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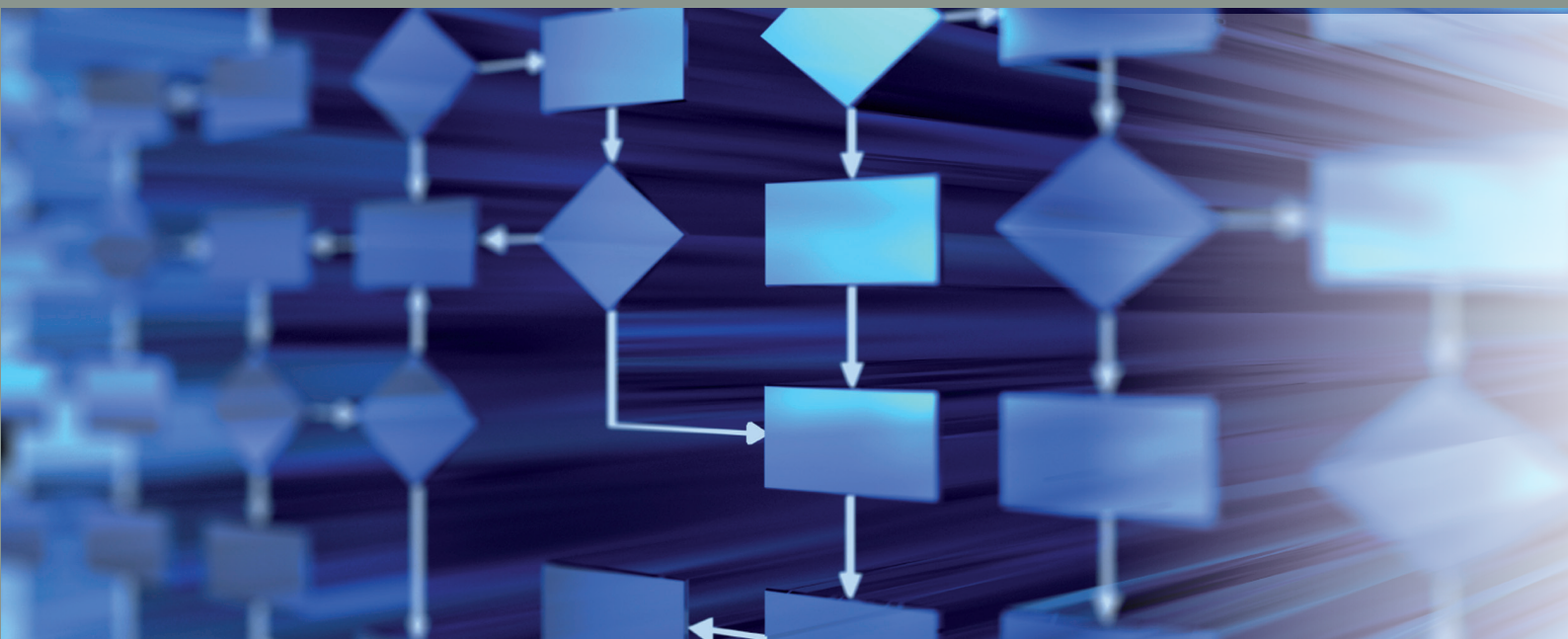
COVID-19 Impact on Artistic Income

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Abstract

This paper assesses the impact of the pandemic crisis on self-employed income among artists resident in Germany. Using unique data from the latest available public insurance records, we show that musicians and performing artists are among the most vulnerable groups, and that writers, on average, are relatively less impacted. Moreover, the paper looks at the impact of the 2020 crisis on income differences by gender, career stages and regions, and it investigates the effect of specific non-pharmaceutical, public intervention implemented in German states.

Forthcoming in Covid Economics, Vetted and Real-Time Papers

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1 Motivation

Data and timely evidence for well-informed policy in the cultural and creative sectors are hard to come by in a state of emergency such as the current global pandemic. In a time of crisis, policy makers might not be able to build on previous experiences and learn from historic evidence. Still, there is a need to allocate public resources and support as well as identify and reach out to most vulnerable groups among artists. Based on the latest available data released by official sources in March 2021, this paper makes an attempt to assess the COVID-19 impact on self-employed income from artistic practice and among artists located in Germany.

We find that the pandemic crisis impacts artists in creative and cultural sectors differently, net income losses ranging between 2 to 13 percent. More precisely, our results indicate that musicians and performing artists are among the most vulnerable groups in terms of income losses in 2020, and that some losses may depend on the specific non-pharmaceutical, public intervention implemented in German states. Furthermore, we can show that gender income differences and differences at different career stages largely prevail over the crisis and predate the 2020 outbreak, and that artists in rural areas are no less affected than those in urban areas.

We contribute to a growing number of economic studies assessing the pandemic's impact and the impact of specific containment measures (Baldwin and Di Mauro, 2020; Cusmano and Raes, 2020; von Bismarck-Osten et al., 2020), in particular in the Arts and Culture (Buchholz et al., 2020; Jacobs et al., 2020). For example, topical research by the PEC centre documents a contraction of the UK labor market and fewer hours worked in these sectors.[1] Using data from the national Labour Force Survey (LFS), the study estimates a loss of 55,000 jobs which equals a 30 percent decline in music, performing and visual arts between the first

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[1]See this link to their blog.

and the third quarter of 2020. In addition, a number of recent studies by the European Parliament show similar contractions of these sectors and beyond across the EU and based on Eurostat data (De Vet et al., 2021).[2] Moreover, EU studies track and monitor national public support measures for creators and identify the many non-standard workers such as self-employed and part-time workers as the most vulnerable group in these sectors during the first wave of the 2020 pandemic. Notably, our research is backed by the latest available income data reported to an official public insurance scheme for artists located in Germany and it covers all of 2020. Different to many other COVID-19 impact studies, our research does not rely on income forecasts based on historic data, and it does not suffer potential bias from survey responses and the adequacy of sampling techniques. Moreover, we trust that more concise estimates of income losses experienced by artists in 2020 may enable policy-makers to better target public support in 2021, and help tailor financial and other support for most vulnerable groups and regions.

The paper structures as follows. Section 2 describes the unique dataset and the limitations of the study, section 3 sets up a simple empirical framework, and section 4 presents main findings from the analysis. Section 5 concludes.

2   Data and Study Limitations

Income data for around 190,000 artists comes from social insurance records of the 'Kuenstlersozialversicherungskasse' (KSK) and has been used in previous research on the financial health of creators (Cuntz, 2018; Kretschmer, 2005). The dedicated low-cost insurance scheme targets artists resident in Germany. It requires them to report self-employed income on an annual basis which they later also report to tax authorities. Applicants to the scheme self-identify as (self-employed) artists, and so, from a methodological perspective, there is no need for us to survey artists nor define sample criteria ex ante. In addition, once artists have

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[2]See the reports released here and there.

opted-in, they self-select into one out of four artistic categories, i.e. fine arts, performing arts, music and writing/literature.

The aggregate KSK records we can access report average income/net revenue (mean) from artistic self-employment and the number of insured artists per group by gender, artistic category, age group and geography (NUTS-1 'Laender' or states). The data is available for four consecutive years of reported income 2017 to 2020 and thus it only accounts for the impact on income from first and second pandemic waves in 2020. Furthermore, the data distinguishes artists at early career stages from the total insured population. The KSK defines 'early stage' careers as the first three years of reporting artistic self-employment to them. Tentative analysis of the number of insured artists suggests that there is no substantial crisis impact as the total stock of insured persons does not change in 2020 over previous years (results not shown).

We complement the income data with regional information on non-pharmaceutical interventions (NPI) implemented in 2020 in order to contain the spread of COVID-19 during the first and second pandemic waves (Cheng et al., 2020), i.e. December 31, 2020. NPIs restricted movement, public gatherings, international travel as well as led to the closure of education institutions and retail stores in the 16 German Laender and at different points in time, introducing some limited spatio-temporal variations in the introduction of policy measures (Aravindakshan et al., 2020). The introduction of NPIs, in turn, is linked to the spread of the pandemic over time in each of the Laender (Figure 1).

Several caveats apply to the KSK data. It does not provide any information on alternative sources of income for insured artists. For example, they will often cross-subsidize their artistic income and, in this way, might compensate for some self-employed income losses due to the pandemic via working multiple jobs and taking up regular employment, within and

outside the arts. Moreover, as some of the pre-pandemic 2019 royalties were only distributed in 2020, this might flatten and upward bias the impact we observe on reported income. So, arguably, pandemic 2020 royalty changes will only be reflected in the forthcoming 2021 data. In addition, reported income in 2020 might suffer from bias due to funding support artists received from private and public sources. For example, taxable funding on federal government level aiming to compensate for the substantial changes in revenues by artists and other self-employed workers might upward bias income figures (e.g. the so-called "November-/Dezemberhilfen" funds).[3] However, this main source of public funding in Germany does not seem relevant here as the distribution of funds was delayed until late January 2021 and thus it should not impact 2020 reported income.[4] Moreover, most financial support was based on the reimbursement of lost fixed costs which meant many self-employed were not eligible for these schemes. If our data would nevertheless be biased by funding and support measure, we could still treat and consider results as lower bound estimates of the pandemic impact.

Finally, other contextual information might be equally important to consider as a determinant of income changes. For example, the 2020 pandemic might serve as a catalyst to digital change and digital literacy among artists, based on recent industry surveys.[5] Arguably, trends towards more online distribution and cultural consumption as well as, related to that, alternative income sources and reworked business models go largely unobserved with the given data and can also moderate the income changes we observe in the next section.

3 Empirical Approach

We are interested in understanding how income in the different creative sectors is affected by the COVID-19 crisis in Germany, accounting for the various NPIs on the state-level. In an ideal empirical setting, a (quasi) natural experiment would randomly assign treatments,

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[3]See, for example, this or that link (in German).
[4]See, for example, this source (in German).
[5]See, for example, this source (in German).

i.e. different sets of NPIs, to a group of treated artists and not assign them to a control group of similar artists. Looking at both groups, we could isolate the causal effect of NPIs on income in each state and creative sector, controlling for other relevant factors associated with the spread of the COVID-19 pandemic. Instead, the empirical approach begins with a straightforward income estimation, and baseline results are obtained from estimating the following equation:

$$Inc_{s_{ct}} = \alpha + \delta * (Post_{st}) + \boldsymbol{X} * (Control_{s_{ct}}) + \mu_c + \epsilon_{s_{ct}}, \tag{1}$$

where Inc describes the average income of insured artists in state c, sector s and year t. Baseline regressions include state-fixed effects (μ) and standard errors are clustered at the state-level. Further control variables are summarized by $\boldsymbol{X}$ and capture artist group characteristics such as gender, age cohorts and career stages. We thus run separate regressions in each sector in order to isolate the $Post_{st}$ year effect, and then test the statistical significance of the difference between the 2019 and 2020 coefficients.

In a second step, we combine all sectors and run a single regression that identifies post-2019 income effects, based on the baseline specification outlined in equation (1):

$$Inc_{s_{ct}} = \alpha + \sum_t \beta^t year + \delta * (2020_t \times Sector_s) + \boldsymbol{X} * (Control_{s_{ct}}) + \mu_c + \epsilon_{i_t}, \tag{2}$$

and where $Sector_s \in \{$Writing, Fine Art, Music and Performing Art$\}$. Here, again our coefficient of interest is represented by δ, i.e. the interaction term of sectors and the 2020_t year treatment variable, capturing income-effects of the 2020 pandemic year. Baseline regressions include year-fixed effects (β), state-fixed effects (μ), and controls ($\boldsymbol{X}$) as well as standard errors clustered at the state-level.

Furthermore, as we estimate factor-variables interactions with year dummies, an meaningful approach is to interpret and graph income gaps using the margins-command (Stata). Margins are statistics calculated based on predictions from the above model. Thus we calculate margins based on the LHS of equation (1) as $\frac{\Delta E[y|sector,year]}{\Delta year}$, allowing the intercept and marginal effect (slope) of $post2019$ outcomes to be different for each sector, see for instance (Karaca-Mandic et al., 2012; Perraillon, 2021).

Finally, we refine our empirical strategy and estimate the income effects for different types and qualities of NPIs impacting each sector. We calculate post-2019 income effects as described above, but include an approximation of NPI intervention period lengths for each state (for example, the number of lockdown days). This variation allows to account for the heterogeneity in state-level responses to the COVID-19 pandemic in Germany. Hence, we add to the baseline equation (1) and the coefficient of interest δ an interaction term NPI_c in state c. We distinguish NPI treatments in upper and lower percentiles of intervention periods (<p25 and >p75) and test whether the effect of specific NPIs and lengths on 2020 income differs across sectors, with $NPI_c = 0$ and $NPI_c = 1$. So, the interaction term $\delta * (Post_t \times NPI_c)$ identifies this effect and we again run separate models for each sector in order to report the coefficient of interest.

4   Findings and Discussion

4.1   Baseline Results: Sectoral Income Gap

Our baseline results are presented in table 1 and table 2 of the Annex. In table 1 we run the regression for each sector separately and samples are restricted to years 2019-2020. In table 2, we report post-2019 interaction income effects for all sectors and based on the larger sample for years 2017-2020. All models control for gender, age cohorts, sectors and career stage effects on income. Both tables show results for our preferred specification including

state-level fixed-effects, standard errors clustered at the state-level and year fixed-effects.

The results in table 1 suggest an economically significant, negative income effect in 2020 across all creative sectors and over the previous year. The effect is statistically significant at the 1%-level (or lower) for all sectors except writers. Income drops in 2020 vary across sectors as model (1) to (4) illustrate. We estimate the strongest decline for the group of performing artists, with an average income loss of about 1'998 Euro in 2020, 1'485 Euro for musicians, 1'390 Euro for fine artists and 280 Euro for writers. This loss of income from artistic self-employment is, as we are able to illustrate in the following, substantial when compared to the reported income in 2019 (median) of writers (18'900 Euro), fine artists (15'300 Euro), musicians (12'300 Euro) and performing artists (14'400 Euro).

Negative 2020 income effects continue to hold in our second model specification. Table 2 reports results. In each column, we present overall 2017-2020 sectoral differences in income levels, and interaction terms $\{2020 \times Sector_s\}$ capture post-2019 income changes in each sector over the average income losses experienced by writers in the same period (base). Estimated losses stay economically significant and robust, and relative magnitudes of sectoral effects are confirmed. Notably, linear regression models in table 2 can explain roughly 30 percent of the variance in the outcome variable (1), and, under the log-transformed outcome in model (2), goodness-of-fit measures R^2 increase to 35 percent.

We visualize our main results in figure 2. Notably, writers such as self-employed and freelance journalists, authors or other publicists in this artistic group are exceptional with regard to their income losses. The results indicate that they were able to maintain or slightly increase their self-employed income in the 2020 pandemic year. Arguably, our point estimates for this sector indicate that writers more than other artists were able to continue their work online, in a time when theaters and concert venues were closing due to the restrictions

imposed by NPIs.[6] Figure 2 also reveals sectoral differences pre-dating the crisis as average self-employed income is highest for writers over the entire period of observation, followed by fine artists, musicians and performing artists.

4.2 Impact on Equal Pay, Career Stages and Regions

We can further inspect sectoral impacts of the COVID-19 pandemic along several important dimensions. For example, we can test if the pandemic had an impact on the existing gender income gap as well as test for the changes in income at different career stages and among artists resident urban or rural areas.

First, as Figure 3 illustrates the impact of the pandemic does not uniformly affect women and men across all sectors.[7] Here, it is interesting to note that female writers seem to outperform trends among male counterparts in 2020. Put differently, women in the sector see income growth over their 2019 levels, while men are losing some of their income over the same period. This is a notable result as at odds with the notion developed in many other studies on COVID-19 impact (Xue and McMunn, 2021). Findings there suggest that women, more often than men, are taking over additional household hours during the pandemic, e.g. when home schooling kids etc. Arguably, this should also be reflected in hours worked in professional lives as well as the relative changes in income observed for each group. At the same time, it could be that female writers have more flexible work arrangements in the first place, for example, in terms of working on a less fixed time schedule or working from home/remotely in pre-pandemic times, shielding them from some of the losses. At large, however, diverging trends have little overall effect on the existing, pre-crisis pay gap (i.e. the average sectoral income gap, to be seen in table 1 coefficient $female$, is nonetheless significant and negative). In most sectors, women are equally losing self-employed income from

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[6]NPIs are discussed in greater detail in section 4.3 below.

[7]Petzold et al. (2020) study the psychological distress, anxiety and depression caused by the COVID-19 pandemic in Germany and find that woman showed overall higher scores than men, in line with other research, e.g. Qiu et al. (2020); Wang et al. (2020).

artistic practice. Interestingly, in the performing arts, pandemic losses in 2020 should be assessed against the observation that women did not fully participate in the income growth from pre-pandemic years, mostly benefiting male performers in the same sector.

Second, Figure 4 depicts sectoral trends at different career stages. Here, predictive margins suggest that early-stage artists typically have lower income levels than the average artist in the total population. But it is again the less advanced, often younger writers that outperform average trends among writers in the sector. Possibly, their work is more reliant on digital sources in the first place and thus may be more resilient to the impact of the crisis. Ultimately, based on the data and the analysis this argument cannot be validated and requires more research. Rather the opposite holds for the Fine Arts. Here, early-stage visual artists are experiencing a more pronounced drop in their incomes than artists that are more advanced in careers.

Third, we test if artists located in urban regions see greater income losses due to the pandemic than other regions. This could be due to the fact that some urban agglomerations experienced higher infection rates and saw more restrictive and longer-term NPIs set up. Figure 5 depicts sectoral trends for urban and rural areas in Germany depending on population density. Predictive margins indicate that, on average, artists in more populated areas typically earning higher self-employed income. The time trends we can identify, however, do not imply significant variation and differences in the impact of the pandemic.

4.3   Responsiveness to Specific Public Interventions

Next, we move beyond the binary year treatment used in the baseline model and as outlined in the empirical framework 3. We now allow for a heterogeneous treatment of income groups at the state level based on the estimation model shown in table 1. However, we introduce an

additional measure of "lockdown days" to our models[8], and directly test if income differs for states with fewer lockdown days (i.e. the >25th percentile) and states with longer periods of lockdown (i.e. the <75th percentile). As noted above, this approach does not allow to identify causal estimates, and should be treated and interpreted with great caution as not all sort of state-level variation can be ascribed ex-post to state-level NPI policies.

Coefficient plots in figure 6 help visualize our estimates and serve as a further robustness check, corroborating the baseline results from table 1. In the refined modeling approach, post-2019 income changes continue to show the expected negative sign for all sectors (left-hand side of each panel, coefficient 2020 $Effect$), and the negative gender and early career income effects. On the right-hand side of each panel, we visualize estimates for the interaction terms when accounting for state-level differences in the number of lockdown days. Results in the first panel show that the relative income impact in states with fewer days of lockdown (2020 × >25th percentile) is slightly higher among writers, fine and performing artists when compared to the same artist groups in other states. Income effects for fine artists are weakly negative under such an intervention which deepens the overall negative impact on their income. For states with longer lockdowns (2020 × >75th percentile), estimates in the second panel in figure 6 provide evidence on a considerable negative effect, in particular among writers and musicians, whereas in the case of performing artists and fine artists, the overall negative impact on income is reduced with more days of lockdown.

As we cannot detect statistically significant differences on the state-level for the interaction coefficients shown in figure 6, this indicate that income losses are not directly correlated and do not systematically vary with specific interventions implemented in each state. Their economic significance is nevertheless important to highlight. Arguably, this sort of hetero-

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[8]For further details on NPI measures, please see the data section2. We also test income differences resulting from earlier mass-gathering restrictions, pre-school-closing and social distancing rules (not reported here).

geneity in the income effects can help further inform policies and it can be considered an area worth exploring in additional, COVID-19 related economic research.

5 Conclusive Remarks

Admittedly, our findings must be considered preliminary as, based on the data available to us at the end of May 2021, the COVID-19 impact is restricted to 2020 waves and public interventions only, and so we cannot account for 2021 pandemic effects yet. At the same time, we trust that our income estimates do not suffer from funding bias, as much of the financial support granted and distributed from public and private sources to artists in Germany will only become visible with the 2021 data.

We provide quantitative evidence that, in the course of this first year, creative and cultural sectors have been impacted differently, with musicians and performing artists experiencing the biggest relative losses in self-employed income. Net income losses range between 2 to 13 percent depending on the sector. Moreover, with writers being the notable exceptions, the crisis does not seem to substantially change the existing gender income gap across sectors nor do income differences at different career stages disappear, all predating the pandemic outbreak.

Finally, tentative analysis that goes beyond mere pandemic-year effects further shows that income levels correlate with the specific way non-pharmaceutical public interventions are being implemented. Here, the quality of interventions affect sectors and groups of artists differently, and so, for example, income from writers seems more sensitive to more days of lockdown than income generated in the performing arts sector, even though these effects are not always statistically significant. This may allow policy makers to more holistically and ex ante assess the choice of public measures in a future pandemic beyond their health goals,

and also better target public funding to the most vulnerable groups ex post.

Acknowledgement

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6 Figures and Table

Table 1: Income Creative Sectors

	(1) inc	(2) inc	(3) inc	(4) inc
Post (Writing)	-280.9 (-0.74)			
Post (Fine Art)		-1390.8** (-3.99)		
Post (Music)			-1485.3*** (-4.62)	
Post (Performing Art)				-1998.8*** (-6.55)
Female	-4876.7*** (-9.04)	-6039.2*** (-7.00)	-2585.7** (-3.56)	-6237.9*** (-9.24)
Early Career	-1746.8* (-2.50)	-1045.8 (-1.24)	-3029.3*** (-10.30)	-2222.0** (-3.17)
Constant	24941.3*** (9.72)	22586.8*** (8.80)	25122.0*** (25.77)	23931.9*** (9.09)
N	616	617	601	576
R^2	0.170	0.281	0.172	0.318
N Groups	17	17	17	17
FE	Laender	Laender	Laender	Laender
Cluster SE	Laender	Laender	Laender	Laender
Sample	2019-2020	2019-2020	2019-2020	2019-2020

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: This table shows the baseline results for the dependent variable *income* in model (1)-(4) and separate estimations for the four sectors. All models include age cohort controls which are not reported. The sample is calculated based on reported self-employed income for 2019-2020. All estimates derive from ordinary-least-squares (OLS) models.

Table 2: Income Creative Sectors (overall)

	(1) inc	(2) log(inc)
Writing (base)		
Fine Art	-3205.6***	-0.200***
	(-6.55)	(-6.15)
Music	-6670.0***	-0.416***
	(-15.10)	(-17.40)
Performing Art	-4294.1***	-0.275***
	(-8.70)	(-11.16)
$2020 \times FineArt$	-671.6	-0.0314
	(-1.35)	(-1.28)
$2020 \times Music$	-1199.6**	-0.106***
	(-3.43)	(-4.15)
$2020 \times PerformingArt$	-1376.1*	-0.0990**
	(-2.92)	(-3.75)
Female	-4486.8***	-0.264***
	(-14.44)	(-18.69)
Early Career	-2336.6***	-0.269***
	(-8.22)	(-14.67)
Constant	26814.9***	10.66***
	(21.81)	(138.10)
N	4816	4816
R^2	0.296	0.355
N Groups	17	17
Year FE	Yes	Yes
FE	Laender	Laender
Cluster SE	Laender	Laender
Sample	2017-2020	2017-2020

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: This table shows the baseline results (overall) for the dependent variable *income* in model (1) and *log(income)* in (2). All models include further age cohort and year-effects controls. The sample is calculated based on reported self-employed income for 2017-2020. All estimates are derived from ordinary-least-squares (OLS) models.
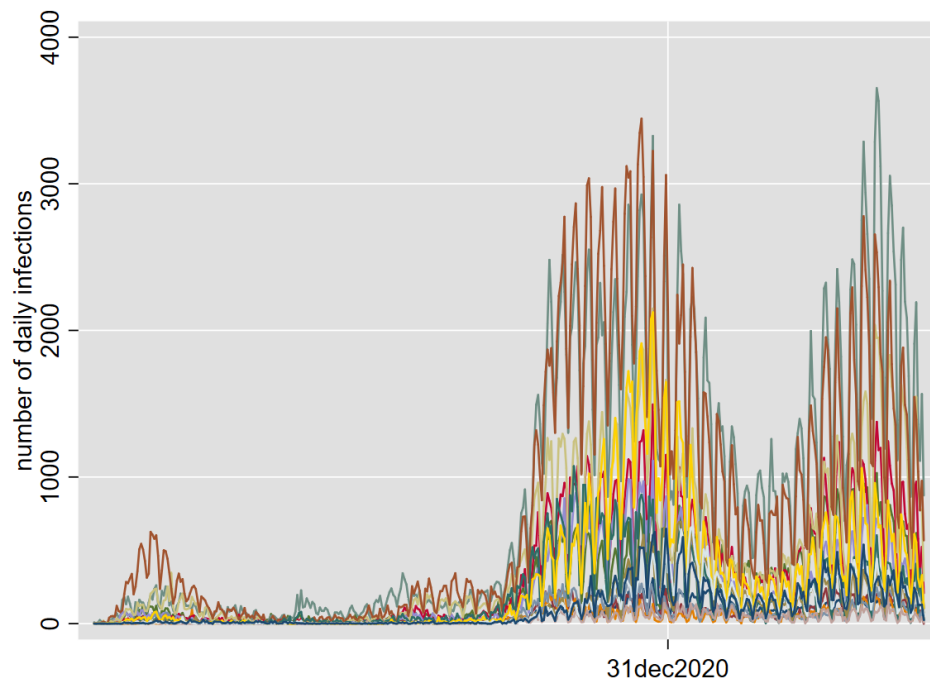
Figure 1: COVID-19 spread by region

Note: This figure shows the time trend in new daily infections for each of the 16 German Laender (NUTS-1), and for the first, second and third pandemic waves. The vertical line indicates the cut-off date for the reference period of the 2020 income data in the midst of the second wave. Source: RKI pandemic data
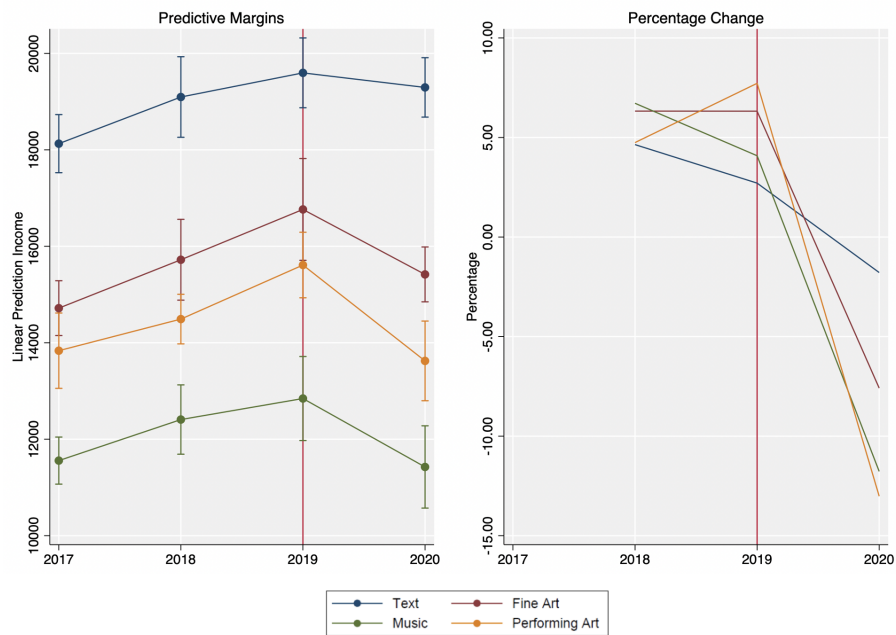
Figure 2: Income by Creative Sectors

Note: The left-hand panel shows absolute income levels by creative sectors, with writing (blue), fine arts (red), music (green) and performing arts (yellow). The panel on the right presents relative income changes from one period to the next.
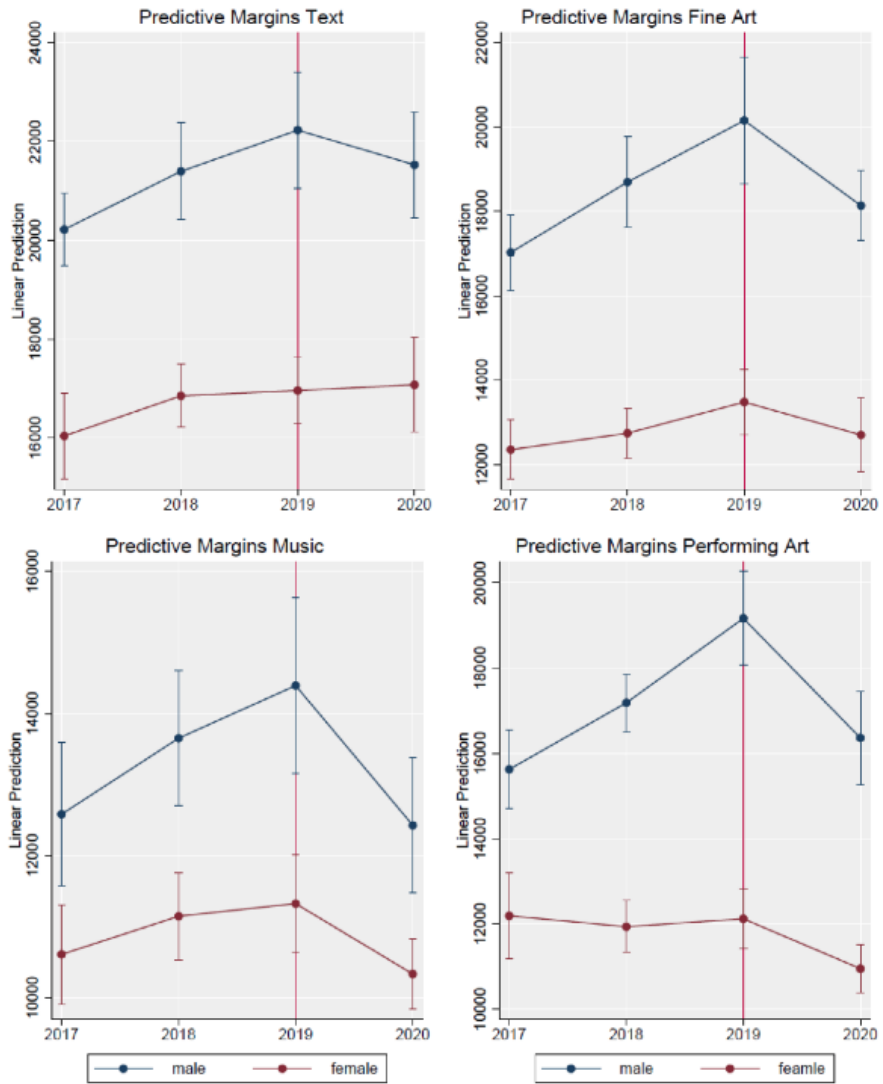
Figure 3: Income by Gender

Note: Panels show predictive margins for each sector and over the observation period. Margins
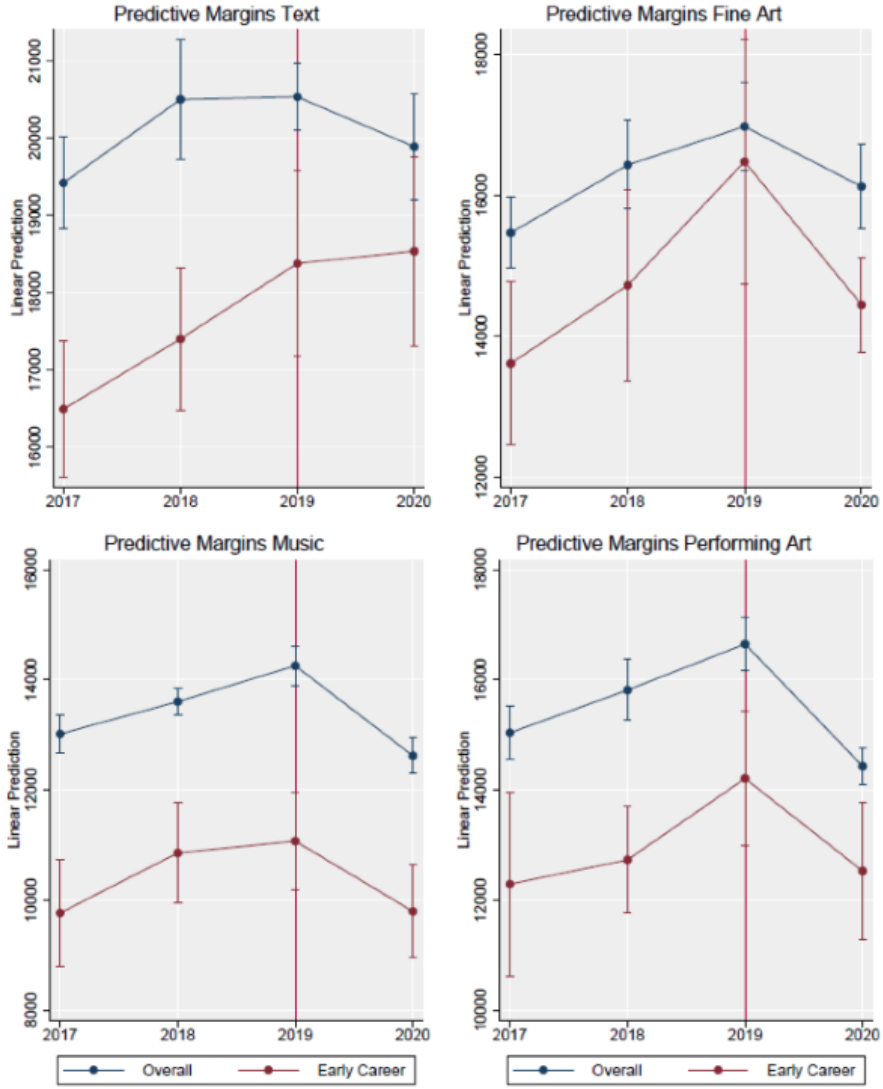are calculated for women (red) and men (blue).

Figure 4: Income by Career Stage
Note: Panels show predictive margins for each sector and over the observation period. Margins
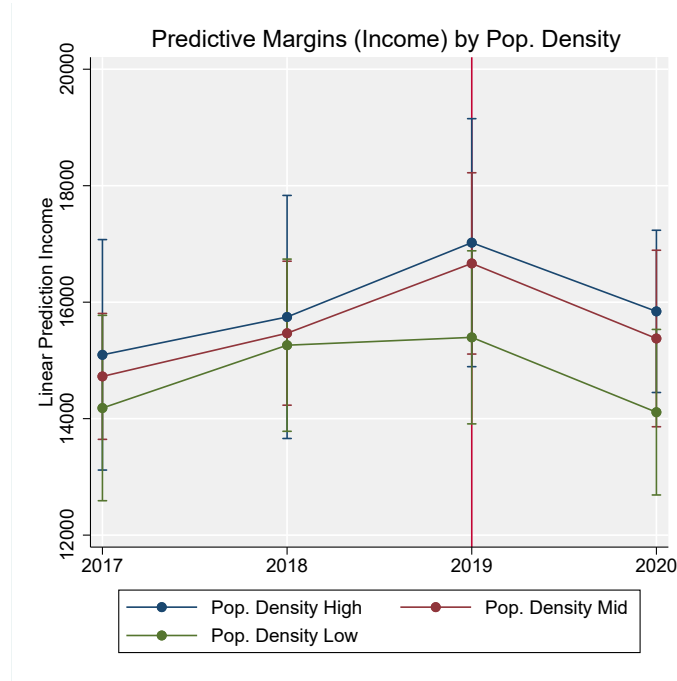are calculated for early stage artists (red) and the total population (blue).

Figure 5: Income by Type of Region

Note: Regions with high/medium/low population density are defined as Pop Density/ km^2 (high) $> 1000 >$ (mid) $> 200 >$ (low). More specifically, the first group includes Berlin, Hamburg, Bremen, the second group includes North Rhine-Westphalia, Saarland, Baden-Wuerttemberg, Hesse, Saxony, Rhineland-Palatinate and the third group the remainder Laender. Source 2017.
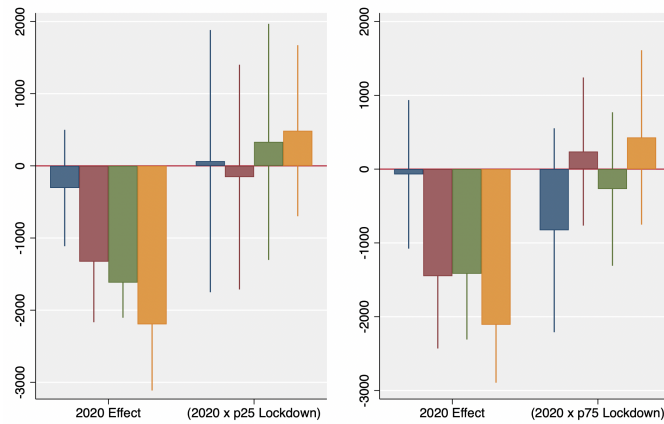

Figure 6: NPI Lockdown Days Coefficients

Note: This figure plots the coefficient size and 90-CI of the interaction term result of interest, based on calculations described in section 3. Writing (blue), fine art (red), music (green) and performing art (yellow), from left to right. Each panel plots the *Post* 2020 Effect on the left-hand-side and the first (second) panel on the right shows the $(2020 \times p25 Lockdown Days)$ interaction term and the $(2020 \times p75 Lockdown Days)$ interaction term, respectively.