Sub-national Quality of Government in EU Member States:

Presenting the 2021 European Quality of Government Index and its relationship with Covid-19 indicators

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Abstract

The 2021 European Quality of Government Index (the EQI) is the largest survey ever undertaken to measure perceptions of quality of government, collecting the opinions of over 129,000 respondents in a total of 208 NUTS 1 and NUTS 2 regions in all EU 27 member states. This paper highlights some of its main results and compares the results with previous rounds of the survey. The survey is not only unique in size, it is also allows for new insights into the intricate link between government institutions, health policy and crisis management, since it has been conducted in the midst of the Covid-19 pandemic. In a time of important challenges, we find an overall increase in the perceived quality of government of European regions. However, the geography of QoG is slowly shifting, with many regions in Eastern Europe now surpassing regions in Southern Europe. We also see a drop in most regions in Poland and Hungary, whose response to the pandemic has involved important infringement of democratic rights and institutions. Such drops cause concern for future crises management and beyond. We find that regional level corruption is closely linked to the extent to which citizens' worry about the effects of the pandemic.

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Introduction

The level of socio economic inequality across European regions remains high, threatening both human wellbeing and efforts to improve sustainability. Trying to understand regional differences in both the short-term response against the current Covid-19 pandemic as well as in the long-term socio-economic and political development, is thus of utmost importance for both scholars and practitioners. Consequently, recent years have seen an increase in the research within social sciences focused on regions instead of countries (Rodríguez-Pose 2020). In line with this trend, we present here the fourth round of the *European Quality of Government Index* (EQI). The quality of government ('QoG') in a territory has been documented as a key factor for understanding its social, economic and political progress (Bagenholm et al 2021; Holmberg, Rothstein and Nasiritousi 2009). Conceptually, we follow the standard definition of quality of government in the literature, that of Rothstein and Teorell (2008) – i.e. quality of government as impartiality in the exercise of public power. To measure it, we look at three aspects: impartiality (i.e. that the government upholds an impartial treatment of all citizens irrespective of their personal characteristics or connections), corruption (i.e. that there is no abuse of public office for private gain), and quality (i.e. that the public services as perceived as high-quality).

This paper introduces the 2021 round of the EQI and presents its main findings. The 2021 round of the EQI is the largest survey ever undertaken to measure the perceptions of quality of government, and it collects the opinions of over 129,000 respondents in a total of 208 NUTS 1 and NUTS 2 regions in all EU 27 member state countries[1]. It builds on previous rounds of this survey; 2010 (Charron, Lapuente and Rothstein 2013; Charron, Dijkstra and Lapuente 2014) 2013 (Charron, Dijkstra and Lapuente 2015) and 2017 (Charron, Lapuente and Annoni 2019)[2], and therefore allows for comparisons over time. Furthermore, it includes several important additions to the original survey, including several Covid-19 related indicators. It is thus also one of the most comprehensive survey to date on Europeans perception of the pandemic and its management. Since its inception, the EQI has had a significant impact on scientific research in multiple disciplines, and has been described as "an instant hit since its release, with several researchers resorting to it as the main indicator of institutional quality across regions of Europe" (Rodriguez-Pose 2020: 374). The data has also been a key feature in the EU Cohesion reports published by the Commission[3].

On the one hand, COVID-19 has been an equalizer: all territories have been affected by the pandemic. On the other, COVID-19 has been a divider: some territories have suffered it significantly more than others.

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[1] NUTS stands for 'Nomenclature of territorial units for statistics' and more can be read about this at: http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction
[2] Data was originally funded by the EU Commission (REGIO) and published in a report by Charron, Lapuente and Rothstein (2010)
[3] See for example, https://ec.europa.eu/regional_policy/en/information/cohesion-report/

Most of the public discussion during the latest year has focused on "which countries are doing better", but within country-differences have been sharper than cross-country ones. For instance, during the first wave of the pandemic the largest cross-country gap within the EU was that between Spain, which experienced a 23,5% increase in excess mortality in comparison with the average of the 2015-19 period, and Latvia, where actually excess mortality went down 8,8%. Yet, within Italy, you have regions with also intriguing declines in excess mortality, like Molise with a 9%, and others with outstanding augments, like Lombardy (close to a 55% increase in deaths). Likewise Spain contains the Balearic Islands, with a decline of 1,4% of mortality, and Madrid, the EU region with the largest increase in deaths during the first wave in comparison to the previous 5 years: nearly a 75%.

The stark regional differences in infections and excess deaths due to Covid build upon the already strong differences in socio-economic development between, on the one hand, increasingly dynamic and prosperous regions and, on the other, declining regions (Iammarino et al. 2019). Geography, far from playing a minor role in an increasingly interconnected worlds, does matter more than ever for development (Farole, Rodríguez-Pose and Storper 2011). These growing divergences could be the result of either agglomeration economies around successful cities (Glaeser 2011) or the quality of institutions in the region (Charron, Dijkstra and Lapuente, 2014), and probably of both. Yet if there is scholarly debate on the causes of the widening gap between winning and losing regions, there is ample consensus on the negative socio-political consequences, leading to the consolidation of a "geography of discontent" (Dijkstra, Poelman, and Rodríguez-Pose 2019) throughout Europe, with particular emphasis in some countries like the UK (McCann 2020). Voters that are dissatisfied with the grim prospects of their region massively opt for populist parties, even if paradoxically the policies proposed by these parties could actually deteriorate their economic situation even further. We are thus contemplating a movement of discontent all throughout the lagging regions in each country (both within and beyond Europe) that can be defined as the "revenge of places that don't matter" (Rodriguez-Pose 2018).

The central finding of this 2021 round of the EQI is in some ways very similar to previous rounds: when it comes to the quality of the government, what region you live in matters just as much as what country you live in. In addition, we have also looked at the association between quality of government and the COVID-19 pandemic. We have done so in a double way, looking at both sides of the causal arrow: that is, if indicators of COVID-19 are associated with the quality of government (in 2021), and how previous levels of quality of government (in 2010-2017) relate to the direness of the pandemic in the region.

Regarding how COVID-19 has affected quality of government, one should expect that the reductions in the interactions between citizens and public officials – due lo lockdowns, school closures and other restrictions – would reduce the opportunities for corruption. And, actually, we see notable decreases in the

self-reported experiences with petty corruption in regions across EU Member States, including Italy, Czech Republic, Slovakia, Hungary and Bulgaria. Regarding how previous levels of quality of government have affected the severity of the effects of the COVID-19 pandemic, we observe that regions with higher levels of quality of government (both in previous rounds as in this 2021 one) report lower levels of both health and economic worry compared with regions with lower levels of quality of government.

Nevertheless, highlighting the (persistent) importance of geography does not imply determinism. While institutional quality is known for being 'sticky' over time (Kaufmann et al 2011) and many high-(low) performing regions obtain similar scores in all the EQI rounds: 2009, 2014, 2017, and 2021, we also document important changes. This includes remarkable falls in several regions in Poland and Hungary, significant increases in regions in Slovenia Latvia, and the intriguing differences in the EQI across different capital regions in Eastern European countries. In some countries, the capital has the lowers EQI level (i.e. Romania, Poland, Hungary, Bulgaria, and Slovakia), while the capital regions in others score the highest (i.e. Czech Republic, Lithuania and Slovenia). We also observe regional divergence in QoG in several countries over the four rounds of the data collection, with the most noticeable case being Spain.

The remainder of this paper is organized as follows. First, we provide an overview of the EQI data and note the changes in the 2021 round relative to previous years. Second, we present the survey question that underlie the regional indicator. Third, we describe the process by which we construct the indicator from the individual-level survey data. Fourth, based on the findings of the 2021 round, we discuss several noteworthy trends that we observe since the initial year of measurement, 2010. Fifth, we present several parsimonious analysis on the relationship between regional QoG and objective (excess deaths) and subjective (perceptions of worry, regional performance) pertaining to the Covid-19 pandemic. While we leave more systemic, rigorous analyses for future research, the purpose is simply to show a birds eye view of how previous levels and current levels of QoG related to objective and subjective outcomes. The article then presents a concluding discussion.

The European Quality of Government Index: Continuity and Changes in the 2021 Round

The latest round, launched in 2021 is based on the largest regionally-focused survey to date. The 2021 data relies on over 129,000 respondents in 208 NUTS 1 and NUTS 2 regions in all EU 27 member state countries[4]. Together with national estimates from the *World Bank Governance Indicators* (Kaufmann, Kraay and

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[4] NUTS stands for 'Nomenclature of territorial units for statistics' and more can be read about this at: http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction

Mastruzzi 2011); we report data on Quality of Government ('QoG') for all EU 27 countries, for a total of 220 political units[5][6][7]. The core QoG survey items are based on a conceptual framework which understands the concept of QoG as a broad, latent multi-dimensional concept consisting of high **impartiality** and **quality** of public service delivery, along with low **corruption**. The concept also refers to how power is actually exercised, not necessarily the *du jure* formal rules. Thus, our measure tries to capture in essence the informal practices of formal institutions. To do this, we rely on European citizens' perceptions and experiences with *corruption*, and the extent to which they rate their public services as *impartial* and of good *quality* in the area in which they reside.

The purpose of the EQI is to provide scholars and policy makers with a 'big picture' metric of sub-national governance that can be used to compare QoG across within political units in Europe, such that regions in one country can be compared with regions in any other member state. Now that the EQI had four rounds, the data can now be used in addition to track changes in QoG within units over time, over the last decade.

The 2021 EQI data largely builds on the work of previous rounds, although there are several differences. One, for the first time the survey now uses a hybrid survey administration approach. Whereas in previous rounds the EQI relied on computer assisted telephone interviews (CATI) via mobile and landline telephones, we now utilize online survey administration for 50% of the respondents. We do this for several reasons, first, the online administration is of particular interest for a topic such as the EQI, where sensitive questions about perceptions and experiences with corruption, for example, could be affected by social desirability biases from interviewer-administered surveys, such as face-to-face or over a telephone. In other words, respondents are more likely to answer truthfully about such sensitive topics when taking self-administered surveys, thus providing more accurate data (Kreuter, Presser, and Tourangeau, 2008; Heerwegh, 2009). Second, previous rounds of the CATI interviews showed that certain sub-groups, such as younger respondents, were consistently under-sampled, due to lack of owning a landline and lower rates of response via mobile phones. The use of online administration intends to compensate for such groups. Three, the costs and flexibility of online administration are superior to CATI – interviews are considerably cheaper and respondents can answer questions at their own pace without the time constraints of telephone interview[8].

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[5] The 2017 round of survey data and research was funded by the EU Commission via an EU Tender "Measuring Quality of Government and Sub-National Variation". Previous round in 2017 and 2010 were funded by the Commission via the DG Regio, and 2013 was funded through the ANTICORRP project and contained Turkey and Serbia in the sample.
[6] With the UK leaving post-Brexit, they are no longer included in the survey, and thus the 2020 round contains only regions from the 27 current member states
[7] NUTS stands for 'Nomenclature of territorial units for statistics' and more can be read about this at: http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/introduction
[8] Of course, there are drawbacks to this administration, in that not everyone has access to the internet. Less educated, poorer and older respondents tend have less access, thus online samples tend to skew toward certain groups. Moreover, the online sample is not longer randomly selected, as respondents opt-in (Pew Research 2018).

With this shift to hybrid administration, the EQI data has increased the sample size considerably – from 78,000 in 2017 to 129,000 in 2021. The appendix, section 2 provides more details on the sample.

Two, the regional target is now the NUTS 2 level in all countries[9]. Compared with previous years, we now report NUTS 2 level data for Sweden, Greece and Slovenia from the NUTS 1 to NUTS 2 level, and Lithuania has added a second NUTS 2 region, thus we report multiple NUTS 2 regions for this member state as well for the first time. These changes allow for more flexibility and observations for research and greater opportunities to explore within-country regional variation.

Third, the EQI survey now samples all EU-27 member states. Previously, the survey included only those member states with multiple NUTS 2 regions. Thus, we now have comparable survey data for previously omitted countries such as Estonia, Malta and Latvia, for which we relied on the World Governance Indicators as proxies. However, the United Kingdom is no longer included due to Brexit. For purposes of comparison over time, we have made retrospective changes to previous years that researchers can employ if they want to analyze a common set of regions over time (see appendix section 3 for more details)

Fourth, we extended the number of languages offered considerably in this round, with a focus on offering the survey in multiple languages in regions where there are sizable linguistic minority communities. In Spain, the EQI is now offered in Catalan and Basque in addition to Spanish, while in Italy, respondents in the northern regions may answer in German or French. Romanian respondents in the Nord Vest (RO11) and Centru (RO12) regions may now also answering Hungarian, and respondents in Latvia and Estonia have the option of Russian in addition to their main respective languages. Belgians anywhere may answer in Dutch or French.

In this document, we highlight the sample, summary statistics and question items that are included in the 2021 round of the EQI. The regional level data is comprised of 17 QoG-focused questions[10] from our large citizen-based survey, which are aggregated to the regional level in each country. The next section briefly outlines the method of aggregation, weighting of variables, and the combination with national level QoG data, yet more information can be found in previous publications. All regional and national level data used in the index is made freely available so that scholars can replicate the data if they so choose, or use individual indicators that more suit their needs[11]. For example, those interested in a particular public sector area, such

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[9] For purposes of political relevance and over time comparisons, we report the EQI index at NUTS 1 for Belgium and Germany.
[10] In prior years, the number of questions was 16-18. This year, the number of core question is 17
[11] All regional and micro-level data can be accessed here: https://www.gu.se/en/quality-government/qog-data/data-downloads/european-quality-of-government-index

as health care, education or elections, can reference individual question or aggregated indicators regionally. In addition, corruption perception and experiences are distinguished.

2021 EQI Survey Questions

Several empirical (based on Annoni and Charron, 2019) and conceptual improvements were made to the question items to EQI index in 2017 that are continued here. In sum, two key changes were been made. First, the scale of the questions has been changed. Namely, in previous years we used an odd-numbered 11-point scale. However, we found that the '5' response (mid-point) was overused and might be lead to mis-leading results. An even '10 point' scale is now employed to keep the variation of a larger scale but to eliminate the middle category, which may have been representing 'don't know' at times. We continue this in 2021. Second, two questions from the 2013 round were removed due to poor performance, and three others have been added, for a total of 17 question items (compared with 16 in the first two rounds). In this year's set of questions, we adjusted the question on corruption in elections based on the poor performance of the previous wording elucidated from a Rasch analysis of the 2017 data.

We begin however by highlighting the 'core' questions that have remained in the three rounds of the survey over time. First, in question 4-6 in the current survey, respondents rate the quality of their three public services in question on a scale of '1' (extremely poor quality) to '10' (extremely high quality):

Q4. How would you rate the quality of public education in your area?

Q5. How would you rate the quality of the public health care system in your area?

Q6. How would you rate the quality of the police force in your area?

The next six questions try to capture the extent to which public services are delivered impartially in the regions of Europe. 'Impartiality' is admittedly a more complicated concept to put forth to respondents than 'quality', so we framed this question in two ways –with a more negative tone, and a more positive tone. In the first three questions (7-9), we asked citizens to rate whether they agreed that 'certain people' get special advantages when dealing with the public service in question from 1 (strongly disagree) to 10 (strongly agree). The second set of questions (10-12) asks respondents whether all people in their region are 'treated equally' by the service in question on a four point scale (1. Agree, 2. rather agree, 3. rather disagree or 4. Disagree). We use all six questions in the final index to allow for as much variation as possible while not letting either the 'positively' or 'negatively' framed question determine the impartiality data alone.

Q7. "Certain people are given special advantages in the public education system in my area."

Q8. "Certain people are given special advantages in the public health care system in my area."

Q9. "The police force gives special advantages to certain people in my area."

Please respond to the following 4 questions with 'Agree, rather agree, rather disagree or Disagree'

Q10. "All citizens are treated equally in the public education system in my area"

Q11. "All citizens are treated equally in the public health care system in my area"

Q12. "All citizens are treated equally by the police force in my area" The next question, on elections, has been re-phrased as the following:

Q13. "In the area where I live, elections are conducted freely and fairly"

The next three questions deal with respondents' perception of the extent to which corruption is present in their public services, along with two general questions of how often they believe that 'others in their area' use corruption to obtain public services. Again, perceptions may not capture the full story, but, as Kaufmann, Kraay, and Mastruzzi (2009) argue "perceptions matter because agents base their actions on their perceptions, impression, and views". Thus, if citizens believe their public services are inefficient or corruption, they are less likely to use their services, likewise with foreign firms and investment in countries perceived to be plagued with problems of rent-seeking and public sector mismanagement. However, we complement these questions with additional questions about respondents' actual experience with bribery later on. The perceptions questions are scaled as 1-10, with '1' being "strongly disagree" and '10' being "strongly agree". In addition, we define the concept of corruption for the respondents to provide a baseline of common understanding, which we expect gives additional comparative validity to these items. The respondents thus hear/see the following:

In this survey, we define corruption to mean 'the abuse of entrusted public power for private gain'. This 'abuse' could be by any public employee or politician and the 'private gain' might include money, gifts or other benefits.

Q14. "Corruption is prevalent in my area's local public school system"

Q15. "Corruption is prevalent in the public health care system in my area"

Q16. "Corruption is prevalent in the police force in my area"

The following two questions were added in 2017. Here, instead of asking citizens about either 'how often others engage in bribery to obtain public services' (2010), or asking respondents about corruption for 'special advantages' (2013), we split these ideas of so called 'need' and 'greed' corruption (see Bauhr, 2017) into the following two questions (1-10, with '1' being "strongly disagree" and '10' being "strongly agree"):

Q17a. "People in my area must use some form of corruption just to get some basic public services."

Q17b. "Corruption in my area is used to get access to special unfair privileges and wealth."

In addition to corruption perceptions questions, we ask about citizens' direct experience with corruption. In contrast to 2010 and 2013, where we only inquired about whether a respondent paid a bribe for one of the public service in question, we follow the 2017 survey and inquire whether the respondent was asked to pay a bribe by a public sector employee at one of the services in question, as well as whether they paid, so as to attempt to capture the direction of who is the 'initiator'. For the final index, we code a respondent as '1' for Q17 or 18 if they answered 'yes' to any of the four sub-questions.

Q18. In the last 12 months, have you or anyone in your family been asked by a public official to give an informal gift or bribe in (1=yes, 2=No, 99=DK/refuse): (a) Schools or other education services? (b) Health or medical services? (c) Police authorities? (d) Any other government-run agency?

Q19. In the last 12 months, have you or anyone in your family given an informal gift or paid a bribe to (1=yes, 2=No, 99=DK/refuse): (a) Schools or other education services? (b) Health or medical services? (c) Police authorities? (d) Any other government-run agency?

Table 1 summarizes the questions and elucidates the name for each survey item in our dataset.

TABLE 1: LIST OF SURVEY ITEMS AND DATASET NAME

Pillar	Variable Description	Variable name in dataset
Corruption Items		
a. perceptions		
	corruption in education	stEdCorr
	corruption in health care	stHelCorr
	corruption in law enforcement	stLawCorr
	need corruption	stNeedCorr
	greed corruption	stGreedCorr
	elections clean and fair	stElecCorr
b. experiences		
	asked to pay a bribe for public service	stnoAskB_any1
	paid a bribe for public service	stnopayB_any1
Impartiality Items		
	some get special advantages in education	stEdImpart1
	some get special advantages in health care	stHelImpart1
	some get special advantages in law enforcement	stLawImpart1
	all treated equally in education	stEdImpart2
	all treated equally in health care	stHelImpart2
	all treated equally in law enforcement	stLawImpart2
Quality Items		
	quality of education	stEdQual
	quality of health care	stHelQual
	quality of law enforcement	stLawQual

Construction of the EQI

The EQI is a composite indictor that uses the aforementioned 17 survey items to proxy for a region's level of QoG. We now provide a brief overview of the steps we take to aggregate the data into a single number per region[12]. First, we begin with the acknowledgement that there are certainly unobserved country-level factors that are – by design - not captured in the regional survey. In other words, regions are embedded in a country context, and QoG embodies more than the services inquired in our question. To account for this empirically, we take a pragmatic approach, whereby we center our regional estimates on each Member State's relative QoG levels within the EU according to the World Bank's 'World Governance Indicators (WGI). In all rounds, we have chosen to anchor the regional estimates using WGI's: '*control of corruption', 'government effectiveness', 'rule of law'* and *'voice and accountability'*. The data is taken for the most recent year of publication (in this case 2019)[13]. We first standardize each of the four measures for the EU-27 sample (or in past rounds,

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[12] For more elaborate details, see Charron, Lapuente and Rothstein (2013)
[13] The latest national-level WGI scores by country and indicator can be found in appendix table 2

the EU-28). This figure is used as country's mean score for each of the three pillars the *EQI*[14]. Regional corruption questions are centered on the WGI's 'control of corruption', impartiality items are centered on 'rule of law', while the quality questions are centered on the mean of the 'government effectiveness' and 'voice and accountability' WGI data.

Second, we then aggregate the individual level responses to the NUTS region of interest, which is NUTS 2 in all cases save Germany and Belgium. In this aggregation step, we weight the individual level responses by post-stratification weights, based on gender, education and age, to better ensure representativeness. The population figures by region for these parameters are taken from the latest year of Eurostat.

Third, the regional data itself combines 17 survey questions about QoG in the region, which yield a high degree of internal consistency (Cronbach's Alpha=0.971, see the appendix for pairwise correlations among the 17 regional indicators). To harmonize the regional QoG indicators such that all are coded in the same direction, we recode variables where necessary so that higher values indicate better regional QoG[15]. For example, question on corruption indicate that higher values imply more perceived corruption, thus we re-verse the scale on questions such as these. Upon combining each pillar's respective regional items and centering them on the respective WGI measure, we then take the arithmetic mean of the three pillars. The data are standardized (z-score) at each stage of aggregation. Although they are included in the regional survey in 2021, the EU27 members - Estonia, Latvia, Malta, Luxembourg and Cyprus do not have multiple NUTS 2 regions, therefore there is nothing to center on their respective WGI Country score. The EQI score for these five member states thus relies on the WGI data as the QoG estimate alone, as we do not observe any regional variation. As per all other members states with at least two NUTS 2 regions, our EQI regional indicators explain within-country variation around the within-EU27 standardized national average of the WGI is used for each pillar. In addition, we provide margins of error around all regional estimates.

In this 2021 round we make a few slight adjustments to past years in order to make comparisons with 2020 data. As our data is standardized around an EU mean of '0', one needs a common sample of regions to make valid comparisons over time (see Charron 2021). As noted in the previous sections, we have added several new regions to the 2021 data, and lost the UK regions from previous rounds. For those interested in using the data to track trends in QoG over time, we have retroactively adjusted previous years (2010,

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[14] Charron et al. 2013 provides more on this point.
[15] Results of the factor analysis can factor weights are found in the appendix 2, Table A.3 of this paper. In all years, the underlying pillars were determined by the concepts, and confirmed with a principle component factor analysis.

2013 and 2017) so that the regional units are consistent for all four years[16]. In addition, we also publish the 2010-2017 as an EU28 time series, keeping the previous values of the EQI as they originally were.

FIGURE 1: ROADMAP FOR 2021 EQI
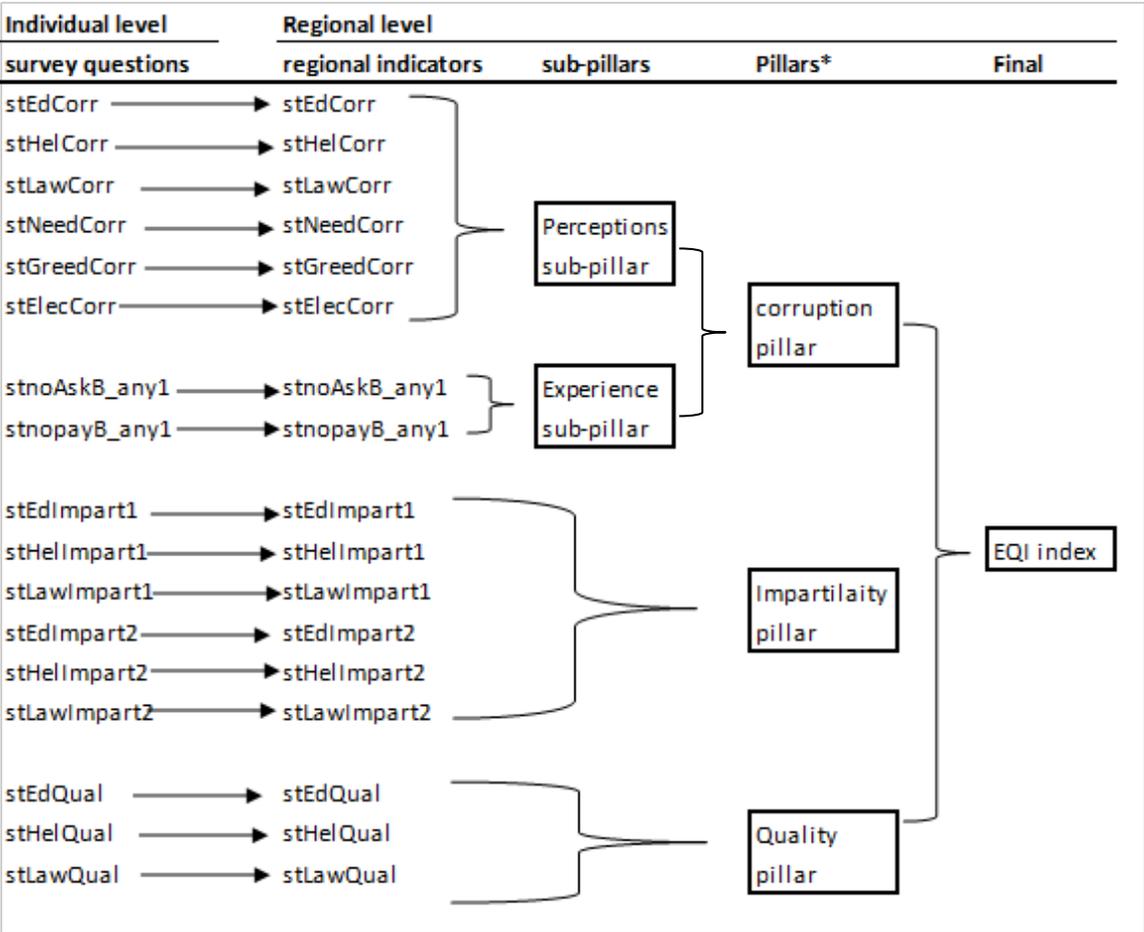
Note: * indicates level of centering on country's WGI score.

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[16] In the case of regional splits, such as HU11 (Budapest) and HU12 (Pest) from the former HU11 region which combined the two, we use the regional scheme for previous years, giving each region the same score. For Ireland, which re-drew its current three NUTS 2 boundaries such that there is no overlap with the previous two, the 2010-2017 take the current three regions take the WGI country level data and only the 2020 regional variation is observed.

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The 2021 EQI and Trends over Time

Figure 2 highlights the overall results of the EQI 2021 data, while Figure 3 reports the countries in rank order of the index with their respective regional variation. Based on the two figures above, we can observe several interesting features of the 2021 data. One, as with previous years, there is significant regional variation in some countries, while very little in others. Italy, Spain, France (in particular when considering the overseas regions), Belgium and Romania have quite considerable regional spans in the data. In addition, the range in Poland, Germany and Greece have increased since the previous round. Slovenia is also a noteworthy case, with the eastern, capital region (SI03) being roughly 0.6 standard deviations above the western region of SI04. Moreover, the former is above the EU27 mean (one of only three new member state regions), while the latter is under it. We also find for the first time significant variation between two Irish regions as the Dublin region (IE06) is significantly lower than the Southern region (IE05) according to the margins of error. In other cases, the within country regional variation is modest or very low, as in Sweden, Denmark, Austria, or Slovakia, where no pairwise differences are significant

FIGURE 2: THE 2021 EUROPEAN QUALITY OF GOVERNMENT INDEX

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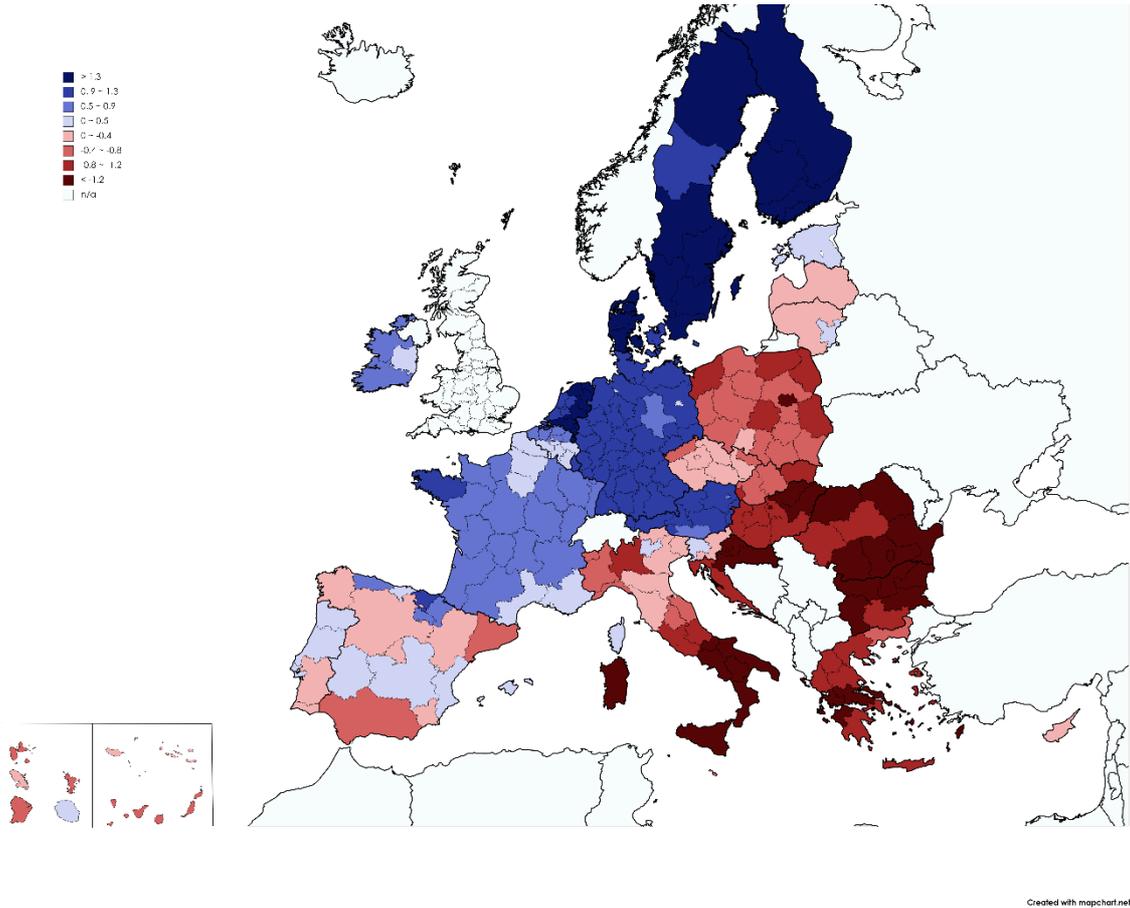
Figures 3 summarizes the final index; showing the countries in rank order from top to bottom on the y-axis and regional variation on the x-axis. As with the 2013 and 2017 EQI index, the Swedish speaking Finish island region of Åland (FI20) is an outlier on the top of the EQI 2021 index ranking.

FIGURE 3: EU-27 COUNTRIES IN RANK ORDER WITH REGIONAL VARIATION
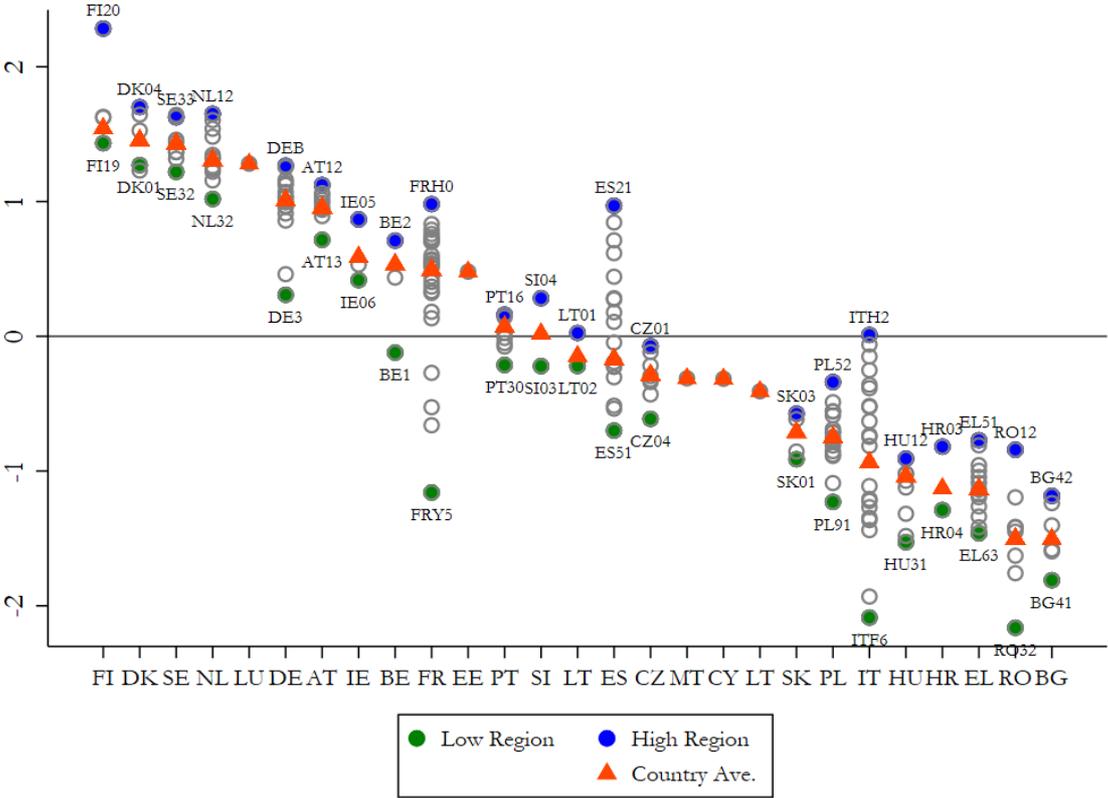
To check the external validity of the measure, we look at a number of pairwise correlations with previous EQI years, alternative QoG type of measures available at the regional level, as well as a number of additional variables with which we would expect the index to correlate. Overall, we find strong evidence of both types of external validity based on these pairwise tests. The 2021 correlates at 0.92 or above with the three previous rounds of the data. Regarding the covariates, we find that both the measure of GDP per capita, as well as the broader HDI measure and poverty rates, correlate at 0.61, 0.64 and -0.63 respectively, meaning that QoG and development are strongly related, but yet theoretically and empirically separate (see appendix). Life expectancy is also significantly correlated along with a (lack of) internet, the '% of women in parliament' and social trust all correlate significantly with the 2021 EQI. Lastly, the variable for which we did not anticipate a correlation with the EQI (area) indeed does not yield a significant correlation. The full correlations table can be found in the appendix.

The above figures in relation to the past three rounds elucidate several interesting findings. First, the geography of regional QoG is shifting (albeit slowly). Whereas in the first rounds, none of the Eastern/Central European regions were above the EU mean, we now see three – LT01, SI03 and the country of Estonia. Other Czech regions such as CZ01 (Prague), CZ05, CZ06 and the Polish region of Opolski (PL52) are all very near the EU-27 mean. Conversely, many southern European regions are now below the EU mean, including several in Spain and Portugal, nearly all Italian regions and all Greek regions. Northern/Western EU regions however remain more consistent and all (with the exception of Brussels, BE1) rank above the EU mean.

Second, we again observe consistent and significant regional variation with a very similar regional rank order to previous years in countries such as Belgium, Spain, France and Italy. Once again, regions such as Vlaams Gewest (BE2), Pais Vasco (ES21), Trento (ITH2) and Bretagne (FRH0) rank at the top position within their respective countries, while Brussels (BE1), Catalonia (ES51)/Andalucia (ES61), Calabria (ITF6) and Mayotte (FRM5) rank lowest.

Third, we observe noticeable drops in overall country averages in Poland and Hungary, which has resulted in all Polish and Hungarian regions declining in the EQI since 2017 (save Opolskie, PL52 and Pest HU12). Conversely, the regions in Slovenia have noticeably increased overall, as well as the country of Latvia.

Fourth, the relative within-country rank of each country's respective capital region is noteworthy. In particular, in the Eastern European countries, the capital is either ranked lowest on the EQI (such as Romania, Poland, Hungary, Bulgaria, and Slovakia) or highest (Czech Republic, Lithuania and Slovenia). Among Western European countries, the capital is lowest in Germany, Belgium, Ireland and Austria, while it is placed in the middle of the rank order in other countries.

Fifth, within countries over time, we see some examples of significant convergence of regional QoG, while others show noticeable divergence. An example of the former is Portugal, shown in Figure 4, while an example of the latter is Spain, shown in Figure 5. Over the four rounds, we see that the Portuguese regions have gone from over a full standard deviation of within country-variance in the EQI to now under 0.5 standard deviation spread from min to max region. In Spain conversely, we observe the min-max difference going from roughly one standard deviation at the start of the EQI to now nearly a two standard deviation spread. In the Portuguese case, the convergence is largely a result of the (previously) higher ranking regions declining and converging to the national average, while in Spain we observe that the stronger performers (Pais Vasco, La Rioja, Navarra) have steadily improved, while Catalonia, Canarias and Andalucía have declined over time.

FIGURE 4: TRENDS IN PORTUGUESE REGIONS OVER TIME
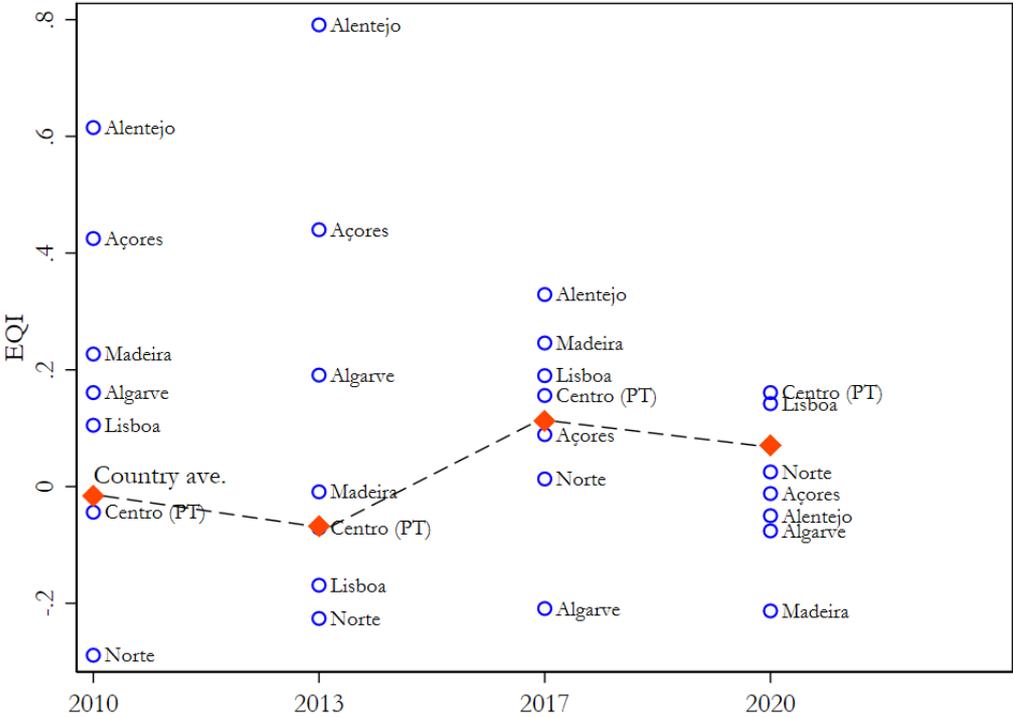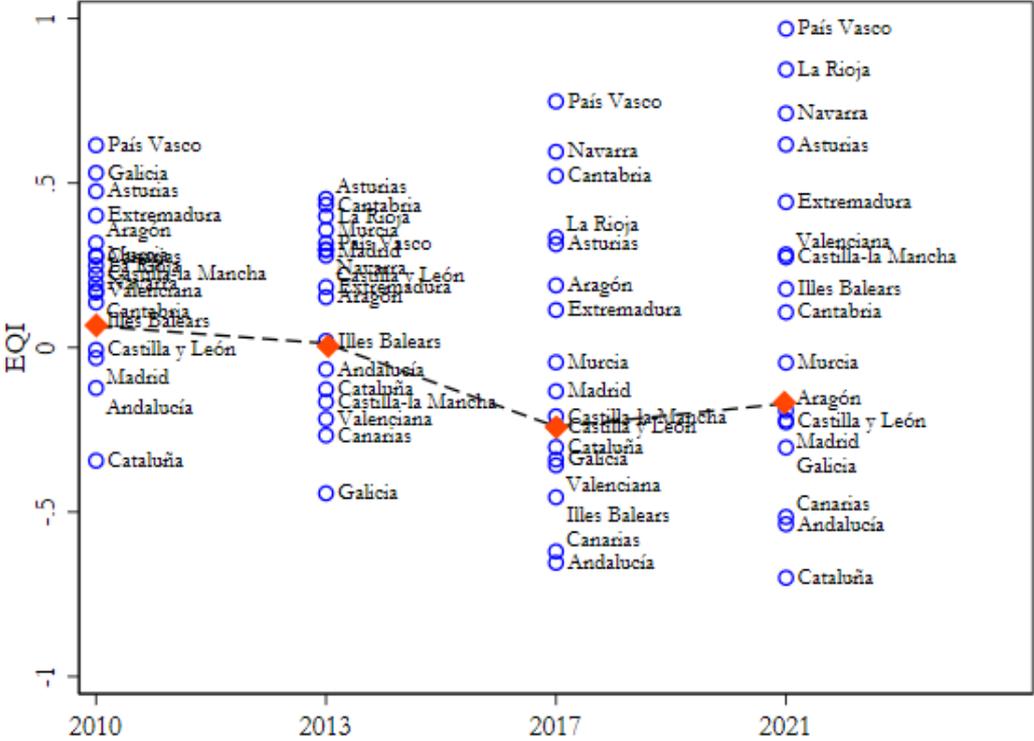
Is Covid-19 Related with Regional QoG?

Although this section does not claim to perform exhaustive analysis of this important question, we initiate some parsimonious tests. In 2021, Europeans have seen their national, regional and local governments in action in the fight to contain the virus. They have also been highly restricted in their ability to socialize, work and utilize public services. We would thus expect that the experiences and perceptions with the pandemic have affected the EQI responses between 2017 and 2021, and that past values of QoG might affect Covid-19 measures. Although we leave a more systematic analysis for future research, we explore several simple correlations to establish whether there are any noticeable patterns. We begin by looking at changes in experiences and perceptions of QoG between the 2017 and 2021 rounds at the regional level.

FIGURE 6: REGIONAL RATES OF EXPERIENCES WITH PETTY CORRUPTION: 2017 VS 2021

Note: regional estimates aggregated from microdata using post-stratification weights.

First, we would expect that given the lock-downs, school closures, and restricted access to non-essential services in many areas in the EU, that rates of experiences with petty corruption would go down. Figure 6 shows the relationship between regional rates of petty corruption experiences (proportion 'yes') in 2017 and 2021[17]. The figure demonstrates that in most cases (70% of the regions) the rates of personal experience with petty corruption in any of our inquired services has gone down. The overall regional mean dropped from 9.3% in 2017 to 6.1% in 2020[18]. In particular, we see drastic decreases in Italian regions, as well as noticeable declines in Czech Republic, Slovakia, Hungary and Bulgaria. While the evidence here is of course not causal, it does imply a clear effect of the pandemic on experiences with petty corruption.

Next, we check to see if the perceptions in quality, corruption and impartiality items have changed from 2017. In this case, rather than the standardized score, we look at the raw regional averages by EQI pillar, as each survey uses the exact same question formulation and scale. Table 2 shows the overall means by region between the two survey rounds, with higher scores equating to higher QoG. We separate the two sets of

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[17] For the sake of valid comparison, we compare only CATI interviews.
[18] Among comparable regions, the regional overall mean was 8.1% in 2013.

impartiality questions due to scaling differences. In three cases, we see that perceptions of regional governance have improved. The mean quality score went up by 0.25, while corruption improved by 0.28, while the second set of impartiality questions shows improvement from 2.7 to 2.78. The first set of impartiality questions shows a decrease by 0.15, thus we see an overall net neutral change on this pillar between years.

TABLE 2: REGIONAL AVERAGES OF 3 EQI PILLARS (RAW SCORES)

Variable	Obs	Mean	Std.Dev.	Min	Max
Quality 2021	195	6.64	.553	5.307	8.014
Quality 2017	195	6.39	.54	4.764	7.917
Impartiality 1 2021	195	5.85	.6	4.135	7.467
Impartiality 1 2017	195	6.00	.579	4.387	7.934
Impartiality 2 2021	195	2.78	.258	2.223	3.521
Impartiality 1 2017	195	2.70	.211	2.058	3.344
Corruption 2021	195	6.92	.94	4.468	8.912
Corruption 2017	195	6.64	.956	4.114	9.244

Note: averages are across regions for all common EQI regions in both 2017 and 2021. Higher scores equate to higher QoG on all indicators. Quality, Impartiality 1 and corruption are scored 1-10, impartiality 2 is scored 1-4.

With respect to quality, we observe an improvement in 161 regions (83%), while we see a decline in 34 (17%). We observe an overall improvement in corruption perceptions in 140 regions (72%), while 55 (28%) in decline. On the second set of impartiality questions, we see an overall improvement in 149 (78%) of the regions, yet only 88 (43%) do we see an improvement on the first set.

Finally, as the Covid-19 pandemic struck in between the 2017 and 2021 round, we check in this section the degree to which subjective and objective regional measures of Covid-19 explain both spatial patterns in 2021 along with regional shifts between 2017 and 2021 rounds. For subjective measures, we employ several survey items from the 2021 round. Namely, we included three questions regarding citizens' attitudes toward the pandemic. The first two inquired about the respondents' personal worries regarding the virus:

Personally, how worried are you about the effect of the COVID-19 virus on the following?
a. *Your own or your family's health?*

b. *Your own or your family's economic situation?*

While the third question inquired about the perceived quality of the response

How would you rate how the authorities are handling the COVID-19 virus in your area?

We aggregate these three questions to the regional level to test whether general worry and perceptions of regional performance are related with current and past levels of QoG. As per objective measures, we follow Charron, Lapuente and Rodriguez-Pose (2021) and use 'excess deaths' in 2020, compared with the previous five year average for each region. As countries have different ways of counting the number of cases, and have different degrees of credibility regarding self-reported Covid-deaths, we argue that excess deaths is a more valid metric to compare regions nested in different countries. To construct this measure, we take data from Eurostat, and calculate the excess deaths for the first six months of 2020 (e.g. the onset of the crisis), the second six months, as well as 2020 on whole.

To assess the relationship between the subjective and objective Covid-19 measures, we present a simple pairwise correlation table with our six indicators of Covid-19 at the regional level and the raw EQI pillars from both 2017 and 2021. Table 3 presents the findings. In general, we see relationships in the expected direction. First, the indicators of Covid19 are related, but a (separate) factor analysis demonstrates that the objective measures are distinct from the subjective ones. We observe that collective economic and health worries are strongly related, yet only health worries are linked with aggregate perceptions of local authority response. In terms of objective measures, we observe that the % excess deaths are significantly correlated with worry and performance assessment, yet only for the measure in the last six months (7-12) of 2020. Given that the survey was launched in October of 2020 and finished in January 2021, this shows that respondents are more collectively affected by recent events than those in the beginning of the year (months 1-6).

Additionally, we see that regions with higher perceived QoG (both past and present) show lower levels of both health and economic worry compared with regions that have lower perceived QoG. In particular, perceptions of corruption are mostly strongly linked with both items of collective worry. We also observe a moderate to quite strong relationship among the pillars of the EQI and overall regional assessments with how local authorities have handled Covid-19. In this case, we see that impartiality is highly related with performance assessments in the aggregate. The relationship between QoG and the objective measures is somewhat mixed, yet mostly insignificant.

TABLE 3: PAIRWISE CORRELATIONS OF REGIONAL COVID-19 SUBJECTIVE AND OBJECTIVE INDICATORS AND EQI PILLARS

Variables	health worry	econ. worry	rate authorities	% excess death (m1-6)	% excess death (m7-12)	% excess death (m1-12)
health worry	1					
econ. worry	**0.76**	1				
rate authorities	-0.04	**-0.35**	1			
% excess death (m1-6)	0.02	0.03	-0.04	1		
% excess death (m7-12)	**0.28**	**0.18**	**-0.22**	**0.56**	1	
% excess death (m1-12)	**0.19**	0.11	-0.16	**0.85**	**0.92**	1
EQI Pillars						
Quality 2021	**-0.19**	**-0.47**	**0.59**	**0.22**	0.11	0.18
Quality 2017	-0.15	**-0.41**	**0.45**	0.13	0.18	0.18
Impartiality 1 2021	-0.08	**-0.40**	**0.67**	0.12	-0.11	-0.01
Impartiality 1 2017	**-0.30**	**-0.57**	**0.48**	-0.12	**-0.19**	-0.18
Impartiality 2 2021	-0.13	**-0.50**	**0.72**	**0.21**	-0.07	0.06
Impartiality 1 2017	-0.13	**-0.52**	**0.69**	0.13	-0.10	0.00
Corruption 2021	**-0.41**	**-0.67**	**0.49**	-0.06	-0.11	-0.10
Corruption 2017	**-0.34**	**-0.68**	**0.59**	0.13	-0.04	0.04

Note: pairwise correlations, n=194. Bold correlations indicate p<0.01

Figures 7 and 8 highlight two of the most interesting relationship we see in the data. First, there is a striking pattern between past levels of corruption perceptions and economic worries due to Covid-19 across EU-27 regions. We see a strong and negative relationship in Figure 7, as regions with higher QoG (lower collective perceptions) exhibit considerably lower levels of economic worry on average.

FIGURE 7: PAST CORRUPTION PILLAR AND ECONOMIC WORRIES FROM COVID-19

FIGURE 8: PAST LEVELS OF IMPARTIALITY AND AVERAGE RATINGS OF COVID-19 RESPONSE
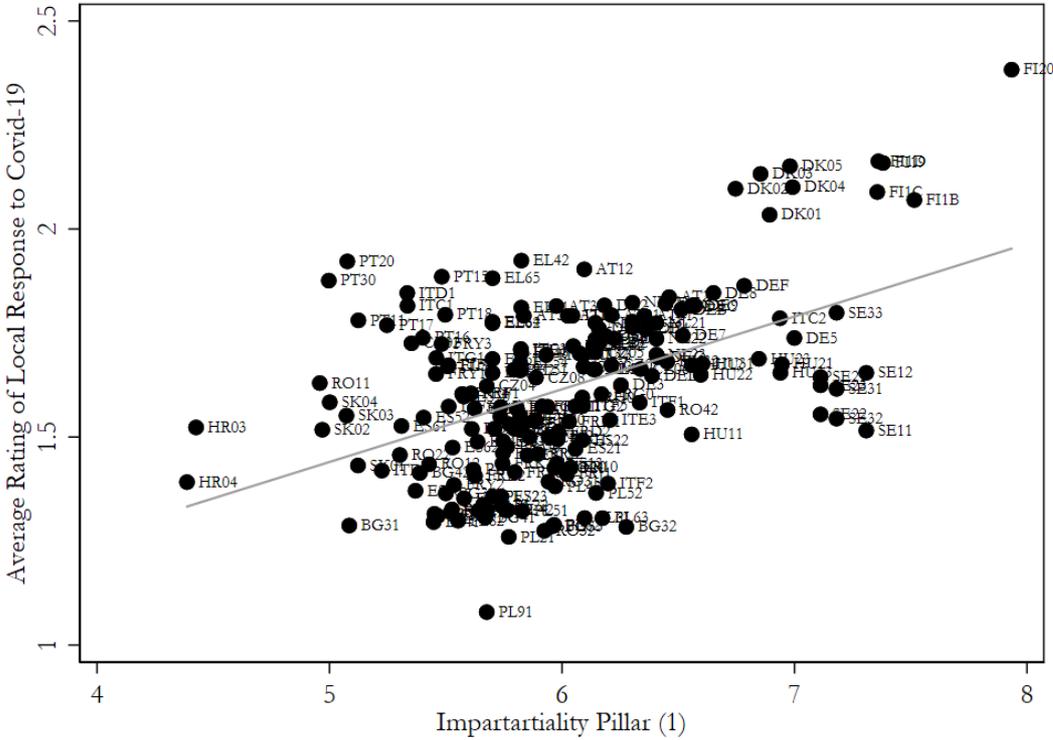
Discussion

The 2021 round of the EQI collects the opinions of over 129,000 respondents in a total of 208 NUTS 1 and NUTS 2 regions in all EU 27 member state countries, which makes it the largest survey measuring perceptions of quality of government to date. Since it builds on previous rounds of the survey (2010, 2013 and 2017) it also allows for systematic analysis of shifts over time and how both changes and inertia can be explained. Finally, and perhaps most importantly, it also seeks to gauge the opinions of Europeans in a particularly dramatic point in time, in the midst of the Covid-19 pandemic. This allows for several new and important insights into the link between institutional performance and quality of government. In particular, it allows for important insights into the quality of public services in three of the public service sectors perhaps most closely involved in managing the consequences and responses to the crises; health care, education and law enforcement.

In this paper, we highlight some of the most important results of the EQI 2021 survey. First, we see an overall improvement in citizens' perceptions of the quality of government between 2017 and 2020. Citizens

rate the quality of public service delivery higher and report lower level of bribing and other forms of corruption. Second, we see that citizens in regions with higher quality of government are less worried about the economic and health consequences of the pandemic, and are more likely to perceive that their authorities have handled the crises well. In particular, past levels of corruption perceptions is strongly related to economic worries due to Covid -19. Third, we find that the geography of regional QoG is slowly shifting. While several Eastern European regions seem to be on a rise, several southern European regions see a marked decline. Fourth, we see a remarkable convergence between regions in some countries, while we see a divergence within others. Fifth, looking at just the capital region score compared to their country mean, we also find a stark and noticeable variation in the scores of EUs capital regions, with some capital regions being way below their country mean, while others are significantly higher. Finally, we see noticeable decline in the EQI in most regions in Poland and Hungary relative to the EU average.

Research from the past decades consistently shows that quality of government have important implications for human well-being, broadly conceived (Bagenholm et al 2021). Corruption has severe effects on population health (Factor and Kang 2015; Pinzon-Florez et al. 2015; Holmberg and Rothstein 2011), and does not only increase the cost of public health care, but also affects the distribution of medical equipment, drugs and vaccines. Deficient quality of government also have important distributional consequences, in that it effectively concentrates power and resources in the hands of wealthy elites. Recent research shows that corruption undermines not only domestic redistributive efforts, but also citizens' willingness to share tax money across national borders, and that it has important implications for within EU redistribution and Cohesion policy (Bauhr and Charron 2018; Bauhr and Charron 2019).

The 2021 EQI survey gives some reasons for optimism. Citizens' perceptions of the quality of government as well as their experiences with public services has shown some clear improvements overall. However, such improvement could be consistent with several alternative explanations found in previous literature. Results may be explained by the increased salience or performance of domestic institution (Hetherigton and Husser, 2012; Hetherington and Rudolph 2008). They could also be explained by a "rally around the flag" effect (Mueller 1970), i.e. that citizens express a form of empathy towards their leaders in a time when they perceive themselves to be vulnerable and dependent upon leadership and public service delivery. The drop in bribery rates could potentially be explained by the more limited interaction with public services because of extensive lock downs in many parts of Europe. Recent studies on the effect of the COVID- 19 pandemic on related issues, such as citizens' trust in institutions seem to find a similar effect (Devine et al 2020). It remains to be seen if the positive effect will last over time.

The survey also shows the critical link between countries and regions that recently experienced substantial democratic backsliding and perceptions of quality of government. While quality of government is clearly

distinct from democratic performance, infringement on media rights and the independence of the judicial system is clearly linked to reduced quality of government. While both Hungary and Poland experienced a decline in quality of government, it seem important to understand why some regions, such as the Opolskie region in Poland and the Pest region in Hungary seem to have evaded the general drop. A wealth of empirical evidence suggest that while democracies may not always be as effective as theories predict to reduce corruption levels, examples of autocracies that manage to contain corruption are comparatively rare. In most international comparisons, liberal democracies fare the best in terms of containing corruption and improving the quality of government (Bauhr and Grimes 2021).

The survey clearly shows the important link between corruption levels for the extent to which citizens worry about the economic consequences of the pandemic. The slow shift in the geography of QoG may therefore also lead to a slow shift in the geography of citizens concerns about the future. It is therefore of imperative importance to continue to explore the causes and sometimes dire consequences of low quality of government. What explains the rise in quality of government in many eastern European regions? Why are many southern European regions lagging behind? Why are some countries pulled a part while others are converging? How and why do some regions succeed in maintaining relatively good quality of government in countries that are affected by democratic backsliding? Answering these questions will be of central importance for the development of quality of government across Europe and may eventually allow more citizens to encounter public services that are not affected by considerations such as informal payments, party affiliation or biases based on gender, ethnicity or race.

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Appendix

Section 1: Background on the 2021 Survey and Sample

The field work for the full sample began during the month of October, 2020 and concluded in the first week of February 2021. The interviews were conducted in the local majority language in each country/region. The results were returned to the Quality of Government Institute in February, 2021. The E.U. regional survey was undertaken by Efficience 3 (E3), a French market-research, Survey Company specializing in public opinion throughout Europe for researchers, politicians and advertising firms. E3 has also conducted the 2010, 2013 and 2017 rounds of the EQI and were thus familiar with the question format and goals of the survey. E3 conducted the interviews themselves in several countries and used sub-contracting partners in others. The respondents, from 18 years of age or older, were contacted randomly via telephone in the local language. Computer Assisted Telephone interviews (CATI) were conducted via both landlines and mobile phones, with both methods being used in most countries. Decisions about whether to contact residents more often via land or mobile lines was based on local expertise of market research firms in each country. Online interviews were also included this year as a compliment to the traditional CATI interviews, thus increasing access to certain demographic groups (namely younger people) and increasing the sample size significantly compared to previous years. Moreover, for the first time, all EU countries, including even the smaller member states, are included in the survey. For purposes of regional placement, respondents were asked the post-code of their address to verify the area/ region of residence if mobile phones were used, or if they were an online respondent.

Ideally, a survey would be a mirror image of actual societal demographics – gender, income, education, rural-urban, ethnicity, etc. However, we are not privy to exact demographic distributions; in particular, at the regional level in most cases, thus imposing artificial demographic lines might lead to even more problems than benefits. For our CATI sample, we thus sought the next best solution. Based on their expert advice, to achieve a random sample, we used what was known in survey-research as the 'next birthday method'. The next birthday method is an alternative to the so-called quotas method. When using the quota method for instance, one obtains a (near) perfectly representative sample – e.g. a near exact proportion of the amount of men, women, certain minority groups, people of a certain age, income, etc. However, as one searches for certain demographics within the population, one might end up with only 'available' respondents, or those that are more 'eager' to respond to surveys, which can lead to less variation in the responses, or even bias in the results. The 'next-birthday' method, which simply requires the interviewer to ask the person who answers the phone who in their household will have the next birthday, still obtains a reasonably representative sample of the population. The interviewer must take the person who has the next coming birthday in the household (if this person is not available, the interviewer makes an appointment), thus not

relying on whomever might simply be available to respond in the household. So, where the quota method is stronger in terms of a more even demographic spread in the sample, the next-birthday method is stronger at ensuring a better range of opinion. The next-birthday method was thus chosen because we felt that what we might have lost in demographic representation in the sample would be made up for by a better distribution of opinion. With respect to the online sample, for reasons of access, a random sample is not possible, thus the standard quota method was employed, based on gender, age and education demographics at the NUTS 2 regional level.

Along with the CATI sample, we add online respondents to the 2021 EQI survey. In addition to the added value of lower costs and reaching a wider group of younger respondents that would not otherwise answer their mobile phones, the online administration is of particular interest for a topic such as the EQI, where sensitive questions about perceptions and experiences with corruption, for example, could be affected by social desirability biases from interviewer-administered surveys, such as face-to-face or over a telephone. In other words, respondents are more likely to answer truthfully about such sensitive topics when taking self-administered surveys, thus providing more accurate data (Kreuter et al 2008; Heerwegh 2009). In contrast to the telephone interviews where respondents are randomly contacted, these respondents participate voluntarily. To increase the online sample, E3 worked with local partners to create a multi-channel communication of online and off-line networks to recruit potential respondents. These channels include using banners on various portals and websites, email recruitment via panel owner's databases, newsletters, brand communications, loyalty website and social media platforms. The firm also actively recruited via telephone and face-to-face interactions. All survey email invitations included a general description of the survey, confidentiality and anonymity statements, for panel members, the opportunity to unsubscribe or opt-out of future research; and an appropriate privacy policy or statement. As randomization via this administration was not possible as with CATI, the quota system was employed, based on age, gender and education characteristics of each region.

In addition, to compensate for some key demographic over/under-representation upon receiving the final sample, E3 provides weights based on age, gender and education for each region, comparing the sample drawn to actual demographic statistics from the latest figures provided by Eurostat. This is done for both the CATI and online sample, which we could use to calculate an individual weight for each individual in the sample. In the end, we find variation in response and refusal rates by country, which could have to do with many factors including the sensitivity of one of the primary the topics at hand – corruption. A breakdown of the sample is listed in Table A1 below by country.

TABLE A1: SAMPLE BY COUNTRY

country	NUTS regions	target n per NUT	Online	CATI	total respondents	% of sample
Germany†	38(16)	500 (1188)	9647	9646	19293	14.84%
Romania	8	500	2084	2084	4168	3.21%
Italy	21	600	6454	6453	12907	9.93%
Austria	9	500	2258	2258	4516	3.47%
Poland	17	600	5279	5280	10559	8.12%
Spain	17	600	5204	5205	10409	8.01%
Sweden	8	500	2039	2038	4077	3.14%
Finland	5	500	1248	1248	2496	1.92%
Denmark	5	500	1277	1278	2555	1.97%
Ireland	3	500	754	753	1507	1.16%
Belgium†	11 (3)	500 (1834)	2857	2856	5713	4.39%
Netherlands	12	500	3081	3082	6163	4.74%
Hungary	8	500	2041	2042	4083	3.14%
Slovakia	4	500	1041	1040	2081	1.60%
Croatia	2	500	520	519	1039	0.80%
Bulgaria	6	500	1541	1541	3082	2.37%
France	27	500	6646	6646	13292	10.23%
Republic	8	500	2474	2474	4948	3.81%
Portugal	7	500	1788	1787	3575	2.75%
Greece	13	500	3421	3421	6842	5.26%
Luxembourg	1	500	260	260	520	0.40%
Estonia	1	1000	533	533	1066	0.82%
Latvia	1	1000	519	519	1038	0.80%
Lithuania	2	1000	1020	1019	2039	1.57%
Slovenia	2	500	508	508	1016	0.78%
Malta	1	500	0	505	505	0.39%
Cyprus	1	500	0	502	502	0.39%
total			*64494*	*65497*	*129991*	100%

Note: † indicates that the target sample was collected at the NUTS 2 level and the aggregation for the EQI was done at NUTS 1 (and average sample per NUTS 1)

TABLE A2: DEMOGRAPHIC CHARACTERISTICS OF THE 2021 SAMPLE, BY SURVEY ADMINISTRATION

Variable	CATI	Online	Total
Female	51.5	51.7	51.6
Male	48.5	48.3	48.4
Age:18-29	16.8	20.5	18.6
Age:30-49	34.9	38.5	36.7
Age: 50-64	25.6	25.2	25.4
Age:65+	22.5	15.6	19.1
Education:<secondary	27.6	11.8	19.8
Education: secondary	38.4	39	38.7
Education: tertiary	33.9	49.2	41.4
Population: <10k	34.1	28.1	31.1
Population: 10k-100k	37.1	38.4	37.8
Population: 100k-1m	18.8	23.2	21
Population: >1m	5.2	6.9	6.1
Employment: Public sec.	19.2	19	19.1
Employment: Private sec.	40.9	42.8	41.8
Employment: Not working	38.7	33	35.9

Note: rounded percentages by cell reported.

Appendix Section 2: List of Regions by 2021 EQI

name	nuts	EQI_2021	low_me	high_me	quality	impartiality	corruption
Burgenland (AT)	AT11	0.939	0.769	1.109	0.842	1.108	0.763
Niederösterreich	AT12	1.123	0.977	1.269	0.865	1.491	0.889
Wien	AT13	0.716	0.518	0.914	0.503	0.965	0.6
Kärnten	AT21	0.892	0.722	1.062	0.677	1.168	0.733
Steiermark	AT22	1.042	0.937	1.147	0.742	1.571	0.697
Oberösterreich	AT31	0.951	0.794	1.108	0.61	1.373	0.766
Salzburg	AT32	1.012	0.857	1.167	0.922	1.342	0.659
Tirol	AT33	0.989	0.801	1.177	1.037	1.042	0.778
Vorarlberg	AT34	1.062	0.811	1.313	1.159	1.089	0.819
Region Brussels	BE1	-0.121	-0.422	0.180	-0.191	-0.076	-0.081
Flanders	BE2	0.71	0.380	1.040	0.559	0.6	0.889
Wallonie	BE3	0.436	0.225	0.647	0.052	0.446	0.764
Severozapaden	BG31	-1.581	-1.905	-1.257	-1.732	-1.89	-0.946
Severen tsentralen	BG32	-1.238	-1.558	-0.918	-1.349	-1.383	-0.846
Severoiztochen	BG33	-1.596	-1.847	-1.345	-1.223	-1.829	-1.557
Yugoiztochen	BG34	-1.403	-1.712	-1.094	-1.046	-1.585	-1.423
Yugozapaden	BG41	-1.81	-2.165	-1.455	-1.66	-1.528	-2.042
Yuzhen tsentralen	BG42	-1.184	-1.498	-0.870	-1.216	-1.257	-0.948
Cyprus	CY	-0.315	-0.802	0.172	-0.019	-0.44	-0.452
Praha	CZ01	-0.073	-0.353	0.207	-0.096	0.451	-0.566
Střední Čechy	CZ02	-0.295	-0.513	-0.077	-0.409	0.149	-0.592
Jihozápad	CZ03	-0.322	-0.513	-0.131	-0.307	-0.1	-0.524
Severozápad	CZ04	-0.613	-0.793	-0.433	-0.613	-0.403	-0.754
Severovýchod	CZ05	-0.117	-0.313	0.079	-0.118	0.197	-0.417
Jihovýchod	CZ06	-0.217	-0.409	-0.025	-0.222	-0.004	-0.401
Střední Morava	CZ07	-0.339	-0.540	-0.138	-0.159	-0.169	-0.65
Moravskoslezsko	CZ08	-0.431	-0.640	-0.222	-0.255	-0.195	-0.797
Baden-Württemberg	DE1	0.911	0.719	1.103	0.93	0.694	1.007
Bayern	DE2	1.161	0.995	1.327	1.17	0.986	1.198
Berlin	DE3	0.308	0.004	0.612	-0.083	0.177	0.795
Brandenburg	DE4	0.995	0.721	1.269	0.401	1.219	1.255
Bremen	DE5	0.461	0.067	0.855	-0.074	0.301	1.105
Hamburg	DE6	0.967	0.803	1.131	1.089	0.803	0.902
Hessen	DE7	1.032	0.856	1.208	0.815	0.902	1.265
Mecklenburg-Vorpommern	DE8	1.123	0.936	1.310	0.819	1.1	1.325
Niedersachsen	DE9	1.139	0.945	1.333	0.958	1.014	1.318
Nordrhein-Westfalen	DEA	0.96	0.763	1.157	0.82	0.847	1.108
Rheinland-Pfalz	DEB	1.266	1.045	1.487	1.087	1.029	1.541
Saarland	DEC	1.034	0.840	1.228	0.854	1.052	1.082

Sachsen	DED	0.997	0.788	1.206	0.815	0.742	1.323
Sachsen-Anhalt	DEE	0.859	0.588	1.130	0.423	0.821	1.237
Schleswig-Holstein	DEF	1.255	1.059	1.451	1.025	1.295	1.305
Thüringen	DEG	1.071	0.897	1.245	0.778	1.084	1.233
Hovedstaden	DK01	1.27	1.066	1.474	1.438	1.224	1.006
Sjælland	DK02	1.23	0.966	1.494	0.765	1.137	1.651
Syddanmark	DK03	1.527	1.361	1.693	1.515	1.292	1.606
Midtjylland	DK04	1.701	1.583	1.819	1.762	1.434	1.719
Nordjylland	DK05	1.645	1.491	1.799	1.713	1.471	1.568
Estonia	EE	0.48	0.216	0.744	0.298	0.358	0.729
Attiki	EL30	-1.173	-1.517	-0.829	-0.922	-1.224	-1.244
Voreio Aigaio	EL41	-1.137	-1.530	-0.744	-0.349	-1.262	-1.674
Notio Aigaio	EL42	-1.262	-1.695	-0.829	-0.564	-1.213	-1.869
Kriti	EL43	-1.194	-1.534	-0.854	-0.502	-1.462	-1.486
Anatoliki Makedonia, Thraki	EL51	-0.771	-0.995	-0.547	-0.063	-1.345	-0.817
Kentriki Makedonia	EL52	-1.088	-1.463	-0.713	-1.05	-1.207	-0.885
Dytiki Makedonia	EL53	-0.998	-1.278	-0.718	-0.752	-1.321	-0.809
Ipeiros	EL54	-0.809	-1.144	-0.474	0.299	-1.318	-1.317
Thessalia	EL61	-1.044	-1.283	-0.805	-0.349	-1.453	-1.214
Ionia Nisia	EL62	-1.417	-1.842	-0.992	-1.191	-1.376	-1.527
Dytiki Ellada	EL63	-1.462	-1.783	-1.141	-0.664	-1.706	-1.853
Sterea Ellada	EL64	-1.337	-1.672	-1.002	-1.147	-1.385	-1.329
Peloponnisos	EL65	-0.956	-1.280	-0.632	-0.609	-1.095	-1.058
Galicia	ES11	-0.304	-0.551	-0.057	-0.097	-0.354	-0.428
Principado de Asturias	ES12	0.617	0.478	0.756	0.554	0.853	0.375
Cantabria	ES13	0.107	-0.048	0.262	0.114	0.197	-0.003
País Vasco	ES21	0.969	0.563	1.375	1.042	1.17	0.586
Comunidad Foral de Navarra	ES22	0.712	0.530	0.894	1.032	0.775	0.251
La Rioja	ES23	0.845	0.571	1.119	1.374	0.632	0.435
Aragón	ES24	-0.192	-0.430	0.046	0.009	-0.254	-0.309
Comunidad de Madrid	ES30	-0.227	-0.594	0.140	0.328	-0.45	-0.533
Castilla y León	ES41	-0.221	-0.450	0.008	-0.308	-0.08	-0.251
Castilla-la Mancha	ES42	0.274	0.103	0.445	0.323	0.344	0.124
Extremadura	ES43	0.442	0.265	0.619	0.549	0.5	0.229
Cataluña	ES51	-0.7	-0.954	-0.446	-0.484	-0.526	-1.011
Comunitat Valenciana	ES52	0.283	0.095	0.471	0.274	0.623	-0.079
Illes Balears	ES53	0.178	0.004	0.352	0.039	0.374	0.102
Andalucía	ES61	-0.537	-0.846	-0.228	-0.431	-0.565	-0.555
Región de Murcia	ES62	-0.046	-0.176	0.084	0.024	0.351	-0.507
Canarias	ES70	-0.515	-0.752	-0.278	-0.226	-0.464	-0.797
Länsi-Suomi	FI19	1.433	1.240	1.626	1.328	1.456	1.355
Helsinki-Uusimaa	FI1B	1.629	1.462	1.796	1.582	1.505	1.621
Etelä-Suomi	FI1C	1.434	1.261	1.607	1.311	1.405	1.425

Pohjois- ja Itä-Suomi	FI1D	1.623	1.448	1.798	1.556	1.561	1.572
Åland	FI20	2.284	2.044	2.524	2.19	2.403	2.004
Île de France	FR10	0.134	-0.127	0.395	-0.051	0.468	-0.03
Centre - Val de Loire	FRB0	0.718	0.526	0.910	0.368	0.894	0.811
Bourgogne	FRC1	0.536	0.309	0.763	0.352	0.516	0.68
Franche-Comté	FRC2	0.523	0.258	0.788	0.446	0.399	0.665
Basse-Normandie	FRD1	0.759	0.512	1.006	0.764	0.696	0.732
Haute-Normandie	FRD2	0.563	0.314	0.812	0.432	0.62	0.575
Nord-Pas-de-Calais	FRE1	0.403	0.139	0.667	0.745	0.379	0.04
Picardie	FRE2	0.335	0.104	0.566	0.432	0.278	0.256
Alsace	FRF1	0.733	0.442	1.024	0.928	0.577	0.611
Champagne-Ardenne	FRF2	0.572	0.298	0.847	0.655	0.38	0.616
Lorraine	FRF3	0.513	0.323	0.703	0.459	0.576	0.446
Pays-de-la-Loire	FRG0	0.833	0.628	1.038	0.686	0.854	0.868
Bretagne	FRH0	0.981	0.721	1.241	0.989	0.806	1.041
Aquitaine	FRI1	0.791	0.552	1.030	0.806	0.734	0.743
Limousin	FRI2	0.705	0.461	0.949	0.534	0.67	0.834
Poitou-Charentes	FRI3	0.716	0.492	0.940	0.529	0.713	0.827
Languedoc-Roussillon	FRJ1	0.369	0.127	0.611	0.285	0.382	0.4
Midi-Pyrénées	FRJ2	0.7	0.438	0.962	0.731	0.641	0.65
Auvergne	FRK1	0.601	0.367	0.835	0.461	0.558	0.718
Rhône-Alpes	FRK2	0.541	0.288	0.794	0.65	0.519	0.394
Provence-Alpes-Côte d'Azur	FRL0	0.442	0.227	0.657	0.417	0.581	0.28
Corse	FRM0	0.322	0.090	0.554	0.481	0.583	-0.135
Guadeloupe	FRY1	-0.526	-0.917	-0.135	-1.158	-0.265	-0.096
Martinique	FRY2	-0.271	-0.688	0.146	-1.031	-0.159	0.408
Guyane	FRY3	-0.66	-1.069	-0.251	-1.578	-0.379	0.05
La Réunion	FRY4	0.182	-0.154	0.518	0.289	0.282	-0.046
Mayotte	FRY5	-1.159	-1.515	-0.803	-2.275	-0.3	-0.772
Jadranska Hrvatska	HR03	-0.819	-1.249	-0.389	-1.157	-0.736	-0.472
Kontinentalna Hrvatska	HR04	-1.289	-1.708	-0.870	-1.184	-1.183	-1.356
Budapest	HU11	-1.317	-1.819	-0.815	-1.398	-0.749	-1.658
Pest	HU12	-0.908	-1.364	-0.452	-1.271	-0.425	-0.927
Közép-Dunántúl	HU21	-1.072	-1.451	-0.693	-1.475	-0.746	-0.876
Nyugat-Dunántúl	HU22	-1.122	-1.519	-0.725	-1.283	-0.905	-1.052
Dél-Dunántúl	HU23	-1.022	-1.369	-0.675	-1.25	-0.872	-0.83
Észak-Magyarország	HU31	-1.528	-1.958	-1.098	-1.907	-1.078	-1.43
Észak-Alföld	HU32	-1.482	-1.838	-1.126	-1.396	-1.353	-1.534
Dél-Alföld	HU33	-1.018	-1.424	-0.612	-1.175	-0.662	-1.104
Northern and Western	IE04	0.532	0.288	0.776	0.441	0.652	0.444
Southern	IE05	0.867	0.621	1.113	0.761	0.716	1.029
Eastern and Midland	IE06	0.417	0.216	0.618	0.431	0.35	0.424
Piemonte	ITC1	-0.517	-0.672	-0.362	-0.258	-0.831	-0.404

Valle d'Aosta	ITC2	-0.524	-0.737	-0.311	0.011	-0.769	-0.757
Liguria	ITC3	-0.63	-0.820	-0.440	-0.497	-0.831	-0.493
Lombardia	ITC4	-0.813	-0.999	-0.627	-0.236	-1.219	-0.894
Abruzzo	ITF1	-1.111	-1.329	-0.893	-1.013	-1.254	-0.944
Molise	ITF2	-1.221	-1.559	-0.883	-1.316	-1.29	-0.922
Campania	ITF3	-1.931	-2.246	-1.616	-2.114	-1.567	-1.896
Puglia	ITF4	-1.347	-1.658	-1.036	-1.391	-1.413	-1.088
Basilicata	ITF5	-1.438	-1.723	-1.153	-1.317	-1.638	-1.198
Calabria	ITF6	-2.087	-2.557	-1.617	-2.145	-2.238	-1.646
Sicilia	ITG1	-1.364	-1.647	-1.081	-1.095	-1.509	-1.335
Sardegna	ITG2	-1.268	-1.507	-1.029	-1.159	-1.571	-0.932
Bolzano/Bozen	ITH1	-0.251	-0.432	-0.070	0.322	-0.732	-0.316
Trento	ITH2	0.01	-0.154	0.174	0.658	-0.352	-0.282
Veneto	ITH3	-0.15	-0.371	0.071	0.409	-0.648	-0.193
Friuli-Venezia Giulia	ITH4	-0.061	-0.182	0.060	0.358	-0.422	-0.111
Emilia-Romagna	ITH5	-0.385	-0.575	-0.195	0.331	-0.909	-0.535
Toscana	ITI1	-0.36	-0.484	-0.236	0.033	-0.63	-0.442
Umbria	ITI2	-0.734	-0.941	-0.527	-0.331	-1.131	-0.658
Marche	ITI3	-0.746	-0.941	-0.551	-0.609	-0.986	-0.559
Lazio	ITI4	-1.207	-1.422	-0.992	-1.087	-1.241	-1.158
Sostines regionas	LT01	0.025	-0.310	0.360	0.042	0.161	-0.132
Vidurio ir vakaru Lietuvos regionas	LT02	-0.22	-0.610	0.170	-0.058	-0.121	-0.457
Luxembourg	LU	1.281	1.104	1.458	1.121	1.135	1.444
Latvia	LV	-0.312	-0.495	-0.129	-0.244	-0.058	-0.601
Malta	MT	-0.408	-0.926	0.110	-0.12	-0.149	-0.909
Groningen	NL11	1.346	1.066	1.626	1.361	1.391	1.137
Friesland (NL)	NL12	1.651	1.469	1.833	1.562	1.465	1.743
Drenthe	NL13	1.54	1.344	1.736	1.315	1.558	1.575
Overijssel	NL21	1.481	1.305	1.657	1.357	1.318	1.603
Gelderland	NL22	1.604	1.414	1.794	1.477	1.537	1.62
Flevoland	NL23	1.221	1.046	1.396	1.028	1.132	1.368
Utrecht	NL31	1.157	0.884	1.430	1.141	1.22	0.981
Noord-Holland	NL32	1.019	0.751	1.287	1.249	0.899	0.794
Zuid-Holland	NL33	1.261	1.047	1.475	1.228	1.051	1.363
Zeeland	NL34	1.24	0.966	1.514	1.056	1.389	1.139
Noord-Brabant	NL41	1.326	1.128	1.524	1.363	1.088	1.38
Limburg (NL)	NL42	1.318	1.156	1.480	1.269	1.051	1.489
Malopolskie	PL21	-0.714	-0.935	-0.493	-0.507	-0.924	-0.632
Slaskie	PL22	-0.557	-0.801	-0.313	-0.6	-0.758	-0.252
Wielkopolskie	PL41	-0.587	-0.827	-0.347	-0.473	-0.888	-0.334
Zachodniopomorskie	PL42	-0.888	-1.154	-0.622	-1.126	-0.981	-0.457
Lubuskie	PL43	-0.557	-0.829	-0.285	-0.627	-0.772	-0.208
Dolnoslaskie	PL51	-0.77	-0.994	-0.546	-0.697	-0.742	-0.785

Opolskie	PL52	-0.34	-0.626	-0.054	-0.688	-0.348	0.055
Kujawsko-Pomorskie	PL61	-0.689	-0.899	-0.479	-0.74	-0.73	-0.521
Warminsko-Mazurskie	PL62	-0.81	-1.056	-0.564	-0.936	-0.914	-0.49
Pomorskie	PL63	-0.489	-0.829	-0.149	-0.755	-0.836	0.177
Lódzkie	PL71	-0.852	-1.055	-0.649	-0.964	-0.801	-0.696
Swietokrzyskie	PL72	-0.783	-1.023	-0.543	-0.824	-0.984	-0.455
Lubelskie	PL81	-1.089	-1.374	-0.804	-1.084	-1.465	-0.598
Podkarpackie	PL82	-0.711	-0.952	-0.470	-0.837	-0.836	-0.379
Podlaskie	PL84	-0.878	-1.108	-0.648	-0.76	-1.105	-0.671
Warszawski stoleczny	PL91	-1.229	-1.632	-0.826	-1.558	-1.345	-0.647
Mazowiecki regionalny	PL92	-0.748	-0.970	-0.526	-0.733	-0.921	-0.508
Norte	PT11	0.025	-0.393	0.443	0.612	0.083	-0.624
Algarve	PT15	-0.076	-0.375	0.223	-0.125	0.153	-0.248
Centro (PT)	PT16	0.161	-0.170	0.492	0.411	0.132	-0.078
Lisboa	PT17	0.142	-0.161	0.445	-0.052	0.307	0.156
Alentejo	PT18	-0.05	-0.349	0.249	0.057	0.05	-0.25
Açores	PT20	-0.012	-0.268	0.244	0.422	-0.015	-0.442
Madeira	PT30	-0.213	-0.573	0.147	0.508	-0.393	-0.73
Nord-Vest	RO11	-1.419	-1.747	-1.091	-1.514	-1.307	-1.279
Centru	RO12	-0.842	-1.104	-0.580	-1.417	-0.45	-0.564
Nord-Est	RO21	-1.758	-2.132	-1.384	-1.936	-1.271	-1.871
Sud-Est	RO22	-1.628	-1.957	-1.299	-2.323	-0.897	-1.483
Sud - Muntenia	RO31	-1.414	-1.683	-1.145	-1.924	-0.971	-1.19
Bucuresti - Ilfov	RO32	-2.163	-2.529	-1.797	-2.352	-1.698	-2.198
Sud-Vest Oltenia	RO41	-1.45	-1.746	-1.154	-2.119	-0.801	-1.27
Vest	RO42	-1.195	-1.464	-0.926	-1.736	-0.829	-0.888
Stockholm	SE11	1.459	1.190	1.728	1.42	1.327	1.467
Östra Mellansverige	SE12	1.368	1.078	1.658	1.405	1.172	1.376
Småland med Öarna	SE21	1.643	1.377	1.909	1.598	1.559	1.589
Sydsverige	SE22	1.366	1.129	1.603	1.364	1.295	1.288
Västsverige	SE23	1.438	1.175	1.701	1.28	1.309	1.566
Norra Mellansverige	SE31	1.318	1.000	1.636	1.022	1.282	1.502
Mellersta Norrland	SE32	1.22	0.970	1.470	1.093	1.429	1.002
Övre Norrland	SE33	1.625	1.367	1.883	1.552	1.412	1.73
Vzhodna Slovenija	SI03	-0.221	-0.477	0.035	-0.061	-0.319	-0.258
Zahodna Slovenija	SI04	0.283	0.014	0.552	0.072	0.596	0.149
Bratislavský kraj	SK01	-0.912	-1.187	-0.637	-1.092	-0.696	-0.847
Západné Slovensko	SK02	-0.615	-0.814	-0.416	-0.341	-0.714	-0.721
Stredné Slovensko	SK03	-0.574	-0.799	-0.349	-0.484	-0.559	-0.616
Východné Slovensko	SK04	-0.855	-1.040	-0.670	-0.51	-0.938	-1.021

Note: all data standardized such that the EU27 mean of '0' with a standard deviation of '1'. 'me' refers to 'margin of error'.

Appendix Section 3: Description of retrospective change to previous years for the EU27 time series.

Due to our method of standardization, regional estimates of the EQI are in relation to the EU mean. Thus to be able to compare a region's relative position over time, the same sample is need across years. As a consequence of Brexit, the 2021 sample is the first to only include regions from the EU27 countries, rather than EU28. Moreover, there are several other changes in the number of NUTS 2 regions, either due to change in the targeted region, or due to regional splits.

To account for sampling differences with past round of the EQI, we made several retrospective changes to past rounds, in order to create an 'EU27' time series using the following steps:

1. *re-calculate the country-level WGI data for all years with only EU27 countries (e.g. remove UK from past calculations)*

2. *add regions retrospectively where appropriate for past years.*

-In the case of some countries, we moved from NUTS1 to NUTS 2 in 2021. These are Sweden, Greece, Slovenia. For Sweden and Greece, the respective NUTS1 regional score for each survey item was applied to the NUTS 2 regions. In the case of Slovenia the country WGI score was applied to both NUTS 2 regions for the 2010-2017 years.

-In other cases, there were regional splits, where the EU Commission has created new NUTS2 regions recently. These are in Poland (PL12 is no PL91 and PL92), Hungary (HU10 is now NU11 and HU12), and Lithuania (LT01 is now LT01 and LT02). As these regions are within a previously measured region, we simply added these new regions to past years and apply the past (larger) region's score to both regions. In the case of Lithuania, the country WGI score was applied to both NUTS 2 regions for the 2010-2017 years.

3. *adjust for border changes due to NUTS 2 alterations – the case of Ireland.*

- Previously, there were two NUTS 2 regions (IE01 - Border, Midland and Western and IE02 - Southern and Eastern), and due to reforms, there are three NUTS 2 regions - IE04 (Northern and Western), IE05 (Southern) and IE06 (Eastern and Midland). Unfortunately, unlike the cases above in Poland and Hungary, there is a complete discontinuity from the previous scheme to the current one, whereby none of the previous two regions exist as they were geographically. These changes mean that there are no clean comparisons over time a the NUTS 2 level in Ireland from this EQI round with the previous ones

-as previous years did not yield any noticeable within-country variation (while 2021 did demonstrate significantly more), we apply the country-level WGI averages to the three current Irish regions for the 2010-2017 years so that we have the same number of Irish regions in all years of the data. This essentially wipes away any past variation observed in the previous data, yet is most valid for the current NUTS scheme.

With these three sampling adjustments, we then re-calculate the scores from the raw regional indicators for each year, centering on the updated WGI national scores for each pillar and calculate a final EU27 EQI score for each past year that is comparable with the 2021 data[19].

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[19] All data is publically available at: https://www.gu.se/en/quality-government/qog-data/data-downloads/european-quality-of-government-index