[3] For the sake of completeness, and for possible comparisons, the $RIMP\_B$ and $RREC\_C$ coefficients are also computed for the series based on self-reported attendance-based data, and printed in Table A3 in Appendix.

The series composed of the twenty regional resilience indicators *RIMP* and *RIMP_B* show a positive and significant (at least at the 5% level) correlation and rank correlation among them, for all cultural genres (except for classical music, where the *RIMP* and *RIMP_B* series do not exhibit a positive correlation), so that one might assume they can be used interchangeably; however, the specific scenario regarding the ranking of regions within each genre may vary slightly depending on the chosen indicator.

In particular, while in the case of theater and popular music, the rankings among regions are essentially similar, regardless of whether we consider resilience indicators *RIMP* or *RIMP_B* (and *RRI*, *RRH*, or *RREC_C*), in the cases of cinema (and, to some extent, classical music), the rankings are noticeably different. The reason for this lies in the fact that resilience indicators derived from regression analyses take into account percentage variations recorded in previous years, which is not considered by other indicators. In some cases, this difference is significant, while in others, it is less pronounced. Obviously, one cannot say that one indicator is correct and the other is not; they simply represent two different ways of narrating resilience capacities, whether conditioned or not by historical patterns of the variation rates.

The comments on these indicators are straightforward: the most significant impact, across all examined genres, consistently occurs in the southern regions, indicating their lower resilience capacity to the impact when considering their previous growth rates. Essentially, while impact resilience indicators based on simple statistical measures suggested that regions with lower cultural participation seemed to have suffered less from the Covid-19 impact, indicators accounting for past growth rates signal greater difficulty precisely in regions with historically lower cultural participation. Shifting to recovery resilience indicators, the capacities for better or worse recovery do not reveal a clear geographical pattern: in most cases, southern regions exhibit worse recovery, but there are significant exceptions and even some recovery champions located in the South.

6. Investigating the reasons for different participation and resilience

Exploiting the variability that each resilience indicator exhibits across regions, we investigate the correlation between each resilience indicator and a set of socio-economic characteristics of the regions. This investigation aims to determine whether and which socio-economic characteristics are associated with greater or lesser resilience for each type of cultural performance under consideration.

In the following, we present the results based on the ticket sales data and the regression-based resilience indicators. We support this choice by observing: (a) that ticket data appears more reliable than self-declarations from interviewees (even though the latter are derived from a well-established and comprehensive survey conducted by the National Institute of Statistics) and (b) the resilience measure resulting from regressions aligns more closely with the generally accepted understanding of resilience in the literature. Of course, the analysis can be conducted considering resilience indicators based on simple statistics and/or cultural participation measured by self-reported attendance declarations; indeed, all possible combinations have been considered by us. However, the combination of data derived from ticket sales and regression-based indicators, which we are about to

present, is the combination that provides the most relevant insights into the connections between the resilience capacities of different regions and their socio-economic structural conditions.

Table 4 provides the simple cross-section correlations between the indicators of "historical" cultural participation (as measured in the 2011-19 period) and some socio-economic variables, observed over the same time period. In particular, we consider: the adjusted gross disposable income of households per capita in PPS (denoted by *INCOME*), the graduated people aged 25-65 to capture the human capital and education condition (*GRADUAT*) and two indicators that we will refer to as economic distress indicators: the unemployment rate (*UNEMPL*), and the share of NEET –Not in Education, Employment, or Training– people in the population aged 15 to 29 (*NEET*). All this data is sourced from ISTAT, specifically from the BES project database.[4]

The positive correlation between cultural participation indicators, on the one side, and income and education levels, on the other side, is evident and not particularly surprising. We know well that income and education are two highly significant determinants of the demand for cultural participation (Seaman, 2006). It is interesting to note that, among the in-presence attendance to various genres of cultural events, popular music shows the lowest correlation (although still statistically significant) with education, while popular music shows the highest correlation with income. The significant negative correlation between cultural participation indicators (across all genres considered) and socio-economic distress indicators is noteworthy: where the unemployment rate is higher, cultural participation is lower. Even in cases where the youth NEET rate is higher, cultural participation is lower. The negative correlation is slightly less pronounced in the cases of cinema and popular music, as compared to classical music and theatre. Roughly speaking, the former can be considered as lowbrow cultural activities, while the latter can be associated with highbrow cultural activities. If so, socio-economic distress factors have a larger influence on highbrow cultural consumption compared to lowbrow cultural consumption.

The analysis can be proposed also for further socio-economic variables. In particular, we report here the results concerning: Civic and political participation as defined and measured by ISTAT (*CIVPOLPART*);[5] Percentage of population engaged in volunteer activities (*VOLUNTEER*); Perception of safety (*SAFEPERC*); Burglaries in residences (number per 1,000 households) (*THEFT*); Satisfaction with one own's overall life (*SATISFLIFE*); Satisfaction with leisure time (*SATISFLEISURE*); Household with access to the internet (*INTNT_ACHOME*); Users of the internet (*INTNT_USERS*); Percentage of people using the internet to buy music or movies (*INTNT_BUYMM*); all variables are from ISTAT. Clearly, the variables aim to capture the socio-political involvement of

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[4] https://www.istat.it/it/benessere-e-sostenibilit%C3%A0/obiettivi-di-sviluppo-sostenibile/gli-indicatori-istat.

[5] *CIVPOPPART* is defined as the percentage of individuals aged 14 and older engaging in at least one civic and political participation activity among the following ones: discussing politics at least once a week; staying informed about Italian political events at least once a week; participating online in consultations or votes on socio- political issues (e.g., urban planning, signing a petition) at least once within the months before the interview; reading and posting opinions on social or political issues on the web at least once in the three months prior to the interview. *VOLUNTEER* is the percentage of individuals who, in the 4 weeks prior to the interview, voluntarily dedicated time to activities benefiting other people, the community, or the environment, either through groups or organizations or individually, as a proportion of the total population. *SAFEPERC* is the percentage of individuals aged 14 and older who feel very or quite safe walking alone in the dark. *SATISFLIFE* and *SATISFLEISURE* indicate the percentage of people who report high satisfaction (giving a score equal at least to 8 on a scale from 0 to 10) with their life and leisure time, respectively. *INTNET_ACHOME, USER, BUYMM* the percentage of people declaring having access to the net from home, having used the internet over the last three months, and having used the internet to buy music or movies, respectively. All definitions by ISTAT.

people, the safety condition as perceived by interviewed individuals and as recorded by registered crime, personal satisfaction, access to the internet tool.

The first observation is that there is a systematic correlation between the historical values of cultural participation and the socio-economic variables considered, except for the variables related to crime and safety perception (analogous results emerge for homicide or robbery data). Noteworthy, and not surprisingly, there is a positive (and significant in most cases) association between cultural event attendance and the declared satisfaction for leisure.

Second, the positive and strongly significant cross-section correlation between accessibility and internet usage (and specific usage for cultural purchases) on the one side, and participation in cultural events on the other side, confirms what has already been observed in other studies (e.g., Cellini and Cuccia, 2024): Cultural participation and internet usage go hand-in-hand, that is, they appear to have a complementary nature, from a cross-sectional perspective. Where internet accessibility (and consumption of cultural products via the internet) is higher, there is also a greater in-person attendance at cultural performances.

Even if the analysis of correlation is not reported for the sake of brevity, we mention that, in general, cultural participation measured in terms of ticket sales exhibits stronger correlations with socio-economic variables, compared to cultural participation variables based on self-reported attendance.

< Table 4 >

In this study we are mainly interested in investigating the relations between socio-economic variables and the resilience skills of different cultural genres. Table 5 reports the (cross-section) correlations between the economic indicators and the resilience performance indicators of the regions, as derived from the regression analysis approach (*RIMP_B*, *RREC_C*).[6]

< Table 5 >

We observe that a higher per capita income associates with better resilience to impact in the case of theater, classical music, and popular music, while it associates with poorer resilience to impact in the case of cinema. In other words, in all cultural activities other than cinema, high per capita income has mitigated the negative effect of the shock, whereas this has not been true in the case of cinema, where the worst impact has indeed been in regions with higher income.

A higher level of education is associated with a limited negative impact of the shock in the case of classical music but not in other cases.

A negative association is predominantly recorded for the unemployment rate and the incidence of young NEETs (with the occasional exception of cinema). Greater political participation and

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[6] The analysis can be, of course, repeated referring to the statistics-based indicators of resilience; however, in that case, the correlations are less significant; in few cases the correlation have opposite signs, according to regression-based and statistic-based indicators of resilience.

involvement in volunteer activities are associated with better resilience to impact (again, except for cinema). The robustness of associations with internet access indicators is noteworthy. For cinema, a larger accessibility to the internet and IT tools is associated with poorer resilience of regions to the impact of the shock, while in all other cultural activities, larger internet accessibility is linked to higher resilience to the impact of the shock. This evidence could be seen as another clue to support, once again, the thesis that the telematic consumption of cinematographic products replaces the consumption of cinematographic services more easily than it does for theater and music.

Now let us examine resilience as the capacity for rebound after a shock, keeping in mind that the data allows us to measure recovery only in terms of immediacy, with substantial information available, at present, only for the year 2022. The picture that emerges from the analysis of the correlation between resilience indicators during the recovery phase and socio-economic structural variables is one of a substantial lack of clear relationships. However, for popular music, a negative correlation with internet accessibility becomes apparent, especially concerning the percentage of users using the internet to purchase cultural products. Thus, in areas where these behaviors are more prevalent, it is evident that the recovery in live performance attendance has been worse.

To draw a robust conclusion that online consumption of artistic performances displaces in-person attendance, we would have needed to observe a negative correlation in the case of cinema as well (as was the case for the shock resilience indicator), which is not the case. In fact, for cinema, the correlation is positive. Cinema stands out as the category with the most significant correlations with structural indicators: in this case, regions with higher income (and consistently higher indicators of political and social participation) report better recovery capacity. However, it is essential to note that cinema, overall, is the genre with the worst recovery capacity. Therefore, it seems more accurate to conclude that in the recovery phase, regions with higher incomes performed better, albeit with an overall partiality in the demonstrated recovery capacity of cinema.

It is worth underlining that our findings, derived from a macroeconomic analysis, are fully consistent with the "microeconomic" analysis by Menardo et al. (2023), conducted on a sample of over 1,000 Italian respondents surveyed about their cultural and social behaviors during the Covid-19 months. Essentially, this analysis indicates that the lockdown shock widened the differences in cultural consumption: those who already had a high propensity for cultural consumption and social activities reinforced these behaviors during the lockdown and the following months, while those with a low propensity did not sufficiently replace in-person activities with online activities during the lockdown months, resulting in lower cultural and social participation following the shock.

7. Concluding remarks

Economic resilience evaluates the ability of systems to absorb shocks and rebound. In this study we have evaluated the economic resilience of various forms of in-person cultural entertainment –namely, cinema, theatre (drama), classical music and popular music– amidst the Great lockdown following the Covid-19 outbreak, taking Italy as a case study.

We have outlined some stylized facts and proposed explanations regarding the varying resilience capacity of different types of cultural participation involving in-person attendance. In essence, the main findings that emerge from our study can be summarized as follows. Italian regions exhibit significant differences in the attendance at various genres of cultural activities. These differences are consistently observed in both ticket sales data and respondents' self-reported attendance collected in national survey interviews.

However, the statements made by interviewees reveal a more pronounced impact of the Covid-19 shock than what is indicated by ticket sales data. As a result, the resilience indicator for the shock's impact shows more stringent measures (i.e., more negative effects) in self-reported data compared to ticket sales data. In simpler terms, the impact appears more severe in respondents' answers than in the ticket-based data.

The recovery from the adverse shock for cultural activities under consideration (based on ticket data) is around 80%, comparing the annual 2022 data with the average annual data from the period 2011-19. Cinema stands as a negative exception (with a recovery below 50%), while live concerts of popular music exhibit an overshooting phenomenon, with ticket sales in 2022 approximately double the average annual data recorded from 2011-19. The variability seen in self-reported declarations from interviewed individuals regarding their attendance at live shows (at least once over the last year) does not reflect this range; instead, it shows a recovery rate between 58% and 73% for all genres of cultural activities under consideration.

Popular music experienced the most significant negative impact reaction to the Covid-19 lockdown shock but showed the best recovery concerning historical data, in terms of tickets. Theatrical performances and classical music had a milder impact reaction but also a milder recovery with respect to historical attendance.

Audience measurements based on ticket sales data indicate that the lockdown shock widened the differences among regions in the case of cinema attendance but led to a slight reduction of differences across regions for theatre, classical music, and popular music. Audience measurements based on the percentage of people who reported attending shows indicate widening differences among regions following the Covid-19 lockdown shock in all cases.

We have emphasized that different indicators of resilience provide slightly different stories concerning the ability of cultural activity to respond to the shock, both during impact and recovery phases. While a picture emerges in terms of impact reactions where regions with higher participation seem to have reacted better, indications on recovery are not clear. This ambiguity is likely due to the partiality of the recovery analysis, which, at the moment, has only been able to examine recovery in the immediacy of the lifting of restrictions. Of course, we are aware that a more extended timeframe would be necessary for a comprehensive evaluation of the recovery capacities following the shock induced by Covid-19 and the long-term outlook for the evolution of in-person attendance across various genres of cultural events.

Nevertheless, this study represents a preliminary attempt –as far as we know– to measure and compare the resilience capacities of different cultural sectors, even across the regions within a country. Some evidence may be useful for shaping strategies for private operators and public policies to promote cultural consumption in the form of in-person attendance at cultural events.

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TABLES

Table 1. Variables and acronyms

Acronym	Variable	Source
CIN_POP	Cinema paid entries / population	SIAE
THEA_POP	Theater entries / population	SIAE
OPERA_POP	Opera paid entries / population	SIAE
MCLAS_POP	Classical music concert paid entries / population	SIAE
MPOPU_POP	Pop music concert entries / population	SIAE
CP_CIN	% of people reporting at least one entry to cinema	ISTAT
CP_THEA	% of people reporting at least one entry to cinema	ISTAT
CP_MCLAS	% of people reporting at least one entry to classical music and opera	ISTAT
CP_MPOPUR	% of people reporting at least one entry to pop/rock music concert	ISTAT
CP_OH	% of people attending at least two types of in-person cultural consumption outside the home	ISTAT

Note: entries encompasses paid entries and free entries.

Table 2. Cultural consumption in Italy (national data) before, during and after the Great Lock-down

	Variable	I. (Data)			II. (Stastic-based indicators)			III. (Regression-based indicators)	
		Historic value (2011-19)	Lockdown value	Recovery value	RIMP	RRI	RRH	RIMP_B	RREC_C
(a)	CIN_POP	1.739	0.484	0.815	0.278	1.683	0.469	-0.692***	0.806***
(b)	THEA_ POP	0.245	0.077	0.189	0.316	2.440	0.772	-0.664***	1.613***
(c)	LIR_POP	0.037	0.010	0.030	0.259	3.120	0.807	-0.880***	1.593***
(d)	MCLAS_POP	0.055	0.019	0.046	0.354	2.377	0.841	-0.689***	1.194***
(e)	MPOPUR_ POP	0.175	0.039	0.357	0.221	9.219	2.037	-1.045***	5.599**
(f)	CP_CIN	49.73	9.10	30.60	0.183	3.363	0.615	-0.781***	2.380***
(g)	CP_THEA	19.78	2.90	12.10	0.147	4.172	0.612	-0.782***	3.205***
(h)	CP_MCLAS	9.18	2.20	6.50	0.240	2.955	0.708	-0.689***	1.976***
(j)	CP_MPOPUR	19.46	3.70	11.20	0.190	3.027	0.576	-0.764***	2.046***
(k)	CP_OH	33.52	8.30	23.10	0.248	2.783	0.689	-0.703***	1.801***

Note: Historic value reports the average value over the period 2011-19; Lockdown value report the datum of 2020-21 (average) for variables (a)-(e) and the datum of 2021 for variable (g)-(k); Recovery value reports the datum of 2022. *RIMP*, *RRI, RRH, RIMP_B, RREC_C* are the resilience indicators, as defined in text (impact effect, immediate recovery; recovery with respect to the historical value, respectively)

Table 3. Sigma Convergence across regions

	2011	2019	2022			2011	2019	2022
CIN_POP	0.361	0.303	0.325		CP_CIN	0.082	0.102	0.132
THEA_POP	0.429	0.420	0.347		CP_THEA	0.243	0.220	0.280
MCLAS_POP	0.513	0.403	0.354		CP_MCLAS	0.228	0.130	0,203
MPOPUR_POP	0.716	0.463	0.382		CP_MPOPUR	0.173	0.146	0.229
					CP_OH	0.191	0.165	0.224

Note: The Table reports the coefficient of variation across the 20 observations (pertaining the Italian regions), in year 2011, 2019 and 2022.

Table 4. Correlation between historical values of cultural participation and socio-economic conditions across the regions

	CIN_POP_BASE	THEA_POP_BASE	MCLAS_POP_BASE	MPOPUR_POP_BASE
INCOME	0.715***	0.757***	0.779***	0.841***
GRADUAT	0.7047***	0.6379***	0.6034***	0.5696***
UNEMPL	-0.599 ***	-0.591 ***	-0.698 ***	-0.716 ***
NEET	-0.634 ***	-0.596 ***	-0.700 ***	-0.731 ***
CIVPOLPART	0.7370***	0.6782***	0.7441***	0.7273***
VOLUNTEER	0.240	0.5175**	0.6688***	0.5502**
SAFEPERC	-0.3836*	-0.2437	-0.2036	-0.1332
THEFT	0.7275***	0.4970**	0.5872***	0.6340***
SATISFLIFE	0.1761	0.3822*	0.5693***	0.4817 **
SATISFLEISURE	0.2779	0.4537**	0.5893***	0.4864**
INTN_ACHOME	0.7523***	0.7668***	0.8018***	0.7822***
INTN_USERS	0.7202***	0.7853***	0.8247***	0.8381***
INTN_BUYMM	0.7429***	0.7207***	0.7159***	0.9208***

Note: Critical values, for 20 observations, are: 0.378, 0.444, 0.561, in the cases of two-tail 10%, 5%, 1% significance level, respectively (*, **, ***).

Table 5. Correlation between resilience indicators of cultural participation and socio-economic conditions across the regions

	RIMP_B				RREC_C			
	CIN_POP	THEA_POP	MCLAS_POP	MPOPUR_POP	CIN_POP	THEA_POP	MCLAS_POP	MPOPUR_POP
INCOME	-0.421*	0.488**	0.379*	0.465**	0.575***	0.037	0.202	-0.296
GRADUA	-0.154	0.151	0.428*	0.354	0.046	0.066	0.178	0.018
UNEMPL	0.176	-0.289	-0.377	-0.351	-0.413*	-0.076	-0.175	0.097
NEET	0.201	-0.335	-0.401*	-0.398*	-0.434*	-0.016	-0.174	0.142
CIVPOLPART	-0.327	0.429*	0.497*	0.343	0.508**	-0.139	0.267	-0.263
VOLUNTEER	-0.358	0.315	0.171	0.257	0.604***	0.044	0.069	-0.212
SAFEPERC	0.388*	-0.22	-0.241	-0.353	0.429*	0.222	0.296	0.24
THEFT	-0.263	0.417	0.434	0.503**	0.097	-0.155	-0.14	-0.347
SATISFLIFE	-0.126	0.282	0.176	0.169	0.694***	0.021	0.261	-0.169
SATISFLEISURE	-0.114	0.124	0.25	0.234	0.451**	0.279	0.147	0.079
INTN_ACHOME	-0.440*	0.438*	0.510**	0.397*	0.442*	-0.17	0.212	-0.251
INTN_USERS	-0.483**	0.461**	0.437*	0.376	0.564***	-0.063	0.287	-0.284
INTN_BUYMM	-0.490**	0.569***	0.246	0.486**	0.537**	-0.108	0.213	-0.441**

Note: Critical values, for 20 observations, are: 0. 378, 0.444, 0.561, in the cases of two-tail 10%, 5%, 1% significance level, respectively (*, **, ***).

Table A1-A. Cinema attendance resilience indicators

	CIN_POP					CP_CIN			
	Baseline	*RIMP*	*RRI*	*RRH*		*Baseline*	*RIMP*	*RRI*	*RRH*
Piemonte	1.944	*0.246*	1.763	*0.434*		49.556	0.172	3.447	0.591
Valdaosta	1.903	*0.245*	**1.934**	0.473		46.000	0.170	3.718	0.630
Lombardia	1.934	0.284	1.785	0.508		51.133	0.174	3.449	0.600
Trentino A.A.	1.122	0.301	**2.048**	**0.617**		43.344	**0.228**	2.939	0.671
Veneto	1.646	0.278	1.760	0.490		47.778	0.172	3.439	0.590
Friuli V.G.	**2.036**	0.267	**1.812**	0.484		49.078	0.181	3.191	0.579
Liguria	1.851	0.255	1.773	0.453		48.511	*0.146*	3.746	*0.548*
Emilia R.	**2.339**	0.282	1.662	0.468		**51.956**	**0.219**	2.772	0.608
Toscana	1.927	0.274	1.627	0.445		**51.678**	0.203	*2.771*	*0.563*
Umbria	1.826	0.301	1.551	0.466		48.422	0.256	*2.427*	0.622
Marche	1.995	*0.250*	1.664	*0.416*		49.556	0.180	3.427	0.615
Lazio	**2.425**	0.256	1.720	0.440		**57.778**	0.177	3.529	0.623
Abruzzo	1.768	0.308	1.469	0.453		50.344	0.161	4.086	**0.657**
Molise	*0.604*	0.325	*1.349*	0.438		*41.833*	*0.124*	**5.115**	**0.636**
Campania	1.311	0.257	1.539	0.396		50.033	0.164	**4.695**	**0.769**
Puglia	1.374	**0.343**	1.442	0.494		48.189	0.189	3.297	0.623
Basilicata	*0.715*	**0.416**	*1.299-*	**0.541**		42.844	0.159	3.588	0.570
Calabria	*0.574*	**0.362**	*1.420*	**0.513**		*40.178*	*0.110*	**4.909**	*0.538*
Sicilia	1.156	0.289	1.646	0.476		47.422	**0.226**	*2.570*	0.580
Sardegna	1.164	0.296	1.724	0.510		*40.844*	0.191	3.115	0.595

Note: For each indicator, the three highest (lowest) values are in bold (italics).

Table A1-B Theatre attendance resilience indicators

	THEA_POP					CP_THEA			
	Baseline	*RIMP*	*RRI*	*RRH*		*Baseline*	*RIMP*	*RRI*	*RRH*
Piemonte	0.224	0.322	2.508	0.807		19.344	0.160	3.613	0.579
Valdaosta	0.156	0.299	**2.742**	0.821		14.511	*0.076*	7.636	0.579
Lombardia	0.266	0.285	2.657	0.758		22.044	0.132	4.586	0.603
Trentino A.A.	**0.347**	0.284	2.423	0.688		**30.933**	*0.129*	4.250	0.550
Veneto	0.220	0.310	2.433	0.754		19.333	*0.129*	4.120	0.533
Friuli V.G.	**0.365**	0.326	*2.020*	*0.658*		23.256	0.142	3.848	0.546
Liguria	0.293	0.307	2.589	0.794		20.011	0.135	4.407	0.595
Emilia R.	0.314	0.333	2.439	0.812		21.889	0.178	*3.026*	0.539
Toscana	0.278	0.333	2.315	0.772		20.011	0.185	3.324	0.615
Umbria	0.210	0.325	2.352	0.765		20.000	0.180	*2.917*	0.525
Marche	0.261	0.391	*2.075*	0.811		20.433	0.152	4.677	0.710
Lazio	**0.378**	*0.265*	2.500	*0.662*		26.589	0.139	4.757	0.662
Abruzzo	0.158	**0.462**	*1.679*	0.776		16.189	0.167	3.963	0.661
Molise	*0.060*	*0.232*	**5.439**	**1.260**		*13.467*	0.149	3.700	0.550
Campania	0.183	0.323	2.621	0.847		16.778	0.143	5.833	0.834
Puglia	0.141	**0.412**	2.186	**0.900**		15.867	0.158	3.320	*0.523*
Basilicata	*0.112*	*0.167*	**4.080**	0.680		15.933	0.151	3.083	*0.464*
Calabria	*0.085*	0.310	2.669	0.828		*12.100*	0.165	4.000	0.661
Sicilia	0.214	0.338	2.391	0.808		16.567	0.139	4.043	0.561
Sardegna	0.160	**0.397**	2.162	**0.857**		*13.500*	0.163	*2.909*	*0.474*

Table A1-C Classical music attendance resilience indicators

	MCLAS_POP					CP_MCLAS			
	Baseline	*RIMP*	*RRI*	*RRH*		*Baseline*	*RIMP*	*RRI*	*RRH*
Piemonte	0.050	0.325	2.178	0.709		9.333	0.214	3.250	0.696
Valdaosta	0.029	*0.255*	1.984	*0.506*		9.167	0.262	*1.875*	*0.491*
Lombardia	0.070	0.290	2.514	0.729		10.256	0.195	3.250	0.634
Trentino A.A.	0.093	0.385	2.087	0.804		13.656	0.198	3.074	0.608
Veneto	0.070	0.329	2.704	0.890		10.456	0.210	2.818	0.593
Friuli V.G.	0.064	0.413	2.263	0.935		11.222	0.241	2.111	*0.508*
Liguria	**0.057**	0.323	2.167	0.700		8.778	*0.194*	3.000	0.581
Emilia R.	0.058	0.425	2.195	0.933		9.444	0.212	3.500	0.741
Toscana	0.071	0.380	2.338	0.889		10.056	0.229	2.913	0.666
Umbria	**0.058**	0.347	1.930	0.670		8.656	0.393	*1.353*	*0.531*
Marche	0.045	0.551	1.804	0.993		9.744	*0.185*	4.444	0.821
Lazio	**0.077**	*0.230*	2.514	0.577		11.189	0.286	2.719	0.778
Abruzzo	0.052	0.429	2.589	1.110		7.911	0.228	4.222	0.961
Molise	*0.019*	0.359	**3.680**	1.320		7.656	*0.183*	3.571	0.653
Campania	*0.020*	0.468	1.901	0.890		6.656	0.270	3.444	0.932
Puglia	0.031	**0.554**	2.598	**1.438**		7.733	0.310	2.042	0.634
Basilicata	*0.020*	**1.000**	2.553	**2.554**		9.022	0.211	2.947	0.621
Calabria	*0.017*	**0.679**	2.581	**1.752**		7.178	0.195	4.357	0.850
Sicilia	0.047	0.398	2.274	0.904		7.022	0.328	2.435	0.797
Sardegna	0.036	*0.280*	**3.235**	0.904		7.711	0.272	2.238	0.610

Table A1-D Popular music attendance resilience indicators

	MPOPUR_POP				CP_MPOPUR			
	Baseline	*RIMP*	*RRI*	*RRH*	*Baseline*	*RIMP*	*RRI*	*RRH*
Piemonte	0.191	*0.188*	7.951	1.497	19.900	0.166	3.576	0.593
Valdaosta	**0.271**	*0.047*	**21.487**	*1.002*	20.467	0.220	*2.133*	0.469
Lombardia	**0.258**	0.196	9.460	1.852	19.722	0.152	3.433	0.522
Trentino A.A.	0.182	0.210	10.508	2.209	**29.044**	0.196	2.719	0.534
Veneto	0.188	0.218	8.313	*1.810*	20.144	0.223	2.289	0.511
Friuli V.G.	0.200	0.278	7.511	2.092	**21.533**	0.214	*2.283*	0.488
Liguria	0.116	0.246	*6.954*	1.708	*15.944*	0.182	2.552	0.464
Emilia R.	0.234	0.253	8.986	2.277	21.000	0.152	**3.750**	0.571
Toscana	0.218	0.212	8.711	1.851	19.056	**0.236**	2.289	0.541
Umbria	0.143	0.233	*5.278*	*1.229*	19.778	**0.248**	*1.796*	*0.445*
Marche	0.189	0.261	10.620	2.772	19.922	0.191	3.263	0.622
Lazio	**0.264**	*0.159*	11.251	1.790	21.322	0.197	3.405	**0.671**
Abruzzo	0.093	**0.493**	8.702	**4.287**	21.167	0.198	**4.286**	**0.850**
Molise	*0.021*	0.327	**55.558**	**18.157**	18.578	*0.135*	**3.880**	0.522
Campania	0.075	0.251	**12.120**	3.040	*16.267*	0.209	3.676	**0.768**
Puglia	0.134	0.273	7.987	2.180	17.889	**0.235**	2.619	0.615
Basilicata	*0.039*	**0.352**	18.378	**6.464**	**22.122**	*0.131*	2.966	*0.389*
Calabria	*0.037*	**0.389**	7.863	3.057	20.144	*0.139*	3.286	*0.457*
Sicilia	0.074	0.315	*7.095*	2.233	*16.367*	0.202	2.636	0.532
Sardegna	0.079	0.233	11.848	2.766	21.100	0.190	3.027	0.576

Table A1-E Resilience indicators for the aggregate cultural participation outside the home

	CP_OH			
	Baseline	*RIMP*	*RRI*	*RRH*
Piemonte	36.344	0.264	2.448	0.647
Valdaosta	35.989	**0.286**	*2.243*	0.642
Lombardia	38.033	0.245	2.860	0.699
Trentino A.A.	**44.389**	0.241	2.738	0.660
Veneto	36.700	0.245	2.844	0.698
Friuli V.G.	**39.400**	**0.277**	*2.284*	0.632
Liguria	33.789	0.222	2.667	0.592
Emilia R.	38.378	0.255	2.520	0.644
Toscana	36.378	0.272	2.576	0.701
Umbria	34.544	0.234	2.716	0.637
Marche	33.378	0.216	3.306	0.713
Lazio	**40.578**	**0.303**	*2.447*	0.742
Abruzzo	28.967	0.193	**4.107**	**0.794**
Molise	*24.944*	*0.164*	**4.707**	**0.774**
Campania	25.522	0.227	3.776	**0.858**
Puglia	25.000	0.200	2.740	*0.548*
Basilicata	25.989	*0.165*	**3.442**	*0.569*
Calabria	*21.400*	*0.168*	3.333	*0.561*
Sicilia	*24.889*	0.221	2.818	0.623
Sardegna	31.411	0.223	3.114	0.694

Table A2. Regional resilience as measured by *RIMP_B* and *RREC_C* (Ticket sales data)

	CIN_POP		TEA_POP		MCLAS_POP		MPOPUR_POP	
	RIMP_B	*RREC_C*	*RIMP_B*	*RREC_C*	*RIMP_B*	*RREC_C*	*RIMP_B*	*RREC_C*
Piemonte	-0.427	0.903	-0.678	1.642	-0.726	1.068	-1.126	4.450
Valdaosta	-0.447	**1.258**	**-0.509**	**2.076**	-0.778	**3.005**	-1.014	*1.520*
Lombardia	**-0.363**	0.801	-0.701	1.850	-0.701	1.399	-1.095	5.726
Trentino A.A.	-0.400	**1.114**	-0.653	1.876	-0.665	1.020	-0.976	7.364
Veneto	-0.399	0.836	-0.640	1.785	-0.665	1.020	-1.139	4.326
Friuli V.G.	-0.412	0.898	-0.628	1.260	-0.663	1.101	-0.944	4.748
Liguria	-0.423	0.931	-0.646	1.886	-0.702	0.942	**-0.963**	4.254
Emilia R.	-0.390	0.774	**-0.614**	1.773	-0.713	0.895	-1.008	5.670
Toscana	-0.443	0.828	-0.689	1.374	-0.698	1.099	-1.112	5.233
Umbria	-0.420	0.711	-0.657	1.614	**-0.636**	0.657	**-0.816**	*3.542*
Marche	-0.433	0.870	-0.648	*1.012*	**-0.590**	0.743	-0.967	7.233
Lazio	**-0.355**	0.780	-0.653	1.801	-0.607	**2.282**	-1.030	7.062
Abruzzo	-0.416	0.610	-0.670	*0.361*	-0.670	1.534	-1.064	4.800
Molise	-0.450	*0.606*	-0.936	**3.673**	**-0.534**	2.129	-1.479	**35.290**
Campania	**-0.369**	0.545	-0.662	1.764	*-0.828*	*0.288*	-0.997	**8.041**
Puglia	-0.449	0.672	**-0.576**	1.399	-0.651	1.127	**-0.879**	5.508
Basilicata	*-0.474*	*0.471*	-0.909	**1.933**	*-1.113*	0.289	-1.389	**12.187**
Calabria	*-0.512*	0.649	-0.759	1.491	*-1.139*	0.419	-1.316	3.959
Sicilia	*-0.512*	0.940	-0.697	1.531	-0.645	1.226	-1.158	*3.411*
Sardegna	-0.453	**0.953**	-0.737	*0.850*	-0.728	**2.146**	*-1.492*	6.013

Table A3. Regional resilience as measured by *RIMP_B* and *RREC_C* (Self-reported attendance data)

|	CP_CIN		CP_TEA		CP_MCLAS		CP_MPOPUR	
	RIMP_B	*RREC_C*	*RIMP_B*	*RREC_C*	*RIMP_B*	*RREC_C*	*RIMP_B*	*RREC_C*
Piemonte	-0.791	2.468	-0.768	2.639	-0.728	2.255	-0.797	2.590
Valdaosta	-0.808	2.726	*-0.914*	**6.631**	-0.714	*0.879*	-0.751	*1.129*
Lombardia	-0.803	2.464	-0.786	3.623	-0.733	2.276	*-0.843*	2.434
Trentino A.A.	-0.745	1.950	-0.786	3.288	-0.684	2.115	-0.763	1.734
Veneto	-0.804	*0.452*	-0.787	3.162	-0.653	1.863	-0.722	1.308
Friuli V.G.	-0.784	2.206	-0.796	2.881	-0.653	1.147	-0.723	*1.307*
Liguria	*-0.814*	2.768	*-0.829*	3.429	*-0.780*	2.022	-0.814	1.558
Emilia R.	-0.762	1.780	-0.759	2.053	-0.762	2.508	-0.831	**2.755**
Toscana	**-0.742**	1.793	**-0.739**	2.357	-0.652	1.938	-0.734	1.292
Umbria	**-0.686**	*1.443*	**-0.733**	*1.939*	**-0.465**	*0.348*	**-0.664**	*0.816*
Marche	-0.778	2.446	-0.780	3.709	-0.747	**3.457**	-0.749	2.277
Lazio	-0.772	2.552	-0.776	**3.800**	-0.633	1.738	**-0.718**	2.431
Abruzzo	-0.808	3.108	**-0.709**	3.015	*-0.796*	**3.204**	-0.778	**3.299**
Molise	*-0.853*	4.132	-0.754	2.742	*-0.788*	2.583	*-0.835*	**2.887**
Campania	-0.794	3.715	-0.816	**4.849**	-0.716	2.429	-0.746	2.687
Puglia	-0.793	2.310	-0.807	2.337	-0.691	*1.039*	-0.733	1.624
Basilicata	-0.794	2.606	-0.743	*2.116*	-0.735	1.952	*-0.835*	1.977
Calabria	*-0.835*	3.939	-0.766	3.019	-0.706	**3.353**	-0.723	2.349
Sicilia	**-0.731**	*1.583*	*-0.824*	3.052	**-0.617**	1.441	**-0.715**	1.672
Sardegna	-0.761	2.143	-0.739	*1.936*	**-0.128**	2.732	-0.741	1.965

FIGURES

Figure A1. Attendance to cinema, theatre, classical music and popular music: registered entries and people declarations (data at the national level).
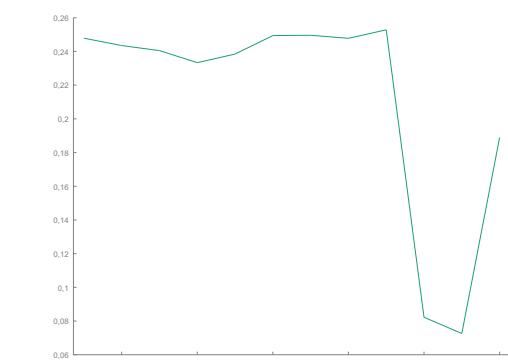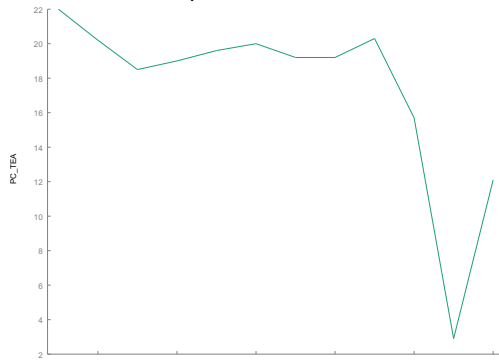
Cinema – Tickets

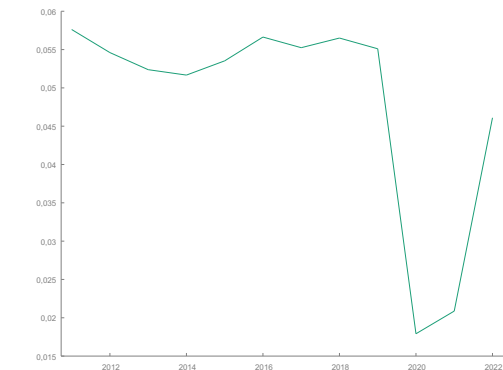Cinema – Self-reported attendance
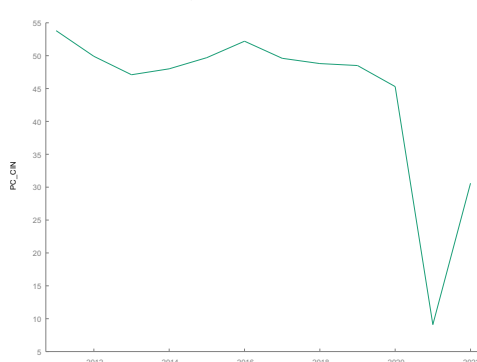
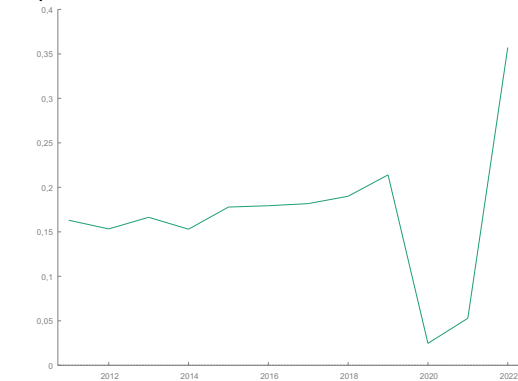Theatre -Tickets

Theatre – Self reported attendance

Classical Music – Tickets

Classical and opera music – Self-reported attendance

Popular Music- Tickets
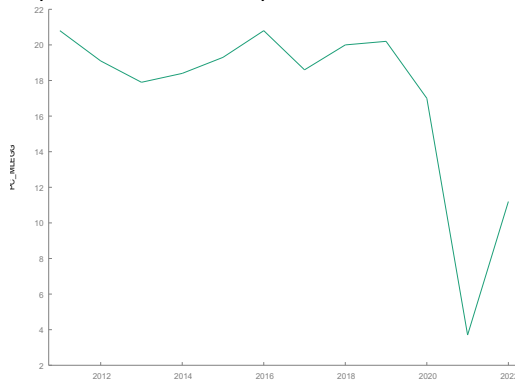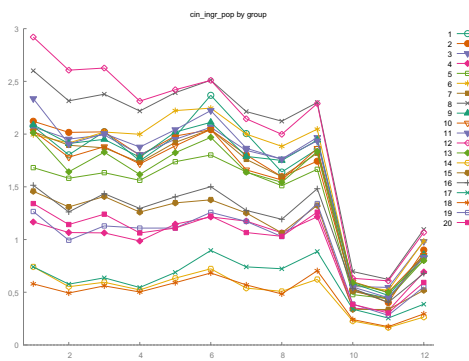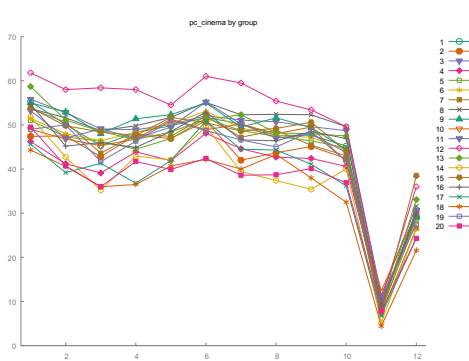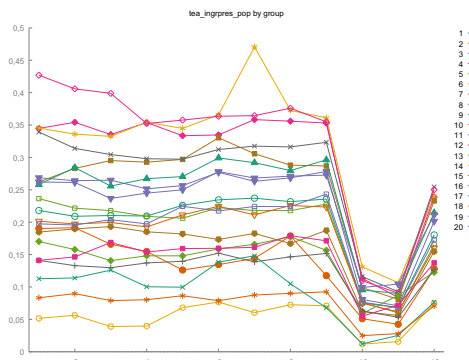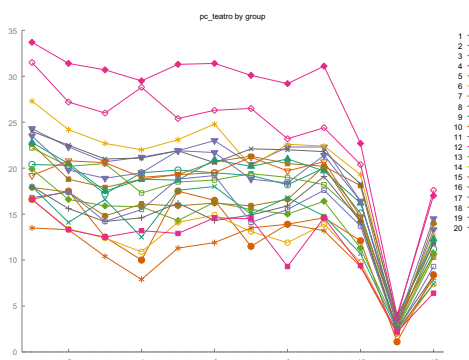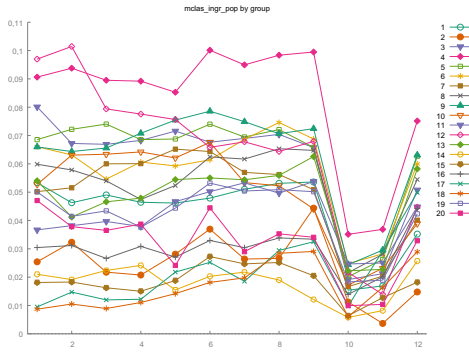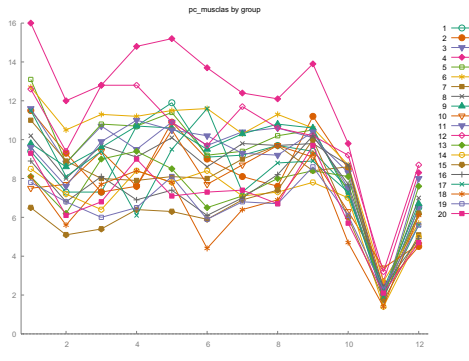

Popular music – Self-reported attendance

Figure A2 - Attendance to cinema, theatre, classical music and popular music: registered entries and people declarations (regional data)

Cinema – Tickets

Cinema – Self-reported attendance

Theatre -Tickets

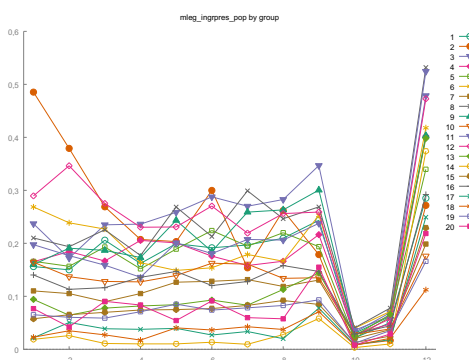Theatre – Self reported attendance

Classical Music – Tickets

Classical and opera music – Self-reported attendance

Popular Music- Tickets

Popular music – Self-reported attendance