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1. Initial Toolkit Assembly

As stipulated in previous reports, the team began its work on the BRaVE indicator toolkit by first setting forward some best practice criteria for the creation of indicators. These criteria were as follows:

- 1. Derive a theory-based longlist of indicators from our concept paper, policy review, and the literature. The goal here is to capture everything and not be selective;
- 2. Synthesize and categorize the indicators using the framework laid out in the Concept paper. The goal here is to reduce the indicators to a set of non-overlapping, meta-categories with high specificity and sensitivity;
- 3. Assess the resulting indicator framework for face validity. Consider adding or reconceptualising indicators to improve face validity. Ensure the correspondence of theory to indicator is clear and defensible;
- 4. Indicators are measurable through external data and professional ratings. Differing forms of open source data are to be used as a proxy measure for each indicator (e.g., polling, social media, public data). Indicators can be informed by multiple data sources;
- 5. Assess indicator scale validity to ensure within category measurements are consistent.

Therefore, the assembly of BRaVE's initial indicator toolkit began with (1) a review of literature on polarisation from varying fields of academic enquiry, including (but not limited to) sociology, psychology, political science, economics, religious studies, education, linguistics, and computer science. This process resulted in a catalogue of 203 papers and projects on the topic of polarisation, from which a total of 100 indicators were extracted and described. The team then addressed (2) by assembling the 100 indicators under the conceptual schema outlined in the BRaVE concept paper, which originally consisted of four conceptual categories (socio-economic, cultural, historical and communication-based), organised under three conceptual levels (macro – state level, meso – community level and micro – individual level). Once arranged, if one or more indicators were found to have descriptions with either the same point of reference, a similar sense, or the same suggested unit of measurement, these were synthesised into one indicator. This process resulted in a synthesised set of 20 indicators.

In order to capture point (3) of the best practice process, the team undertook a series of indicator reviews. The first of these involved presenting the indicators to the BRaVE consortium in This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement number 822189





July 2019 and workshopping amongst consortium members to address potential gaps in the indicator framework. The consortium review resulted in five critical feedback elements. The first and most crucial discussion point was around how the consortium was to define the concept of polarization. The second key aspect of feedback was the need for a set of resilience indicators to complement the project's polarization indicators, while the third highlighted the need for scales of polarization and resilience. The fourth area of feedback centered around the need to arrange the indicators under types of polarization that would be recognizable to the project's stakeholders. The fifth topic of discussion involved organizing the indicators under the factors discussed in BRaVE's concept paper, in order to make a clearer conceptual link between the toolkit and the project's concept paper.

To address this feedback, the team introduced the theoretical framework shown in Figure 1, which defines polarization as the damaging of relationships between the individual and the state, on the one hand, and the individual and their community on the other. This definition was developed from Ellis and Abdi's (2017) work on resilience, in which resilience is envisaged as the building of relationships between the individual and the state (labelled as 'Social Linking') and between the individual and their community (labelled as 'Social Connection').

POLARISATION	RESILIENCE
State and/or Community Presence of Relationship Breaking	State and/or Community Presence of Relationship Building
MODERATION	NON-RESILIENCE
State and/or Community Absence of Relationship Breaking	State and/or Community Absence of Relationship Building

Figure 1. BRaVE Theoretical Model





Table 1. BRaVE Indicator to Factor (Indicator Group) Mapping

Indicator(s)	Factor/Indicator Grouping	Conceptual category	Polarisation/ Resilience
State Welfare	Social Deprivation	Socio-Economic	Polarisation
Segregation Lack of Cultural Mixing	Lack of Inter-Group Contact	Socio-Economic Cultural	Polarisation
Minority Recruitment Diversity Programmes Lack of Representation Exclusionary Production Practices	Discrimination/Racism	Historical Socio-Economic	Polarisation
Individual Assets	Social Disparity	Socio-Economic	Polarisation
Far-Right Political Influence Individual Voting Behaviours	Active Redress	Historical	Polarisation
Laws Protecting Minorities Hate Speech Legislation Restrictions on Minority Symbols	Political Injustice	Historical	Polarisation
Inter-Group Conflict Polarising Media Content	Antagonistic Environment	Historical Communication-Based	Polarisation
Lack of Transnational Identity Ignorance of Minority Culture Individual Perceptions of Self and Other	Exclusionary Identities	Cultural	Polarisation
Polarising Communication Online	Online Polarisation	Communication-Based	Polarisation
Selective Communications	Mainstream (Dis)Engagement	Communication-Based Cultural	Polarisation
Family Support	Positive Well-Being	Cultural	Resilience
Community Engagement	Community Engagement	Historical	Resilience
Social Inclusion	Social Inclusion	Historical	Resilience
Democratic Media Reporting Positive Cultural Image Pro-Social Messaging Trusted Accurate Information Supportive Environment	Democratic Reporting	Communication-Based	Resilience
Social Cohesion	Community Cohesion	Socio-Economic	Resilience
Complex/Flexible Identity	Supportive Environment	Cultural	Resilience
Online Resilience Positive Cultural Image Pro-Social Messaging Supportive Environment	Positive Image Online	Communication-Based	Resilience
Sense of Belonging	Sense of Belonging	Cultural	Resilience
Equality of Opportunity	Equal Opportunities	Socio-Economic	Resilience
Agency	Agency	Socio-Economic	Resilience
Positive Political Engagement	Positive Political Engagement	Historical	Resilience
Sufficient Resources Social Cohesion	Community Enterprise	Socio-Economic	Resilience
Sufficient Resources	Investment	Socio-Economic	Resilience

Next, the 20 indicators were mapped onto the factors discussed in the BRaVE concept paper to identify any conceptual gaps. Additional indicators were introduced to fill conceptual gaps, using the concept paper's factor descriptions as a guide. This was particularly the case for resilience indicators, This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement number 822189





which did not feature in the original framework. The process resulted in the mapping of indicators to factors displayed in Table 1. Having produced this mapping, the initial literature review and the results of the BRaVE project mapping exercise of papers, projects, policies and institutions were used to distinguish five types of polarisation that were both commonly dealt with in the literature and on the ground. These were: Ethnic/Racial Polarisation, Religious Polarisation, Gendered Polarisation, Political Polarisation, and Socio-Economic Polarisation.

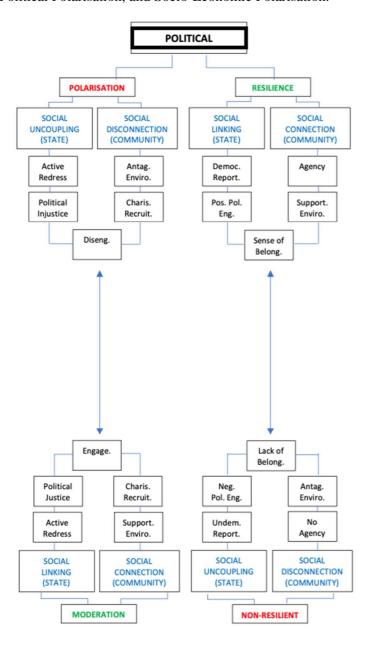


Figure 2. Example conceptual model of 'political' polarisation





The literature review, mapping work and concept paper were then used as the basis on which to construct models of each type of polarisation. Figure 2 provides an example of this with reference to political polarisation. In line with feedback from the consortium meeting, indicators are grouped under concept paper factors and arranged on two different scales: one for polarisation to moderation and one for resilience to non-resilience. Indicator groupings are further organised according to whether they relate to an individual's relationship with the state, to an individual's relationship with their community, or both (in accordance with our theoretical framework).

The team then moved to stage 4 of its best practice process for the formation of indicators, which entailed consulting a range of resources from independent research bodies in order to extract measures to capture the project's indicators outlined in Table 1. Resources were drawn from European Commission data repositories and reports (including Eurobarometer reports and special reports on forms of discrimination), project databases and data explorers (such as MIPEX, EU-MIDIS II and V-DEM), and independent reports (such as those authored by PEW Research Center, Freedom House and the Institute for Economics and Peace). The measures consist of both self-reports (for example, perceptions of discrimination) and objective measures (for example, restrictions placed on religion). The key criteria in the extraction of measures was to ensure that data points were comparable across the ten EU countries featured in the BRaVE project (these being Belgium, Denmark, France, Germany, Greece, Hungary, Italy, Netherlands, Poland, and the UK).

Raw scores for each measure were taken from the aforementioned sources and input for each country. See Appendix 1 for a list of all measures and all raw scores for each type of polarisation, along with their sources. An EU average was taken to use as a baseline against which country scores could be compared. Where an EU average was not listed in the source (for example, in sources that related to worldwide observations), this was calculated separately by extracting scores for all EU countries featured in the source. On occasion, the source featured a subset of EU countries. Therefore, details of the baseline group are provided in Appendix 1. Scores were then colour coded according to whether they were higher or lower than the EU baseline on a given measure. For example, for the religious polarisation measure "General level of discomfort with minority religious political leader is greater than EU average" (which can be found under the 'Exclusionary Identities' grouping), cells in Appendix 1 are shaded red if the country's score exceeds the EU average and are shaded yellow if the country's score matches the EU average.





It should be noted that Moderation measures mirror Polarisation measures, and that Non-Resilience measures mirror Resilience measures. Where possible, Moderation and Non-Resilience measures use different but comparable data, for example:

- 1. Ethnic and Racial Polarisation Discrimination: Percentage of those experiencing ethnically motivated discrimination in 10 areas of life over the last 12 months is higher than EU average
- 2. Ethnic and Racial Moderation Lack of Discrimination: Percentage of those experiencing no ethnically motivated discrimination in 10 areas of life over the last 12 months is higher than EU average

In this case, the polarising measure is measuring those who have experienced discrimination, while the moderating measure is measuring those who have not experienced discrimination. However, on occasion, only one set of data points are available for a polarisation or resilience measure, for example, if the measure is an index or a survey question that sought only an affirmative response. In such cases, we instead look for the *reverse* effect, for example, if the polarisation measure is looking for countries scoring higher than average on the social hostilities index (SHI), the moderating measure will be using the same data points, but this time looking for countries scoring below the average. Of course, such measures must be counted only once in the eventual toolkit visualisation.

Having derived raw scores for all measures, z-scores were computed from raw scores by first comparing each country to the EU baseline on a given measure, and then taking the mean and standard deviation of the comparison values. Country comparison values were then subtracted from the mean and divided by the standard deviation to arrive at the z-scores shown in Appendix 1. The z-scores will be used for the visualisations of the toolkit to be displayed on the project's website, as these ensure that values are comparable by standardising them first.

After this first pass, the team then returned to step (3) of its best practice process, undertaking further review work on the toolkit in the form of face-to-face and online stakeholder workshops. These workshops have been covered extensively in previous reports and therefore will only be touched on briefly here (please see deliverable reports D4.1 and D4.2 for further details). Collectively, feedback from the workshops on the toolkit was positive, but emphasised the need to keep polarisation and resilience indicator scores separate from one another, so as not to obscure the extent of polarisation within a given country, and also to provide the measures and sources (as listed in Appendix 1) in order to ensure transparency and clarity of understanding as to how scores were derived. The workshops further highlighted the need for additional measures on (political) rhetoric,





well-being, and institutional identity. Step (4) of the best practice process was therefore re-visited. Additional measures relating to aspects of stakeholder feedback were subsequently added to the toolkit via desktop research for further independent sources.

Ultimately, the steps described in this section captured a set of 470 measures produced by EU funded projects, governments, and independent organisations. This 'consolidated' view of existing radicalisation and polarisation measures shows the breadth of data that has been produced in this area over the last decade. While our effort is not exhaustive, it does provide a useful lens on the focus of research and policy measures over the last decade. Specifically, the balance of measures across the conceptual model is 124 for ethnicity and race, 104 for religion, 78 for political, 44 for economic, and 120 for gender. The relative absence of measures for economic polarisation and resilience may reflect the fact that this is captured in the broader measures of wealth distribution and economic prosperity and so polarisation specific measure have not been a priority of government or researchers. The absence of political indicators is more interesting, however, particularly in light of today's political context. We anticipate this balance changing over the next few years as new measures relating to political polarisation and resilience are developed.

2. Refined Toolkit Assembly

Section 1 of this report has covered stages (1) to (4) of our best practice process for indicator creation. This section of the report will turn to stage (5) of this process, which seeks to statistically evaluate the indicators and their measures and remove redundancy in their design. The aim here is to examine the value of the 470 measures and to ensure that measures within indicator groupings are internally consistent (i.e. that they are measuring the same thing). Ultimately, the goal is to produce a refined toolkit of indicators and measures for polarisation and resilience. With this in mind, we subjected each subscale within the model to a simple reliability analysis.

This analysis uses the statistic Cronbach alpha (Cronbach, & Gleser, 1959) to assess the internal consistency of each set of measures within an indicator group, that is, how closely related the measures are as a group. Cronbach's alpha is the average inter-item correlation among measures within an indicator group. A high alpha coefficient would suggest the set of measures are measuring the same aspect of polarisation or resilience. A lower alpha coefficient would suggest either that the constituent measures are measuring different things, or that the aspect of polarisation/resilience the measures are trying to measure is too difficult to capture effectively (at least with current measures).





Tables 2 and 3 show Cronbach alpha coefficients for each of the polarisation and resilience subscales respectively. They also report a leave-one-out analysis (where the coefficient is calculated repeatedly for the scale, but with one item removed), when it is the case that item removal improves internal consistency by 0.05 or more. Scales highlighted in bold have an alpha greater than .700 and are thus good candidate measures for a refined toolkit (DeVellis, 2012). Those scoring below .700 are ill-conceptualised in their current form, and are areas that future research might reasonably prioritise so as to 'round out' the accurate measurement of polarisation and resilience across Europe.

Table 2. Cronbach alpha for each of the polarisation scales

Туре	Form	Question	Items	Scale	Leave- one-Out
Ethnic – Racial	Polarisation	Political Injustice	1		
Ethnic – Racial	Polarisation	Mainstream Disengagement	6	.939	
Ethnic – Racial	Polarisation	Antagonistic Environment	4	.566	
Ethnic – Racial	Polarisation	Online Polarisation	1		
Ethnic – Racial	Polarisation	Exclusionary Identities	5	.863	
Ethnic – Racial	Polarisation	Racism	8	.808	
Ethnic - Racial	Polarisation	Lack of Inter-Group Contact	2	.086	
Ethnic - Racial	Moderation	Political Justice	1		
Ethnic – Racial	Moderation	Mainstream Engagement	6	.975	
Ethnic - Racial	Moderation	Online Moderation	1		
Ethnic - Racial	Moderation	Peaceful Environment	4	-1.008	.773
Ethnic – Racial	Moderation	Inclusive Identities	5	.912	
Ethnic – Racial	Moderation	Lack of Racism	8	.846	
Ethnic - Racial	Moderation	Inter-Group Contact	2	.143	
Religious	Polarisation	Political Injustice	5	.617	.722
Religious	Polarisation	Mainstream Disengagement	5	.885	.955
Religious	Polarisation	Antagonistic Environment	4	.498	.621
Religious	Polarisation	Online Polarisation	1		
Religious	Polarisation	Exclusionary Identities	15	.768	.924
Religious	Polarisation	Discrimination	4	.634	
Religious	Moderation	Political Justice	5	.694	.801





Religious	Moderation	Mainstream Engagement	5	.908	.959
Religious	Moderation	Peaceful Environment	4	.569	
Religious	Moderation	Online Moderation	1		
Religious	Moderation	Inclusive Identities	15	.952	
Religious	Moderation	Lack of Discrimination	4	.512	
Political	Polarisation	Political Injustice	3	.925	
Political	Polarisation	Mainstream Disengagement	8	.954	
Political	Polarisation	Active Redress	1		
Political	Polarisation	Antagonistic Environment	9	275	150
Political	Polarisation	Online polarisation	2	.836	
Political	Moderation	Political Justice	3	.548	.835
Political	Moderation	Mainstream Engagement	8	.945	
Political	Moderation	Active Redress	1		
Political	Moderation	Peaceful Environment	9	275	124
Political	Moderation	Online Moderation	2	.836	
Economic	Polarisation	Social Deprivation	9	.015	.8641
Economic	Polarisation	Social Disparity	2	.179	
Economic	Moderation	Lack of Social Deprivation	9	.015	.866 ¹
Economic	Moderation	Social Equality	2	222	
Gender	Polarisation	Political injustice	8	.801	.891
Gender	Polarisation	Discrimination	6	.674	
Gender	Polarisation	Exclusionary identities	9	.970	
Gender	Polarisation	Online Polarisation	2	.960	
Gender	Polarisation	Antagonistic environment	6	.829	
Gender	Moderation	Political justice	8	.794	
Gender	Moderation	Lack of discrimination	6	.576	
Gender	Moderation	Inclusive identities	9	.975	
Gender	Moderation	Online Moderation	2	.960	
Gender	Moderation	Peaceful environment	6	.809	

¹Reflects the removal of a GDP measure whose scale is orders greater than the scales used by other measures. It is possible that this indicator could be included reliably once converted into standardised scores





As can be seen on Table 2, there are some good measures of polarisation available across each of the dimensions of the conceptual model. Some of these achieve extremely high internal consistency (e.g., the measures within the indicator grouping Exclusionary Identities, under Gender polarisation), simultaneously suggesting a robust indicator, but also the opportunity to remove some measures without loss of predictive value. Others are very weak, such as the measures for Antagonistic and Peaceful Environments, which suggest more work is needed to determine a reliable indicator of environmental dynamics.

Interestingly, for some of the indicators, single measures appear not to measure the same aspect of polarisation as the others. For example, removal of the country's Social Hostility Index (SHI) measure greatly improves the internal consistency of the Political Injustice scale, raising questions about what kind of hostility is being measured by the SHI. Similarly, the measure "Percentage of those who are satisfied with the way democracy is working in their country is greater than EU average" does not seem to relate to other questions pertaining to Political Justice. This is likely to be due to people's satisfaction having little to do with what is occurring in reality. We can always want more. These observations highlight both the importance of careful wording and the vulnerability of relying on subjective measures of assessment.

Table 3. Cronbach alpha for each of the resilience scales.

Туре	Form	Question	Items	Scale	Leave- one-Out
Ethnic – Racial	Resilience	Positive Well-being	4	.690	
Ethnic - Racial	Resilience	Community Engagement	4	.675	
Ethnic - Racial	Resilience	Social Inclusion	1		
Ethnic – Racial	Resilience	Democratic Reporting	4	.035	.202
Ethnic – Racial	Resilience	Community Cohesion	3	.727	
Ethnic – Racial	Resilience	Supportive Environment	9	.819	
Ethnic - Racial	Resilience	Positive Image Online	1		
Ethnic – Racial	Resilience	Sense of Belonging	6	.769	
Ethnic – Racial	Resilience	Equal Opportunities	3	001	.392
Ethnic – Racial	Non-resilient	Negative well-being	4	.690	
Ethnic – Racial	Non-resilient	Lack of Community Engagement	4	.695	





Ethnic - Racial	Non-resilient	Social Exclusion	1		
Ethnic - Racial	Non-resilient	Undemocratic Reporting	4	.202	.438
Ethnic – Racial	Non-resilient	Community Disunity	3	.743	
Ethnic - Racial	Non-resilient	Unsupportive Environment	9	.629	.703
Ethnic - Racial	Non-resilient	Negative Online Image	1		
Ethnic – Racial	Non-resilient	Lack of Belonging	6	.813	
Ethnic – Racial	Non-resilient	Unequal Opportunities	3	001	392
Religious	Resilience	Community Engagement	1		
Religious	Resilience	Social Inclusion	1		
Religious	Resilience	Democratic Reporting	4	.611	.683
Religious	Resilience	Community Cohesion	2	.861	
Religious	Resilience	Supportive Environment	2	.528	
Religious	Resilience	Positive Image Online	2	.146	
Religious	Resilience	Sense of Belonging	1		
Religious	Resilience	Equal Opportunities	1		
Religious	Resilience	Positive Psychological State	4	.707	.793
Religious	Non-resilient	Lack of Community Engagement	1		
Religious	Non-resilient	Social Exclusion	1		
Religious	Non-resilient	Undemocratic Reporting	4	.529	.594
Religious	Non-resilient	Community Disunity	2	.866	
Religious	Non-resilient	Unsupportive Environment	2	.287	
Religious	Non-resilient	Negative Online Image	2	.077	
Religious	Non-resilient	Lack of Belonging	1		
Religious	Non-resilient	Unequal Opportunities	1		
Religious	Non-resilient	Negative Psychological State	4	.707	
Political	Resilience	Positive Political Engagement	1		
Political	Resilience	Democratic Reporting	4	022	.886
Political	Resilience	Social Inclusion	3	.714	.951
Political	Resilience	Sense of Belonging	2	.912	
Political	Resilience	Supportive Environment	2	.776	
Political	Resilience	Agency	4	.461	.513
Political	Non-resilient	Negative Political Engagement	1		





Political	Non-resilient	Undemocratic Reporting	4	.044	.886
Political	Non-resilient	Social Exclusion	3	.713	.951
Political	Non-resilient	Lack of Belonging	2	.720	
Political	Non-resilient	Unsupportive Environment	2	.776	
Political	Non-resilient	No Agency	4	.405	.489
Economic	Resilience	Investment	3	.207	.301
Economic	Resilience	Community Enterprise	4	.000	.089
Economic	Resilience	Social inclusion	1		
Economic	Resilience	Sense of belonging	1		
Economic	Resilience	Positive well-being	2	.677	
Economic	Non-resilient	Lack of Investment	3	.710	.783
Economic	Non-resilient	Lack of Community Enterprise	4	.000	.089
Economic	Non-resilient	Social exclusion	1		
Economic	Non-resilient	Lack of belonging	1		
Economic	Non-resilient	Negative well-being	2	.677	
Gender	Resilience	Social inclusion	4	.668	
Gender	Resilience	Democratic reporting	5	.258	.423
Gender	Resilience	Supportive environment	10	.938	
Gender	Resilience	Positive image online	2	.617	
Gender	Resilience	Positive well-being	1		
Gender	Resilience	Sense of belonging	1		
Gender	Resilience	Equal opportunities	6	.753	
Gender	Non-resilient	Social exclusion	4	.632	.711
Gender	Non-resilient	Undemocratic reporting	5	.441	.500
Gender	Non-resilient	Unsupportive environment	10	.950	
Gender	Non-resilient	Negative image online	2	.617	
Gender	Non-resilient	Lack of belonging	1		
Gender	Non-resilient	Negative well-being	1		
Gender	Non-resilient	Unequal opportunities	6	.625	.686

As can be seen from Table 3, there are also good indicator groups for resilience in each of the conceptual model dimensions. However, on average, the internal consistency of these groups' This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement number 822189





measures is lower than found for polarisation indicator groupings. For economic, religious and gender related resilience, there are fewer measures than is ideal, suggesting a degree of vulnerability in our ability to accurately gauge resilience. This vulnerability may stem from both the challenge of measuring resilience and, arguably, the relative level of evidence that has accumulated regarding how to measure resilience compared to that on polarisation. As identified elsewhere in this project, work on resilience has tended to lag behind work on polarisation. Of course, as with certain aspects of polarisation for which there are a paucity of measures (such as economic measures), this observation may also be due to the lack of directly comparable data points available.

One of the causes for low alpha values observed in Tables 2 and 3 is the apparent inadequacy of some measures. For example, the religious moderating measure "Experiences of physical attacks due to the wearing of a niqab or headscarf in the last 12 months is *lower* than EU average" reduces the internal consistency of the Peaceful Environment indicator group. This is perhaps best explained by unequal reporting of such incidents across the countries being examined, which leads to unfitting relative scores. Similarly, the political resilience measure "The extent to which print and broadcast media represent a range of political perspectives is greater than EU average" correlates negatively with the other measures of Democratic Reporting, suggesting that 'range' may have negative connotations in this context.

A researcher or policy maker adopting the indicator groupings highlighted in bold in Tables 2 and 3 would have a useful toolkit that captures many, but not all, of the facets of the BRaVE conceptual model. She or he would need to be mindful that the toolkit provides only a cursory measure of economic polarisation and resilience. However, the scores from each dimension may be normalised to allow relative comparisons across profiles for different entities (e.g., countries).

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