

# D5.3

Proof of concept: democratic  
resilience



Funded by  
the European Union

This project has received funding from the European Union under  
the Horizon Europe Research & Innovation Programme  
(Grant Agreement no. 101132698 ENCODE).



# D5.3 Proof of concept: democratic resilience

Dissemination Level: PU – Public  
Lead Partner: University of Vienna (UNIVIE)  
Due date: 31.05.2026  
Actual submission date: 2.06.2026

## PUBLISHED IN THE FRAMEWORK OF

ENCODE - Unveiling emotional dimensions of politics to foster European democracy

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## REVISION AND HISTORY CHART

| VERSION | DATE       | EDITORS                                                    | COMMENT                                                       |
|---------|------------|------------------------------------------------------------|---------------------------------------------------------------|
| 0.1     | 15.05.2026 | Anand Murugesan (UNIVIE)                                   | Consolidated draft based on D5.2 framework and D5.3 materials |
| 0.2     | 1.06.2026  | Mette Marie Stæhr Harder (UCPH)<br>Łukasz Wilczyński (ASM) | Review                                                        |
| 0.3     | 1.06.2026  | Anand Murugesan (UNIVIE)                                   | Final Version                                                 |
| 1.0     | 2.06.2026  | Aleksandra Oleksik (ASM)                                   | Submission to Participant Portal                              |

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## EXECUTIVE SUMMARY

This deliverable builds on Task 5.2, which developed and tested behavioral and survey-based measures of democratic resilience. Here, democratic resilience means citizens' willingness to uphold basic democratic rights even when there are personal costs or pressures. D5.3 turns the validation work into a practical monitoring tool: a short set of survey questions, a Democratic Resilience Index, and an interactive heat map that shows resilience across countries and demographic groups.

The core method is a step-by-step process for choosing survey questions that are informative about democratic resilience. Questions from the European Social Survey and the World Values Survey are compared with two behavioral measures of democratic resilience: Voice and Vote. Voice measures whether citizens refuse money to sign a petition that goes against their own political view. Vote measures whether citizens refuse to consider giving up the opportunity to vote in exchange for money. The D5.3 procedure gives priority to questions that remain useful when tested across different countries, rather than questions that work only in one national setting.

The resulting short survey module performs well compared with both the full survey questionnaire and the experimental measures. Using adjusted R-square, a standard measure of how much variation a model explains, the validated items explain 7.84% of Voice resilience, compared with 9.29% for the full survey battery and 6.14% for all experimental items. For Vote resilience, the validated module explains 8.32%, compared with 9.14% for all survey items and 4.00% for all experimental items. Because the validated module uses far fewer questions, it is well suited for repeated, low-cost measurement of panel data across countries.

To make the tool usable across many countries, the deliverable develops a Democratic Resilience Index based on the validated questions that are available in World Values Survey waves 6 and 7. This practical choice means the index can be calculated for many European countries and for two survey waves. It can therefore be used to compare countries at one point in time and to explore changes over time. The country-level index is presented on a 0-100 scale, where higher values mean stronger democratic resilience.

The heat map is the main D5.3 output. It shows the Democratic Resilience Index on a map of Europe for all countries with the required WVS data. Users can select a country, view results by gender and age group, and compare results across WVS waves 6 and 7. Screenshots and examples of the final heat-map interface are included in the dedicated section of this deliverable.

As a further check, the new index is compared with the V-Dem Electoral Democracy Index, a widely used measure of the quality of democratic institutions. The relationship is positive and meaningful, with correlations of 0.664 for WVS wave 6 and 0.456 for WVS wave 7. This suggests that the citizen-level index is connected to national democratic quality, while also capturing something distinct about the values, attitudes, and behavior of citizens.

The heat map is also intended as a shared diagnostic resource for later ENCODE activities. It can help partners identify countries and socio-demographic groups where democratic resilience appears comparatively stronger or weaker, and can therefore inform follow-up work on communication, policy recommendations, and foresight activities in subsequent work packages.

# 1. INTRODUCTION

## 1.1 THE ENCODE PROJECT

The ENCODE project, “Unveiling Emotional Dimensions of Politics to Foster European Democracy,” examines how emotions, values, identities, and political narratives shape democratic engagement and vulnerability to democratic erosion. The project combines conceptual work, computational analysis, experiments, and surveys to help policymakers and civil-society actors understand where democratic values are strong and where they may be under pressure.

Within this broader agenda, Work Package 5 focuses on democratic values, and democratic resilience at the level of individual citizens. It develops tools that connect political attitudes to observable choices about democratic rights and institutions.

## 1.2 OBJECTIVES OF THIS DELIVERABLE

1. Consolidate the survey indicators developed and tested in D5.2.
2. Identify a short set of survey questions that predict Voice and Vote resilience across countries.
3. Construct a Democratic Resilience Index using validated items that are available in major international survey data.
4. Visualize the index through a heat map by country and demographic group.
5. Check the index by comparing it with a widely used country-level measure of democracy.

## 1.3 STRUCTURE OF THE DOCUMENT

The deliverable is structured as follows. Chapter 1 introduces the deliverable and its objectives. Chapter 2 explains how D5.3 builds on D5.2 and moves from behavioral validation to cross-country monitoring. Chapter 3 presents the selection of survey questions validated against behavior. Chapter 4 describes the construction of the Democratic Resilience Index. Chapter 5 introduces the heat-map output and its country and subgroup views. Chapter 6 compares the index with the V-Dem Electoral Democracy Index. Chapter 7 summarizes conclusions and recommendations. The Appendix provides item-by-item interpretations of the experimentally validated survey questions.

## 1.4 RELATION TO OTHER TASKS

D5.3 builds directly on D5.2. D5.2 established the validation framework by comparing incentivized experimental games, direct behavioral measures, and standardized survey items. D5.3 applies the validated survey indicators to create a monitoring tool: a Democratic Resilience Index and an accompanying heat-map visualization. This makes the D5.2



methodology suitable for cross-country comparison and for repeated, low-cost measurement over time.

This deliverable also connects to other ENCODE work packages. WP2 provides the conceptual background on emotions, values, and democratic resilience. WP3 examines how emotions are activated and shaped in political communication and media environments. WP4 uses face-tracking and eye-tracking in AT, BC, DK, and PL to compare reported emotions with observed emotional responses. WP1 supports shared documentation, data compatibility, and reuse across project outputs.

D5.3 contributes to these work packages by linking validated survey indicators to citizen-level democratic resilience. While WP3 provides evidence on the role of emotions in triggering engagement on social media, WP5 examines how emotions are associated with civic engagement, especially how respondents value political voice and voting rights. In line with WP3, we also examine universalism more deeply by measuring it through both experimental and survey-based tools.

The heat-map output also provides a practical interface for other ENCODE work packages. WP2 can use the index as an empirical bridge between conceptual work on emotions, values, and democratic resilience and observable citizen-level indicators. For later project activities, including policy-oriented and foresight work, the heat map offers an accessible diagnostic tool for identifying where further country-specific interpretation, communication, or stakeholder engagement may be most useful.

## 2. FROM D5.2 TO D5.3: SCALING THE MEASUREMENT STRATEGY

Task 5.2 combined behavioral-economics methods and survey instruments to identify which self-reported attitudes and values are informative about actual behavior. The distinctive contribution of Task 5.3 is to turn this validation into a practical, scalable, and visual monitoring instrument. The deliverable therefore shifts the emphasis from experimental measurement to application across countries.

*Table 1: Relationship between D5.2 and D5.3*

| ELEMENT                 | D5.2 CONTRIBUTION                                                                                                         | D5.3 CONTRIBUTION                                                                                                 |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Primary purpose         | Validate survey measures against incentivized and behaviorally meaningful tasks.                                          | Turn validated indicators into an index and heat-map output.                                                      |
| Core outcomes           | Voice and Vote resilience, measured through willingness to trade political expression and voting opportunities for money. | Predicted democratic resilience based on a validated short survey module and available international survey data. |
| Methodological emphasis | Combination of behavioral tasks, experimental games, and survey questions.                                                | Selection of reliable items, index construction, and visual comparison by country and demographic group.          |
| Main deliverable        | Validated behavioral and survey toolbox.                                                                                  | Democratic Resilience Index and heat map.                                                                         |

### 2.1 BEHAVIORAL VALIDATION FRAMEWORK

The D5.2 framework remains the methodological foundation for D5.3. The direct behavioral outcomes are Voice and Vote. Voice captures whether respondents reject the possibility of being paid to sign a petition that contradicts their own position on an important policy issue. Vote captures whether respondents reject the possibility of being paid to give up the opportunity to vote. These outcomes provide behavioral benchmarks against which survey items can be evaluated.

D5.3 uses these benchmarks to identify survey items that predict democratic resilience across countries. The validated survey module is therefore not a general attitudes

questionnaire. It is a short set of items selected because it predicts behavior linked to citizens' willingness to uphold core democratic rights.

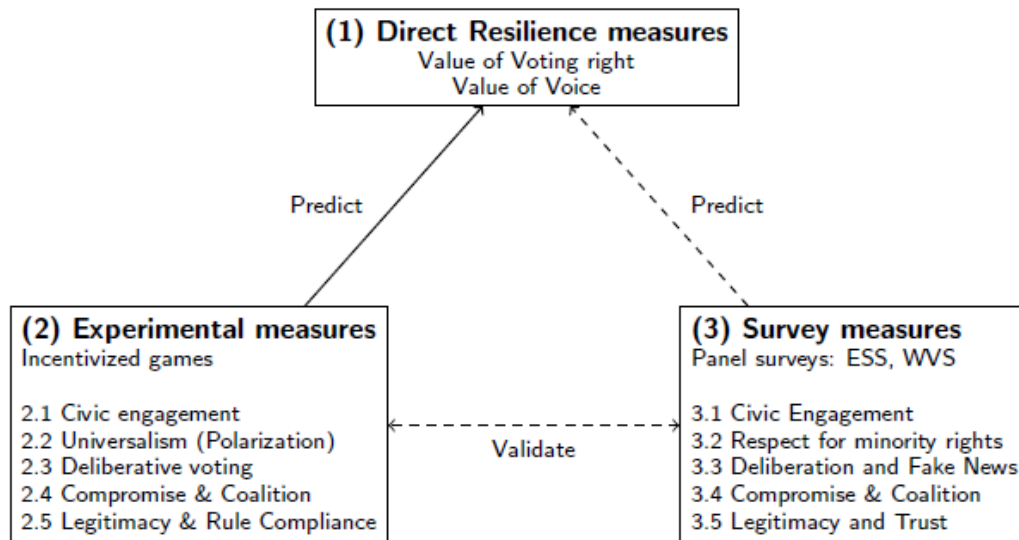


Figure 1: Triangulation framework

## 2.2 COUNTRY COVERAGE AND DATA SOURCES

The D5.3 validation dataset extends the D5.2 evidence base. D5.2 reported data from Austria, Denmark, Italy, and North Macedonia. D5.3 adds country evidence from Bulgaria, France, and Hungary, resulting in a seven-country dataset for selecting robust survey items. These additional countries were included to increase variation in political, institutional, and regional contexts. Bulgaria and Hungary add further coverage of Central and Eastern European contexts, including post-communist institutional legacies, while France adds a large Western European democracy with a different party-system and political-institutional setting from Austria, Denmark, and Italy. The purpose is not to produce a fully representative sample of Europe, but to test whether the selected survey items remain predictive across diverse national contexts before applying the index more broadly to WVS data.

Table 2: Country coverage in the D5.3 validation dataset

| COUNTRY         | ROLE IN D5.3       | NOTES                                                                             |
|-----------------|--------------------|-----------------------------------------------------------------------------------|
| Austria         | Validation dataset | Included in D5.2 and extended D5.3 analyses.                                      |
| Bulgaria        | Validation dataset | Added to strengthen Central/Eastern European coverage and institutional variation |
| Denmark         | Validation dataset | Included in D5.2 and extended D5.3 analyses.                                      |
| France          | Validation dataset | Added to include a large Western democracy and institutional variation.           |
| Hungary         | Validation dataset | Added to strengthen Central/Eastern European coverage and institutional variation |
| Italy           | Validation dataset | Included in D5.2 and extended D5.3 analyses.                                      |
| North Macedonia | Validation dataset | Included in D5.2 and extended D5.3 analyses.                                      |

The validation dataset should be interpreted as a behavioral validation sample rather than as a fully representative European population sample. It is used to identify survey items that predict Voice and Vote resilience across different national settings. The broader cross-country comparison is then conducted through WVS data, where the Democratic Resilience Index can be calculated for all European countries with the required variables.

## 2.3 ETHICS, INFORMED CONSENT, AND DATA PROTECTION

The behavioral validation data used in D5.3 come from the research design described in D5.2 and follow the same ethics and data-protection rules. Respondents were informed about the purpose and structure of the study, that participation was voluntary, that data would be anonymized, and how incentives worked. The D5.3 heat map reports only country-level and group-level aggregate results. No individual-level data are displayed.

## 3. SELECTION OF EXPERIMENTALLY VALIDATED SURVEY QUESTIONS

### 3.1 MULTI-STAGE SELECTION PROCEDURE

D5.3 uses a multi-stage procedure to identify a short and reliable set of survey questions. The goal is to find questions that predict Voice and Vote resilience not only in the countries used to develop the model, but also in other national contexts.

First, LASSO regression is used to select useful predictors from the full set of survey items. LASSO is a statistical method that helps choose the most informative variables from a large number of possible candidates. To test whether the chosen questions travel well across countries, the model is estimated repeatedly while leaving out one country at a time. This approach gives priority to indicators that remain predictive across different settings, rather than indicators that work only in one country.

All models include key demographic controls and controls for variations in the behavioral measures. Country fixed effects are not included at this stage, so the selection procedure favors items that carry information beyond country differences. Observations from non-political treatments are excluded because the goal is to measure democratic resilience in a political setting.

A survey question is kept as a candidate only if the LASSO procedure selects it and its relationship with resilience points in the same direction each time one country is left out. The candidate list is then narrowed further through backward selection, which removes weaker predictors step by step. This final step helps ensure that the selected items remain informative across countries.

### 3.2 REDUCING SURVEY NOISE

Because survey responses can be affected by inattention or low effort, D5.3 applies an additional data-quality step before the final selection procedure. Respondents with exceptionally long completion times are identified as “survey sleepers.” Such patterns may indicate that a respondent was distracted, disengaged, or interrupted, rather than carefully answering the survey.

Excluding these noisy observations improves how well survey items explain Voice and Vote resilience. The filtering step is preparatory: the full selection procedure is then conducted on the refined dataset. The goal is not to remove genuine differences between respondents, but to reduce measurement noise.

### 3.3 RESULTS: VALIDATED QUESTIONS

Table 3 reports the final set of survey questions validated against behavior. The sign shows the direction of the relationship. A positive sign means that the response is associated with

higher predicted Voice or Vote resilience; a negative sign means that it is associated with lower predicted resilience.

Table 3: Experimentally validated survey questions

| NR | DIMENSION        | SURVEY QUESTION AND RELEVANT RESPONSE/SCALE                                                                                                                                                                                                                                                          | VOICE | VOTE |
|----|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|
| 1  | Civic Engagement | How essential do you think it is as a characteristic of democracy that people choose their leaders in free elections? (WVS W5)<br>Scale: 1 (Not essential) - 10 (Essential)                                                                                                                          | (+)   | (+)  |
| 2  | Civic Engagement | If you had to choose, which one of these things would you say is most important? (WVS W6)<br>Options: 1 (Maintaining order in the nation), 2 (Giving people more say in important government decisions), 3 (Fighting rising prices), 4 (Protecting freedom of speech)<br>Relevant response: Option 3 | (-)   | (-)  |
| 3  | Civic Engagement | Did you vote in the last [country] national election in [month/year]? (ESS R6, R10)<br>Options: 1 (Yes), 2 (No), 3 (Not eligible)<br>Relevant response: Option 2                                                                                                                                     | (-)   | (-)  |
| 4  | Civic Engagement | Please indicate for each of them if you have done any of these things, whether you might do it or would never under any circumstances do it.<br>Encouraging others to vote (WVS W7)<br>Scale: 1 (Have done), 2 (Might do), 3 (Would never do)                                                        |       | (-)  |
| 5  | Universalism     | When jobs are scarce, employers should give priority to people of this country over immigrants. (WVS W7)<br>Scale: 1 (Agree strongly) - 5 (Disagree strongly)                                                                                                                                        | (+)   | (+)  |
| 6  | Universalism     | From your point of view, what have been the effects of immigration on the development of [this country]? Do you agree or disagree with the statement that immigration increases the crime rate? (WVS W7)<br>Scale: 1 (Agree), 2 (Hard to say), 3 (Disagree)                                          |       | (+)  |

|    |                 |                                                                                                                                                                                                                                                          |     |     |
|----|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|
| 7  | Universalism    | How important do you think it is for democracy in general that the government protects all citizens against poverty? (ESS R6, R10)<br>Scale: 0 (Not at all) - 10 (Extremely)                                                                             |     | (+) |
| 8  | Compromise      | How much do you trust your family? (WVS W6)<br>Scale: 1 (Completely) - 4 (Not at all)                                                                                                                                                                    | (-) |     |
| 9  | Rule-Compliance | Please state whether you think avoiding a fare on public transport can always be justified, never be justified, or something in between. (WVS W1)<br>Scale: 1 (Never) - 10 (Always)                                                                      | (-) |     |
| 10 | Rule-Compliance | How acceptable for you would it be for [country] to have a strong leader who is above the law? (ESS R10)<br>Scale: 0 (Not at all) - 10 (Completely)                                                                                                      | (-) | (-) |
| 11 | Rule-Compliance | Could you indicate how much confidence you have in labor unions? (WVS W1)<br>Scale: 1 (A great deal) - 4 (None at all)                                                                                                                                   |     | (+) |
| 12 | Rule-Compliance | Please state whether you think cheating on taxes if you have a chance can always be justified, never be justified, or something in between. (WVS W1)<br>Scale: 1 (Never) - 10 (Always)                                                                   |     | (-) |
| 13 | Rule-Compliance | How often do you think ordinary people like yourself or people from your neighbourhood have to pay a bribe, give a gift, or do a favor to local officials and service providers to get the services they need? (WVS W7)<br>Scale: 1 (Never) - 4 (Always) |     | (-) |
| 14 | Rule-Compliance | How important do you think it is for democracy in general that opposition parties are free to criticize the government? (ESS R6)<br>Scale: 0 (Not at all) - 10 (Extremely)                                                                               |     | (+) |
| 15 | Deliberation    | How important do you think it is for democracy in general that the government explains its decisions to voters? (ESS R6)<br>Scale: 0 (Not at all) - 10 (Extremely)                                                                                       | (+) |     |

|    |              |                                                                                                                                                                                                                  |     |  |
|----|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--|
| 16 | Deliberation | How important do you think it is for democracy in general that voters discuss politics with people they know before deciding how to vote? (ESS R6)<br>Scale: 0 (Not at all important) - 10 (Extremely important) | (-) |  |
| 17 | Deliberation | Please indicate whether you use social media (Facebook, Twitter, etc.) to obtain information daily, weekly, monthly, less than monthly, or never. (WVS W7)<br>Scale: 1 (Daily) - 5 (Never)                       | (+) |  |

### 3.4 BRIEF DISCUSSION OF SELECTED PREDICTORS

The selected items broadly fit expectations about democratic resilience. Questions about free elections, the right of opposition parties to criticize the government, opposition to leaders who stand above the law, and past voting behavior all align with established ideas about democratic attitudes. Citizens who value free elections and reject unchecked executive power are more likely to refuse trading Voice and Vote.

The selected items also show that democratic resilience is linked to inclusive values. Attitudes that are more inclusive toward immigrants, support for protecting citizens from poverty, and rejection of exclusionary labor-market preferences predict stronger resilience. These patterns suggest that support for democratic rights is connected not only to institutions, but also to a broader willingness to treat people fairly beyond one's own group.

Questions about rule compliance are central to the validated module. Items about fare evasion, tax cheating, bribery, and confidence in institutions capture whether citizens see rules as legitimate and whether they believe others also follow them. Democratic resilience is therefore linked to a sense of fairness and reciprocity: citizens are more likely to uphold democratic rights when they view the system as fair and rule-governed.

A small number of selected predictors require careful interpretation. The labor-union confidence item appears to depend on country context and may partly reflect post-communist historical legacies. The family-trust item should be read as part of the broader trust battery, not as a standalone statement about family life. The item on discussing politics before voting may capture pressure to conform within close networks rather than open deliberation. These cases should be flagged when the index is interpreted in country reports.

The discussion above highlights only selected predictors. A more detailed item-by-item interpretation of all experimentally validated survey questions is provided in [Appendix A](#).



### 3.5 PREDICTIVE PERFORMANCE OF THE VALIDATED MODULE

The validated survey module keeps much of the predictive power of the full survey battery while using far fewer questions. It also outperforms the experimental measures in adjusted R-square for both behavioral outcomes. Because the number of validated survey items is similar to the number of experimental indicators, the validated module is the most efficient tool in terms of predictive performance per item.

Table 4: Adjusted R-square for experimental, full survey, and validated survey models

| REGRESSION             | VOICE | VOTE  |
|------------------------|-------|-------|
| All survey items       | 9.29% | 9.14% |
| All experimental items | 6.14% | 4.00% |
| Validated survey items | 7.84% | 8.32% |

## 4. CONSTRUCTION OF THE DEMOCRATIC RESILIENCE INDEX

### 4.1 DATA AVAILABILITY AND PRAGMATIC ITEM SELECTION

The validated questions come from both the ESS and the WVS and from several survey waves. This gives the module broad conceptual coverage, but it also creates practical limits for use in other datasets. No single ESS wave contains all validated questions, and applying the full set would require countries to have run both ESS and WVS modules at roughly the same time. Such overlap is uncommon.

For this reason, D5.3 uses a practical strategy for the index and heat map. The index uses the subset of validated WVS questions available in both waves 6 and 7. This means that some validated items are not included, but it allows the Democratic Resilience Index to be calculated for more countries and for two waves. WVS wave 6 covers the period 2010–2014, while WVS wave 7 covers 2017–2022. The use of these two waves allows a repeated country-level comparison, although the data are repeated cross-sections rather than individual-level panel data.

Tables 5 and 6 report the availability of the validated survey items across WVS and ESS waves. The rows labeled “Voice” and “Vote” refer to the behavioral outcome for which the item was selected in the validation exercise. Some items predict Voice resilience, some predict Vote resilience, and some predict both. The tables therefore do not report new survey outcomes; they show whether the validated predictors for each behavioral outcome are available in the relevant survey waves.

Table 5: Availability of validated survey items in WVS

| OUTCOME      | TOTAL NUMBER OF ITEMS | IN WAVE 6 | IN WAVE 7 |
|--------------|-----------------------|-----------|-----------|
| <b>Voice</b> | 6                     | 5         | 6         |
| <b>Vote</b>  | 8                     | 5         | 8         |

Table 6: Availability of validated survey items in ESS

| OUTCOME      | TOTAL NUMBER OF ITEMS | IN ROUND 6 | IN ROUND 10 |
|--------------|-----------------------|------------|-------------|
| <b>Voice</b> | 4                     | 3          | 2           |
| <b>Vote</b>  | 4                     | 3          | 3           |

## 4.2 INDEX ITEMS

Table 7: Experimentally validated survey questions

| DIMENSION        | SURVEY QUESTION AND RELEVANT RESPONSE/SCALE                                                                                                                                                                                                                                                          | VOICE | VOTE |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|
| Civic Engagement | How essential do you think it is as a characteristic of democracy that people choose their leaders in free elections? (WVS W5)<br>Scale: 1 (Not essential) - 10 (Essential)                                                                                                                          | (+)   | (+)  |
| Civic Engagement | If you had to choose, which one of these things would you say is most important? (WVS W6)<br>Options: 1 (Maintaining order in the nation), 2 (Giving people more say in important government decisions), 3 (Fighting rising prices), 4 (Protecting freedom of speech)<br>Relevant response: Option 3 | (-)   | (-)  |
| Universalism     | When jobs are scarce, employers should give priority to people of this country over immigrants. (WVS W7)<br>Scale: 1 (Agree strongly) - 5 (Disagree strongly)                                                                                                                                        | (+)   | (+)  |
| Compromise       | How much do you trust your family? (WVS W6)<br>Scale: 1 (Completely) - 4 (Not at all)                                                                                                                                                                                                                | (-)   |      |
| Rule-Compliance  | Please state whether you think avoiding a fare on public transport can always be justified, never be justified, or something in between. (WVS W1)<br>Scale: 1 (Never) - 10 (Always)                                                                                                                  | (-)   |      |

|                 |                                                                                                                                                                                        |  |     |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----|
| Rule-Compliance | Could you indicate how much confidence you have in labor unions? (WVS W1)<br>Scale: 1 (A great deal) - 4 (None at all)                                                                 |  | (+) |
| Rule-Compliance | Please state whether you think cheating on taxes if you have a chance can always be justified, never be justified, or something in between. (WVS W1)<br>Scale: 1 (Never) - 10 (Always) |  | (-) |

## 4.3 WEIGHTS AND SCALING

The index weights are derived from OLS regressions estimated on the complete seven-country validation dataset for both Voice and Vote resilience. OLS is a standard regression method used to estimate how strongly each survey item is associated with the outcome. To obtain the most informative weights, these regressions use the full set of validated survey questions, not only the smaller WVS subset used for the heat map. The model also includes demographic and methodological controls and is estimated after excluding survey sleepers.

For each country, the average response is calculated for each WVS index item. Each average is then multiplied by its regression weight. These weighted values are added across the Voice and Vote components to produce a raw score. The raw score is then converted to a 0-100 scale. Higher values indicate higher democratic resilience.

This procedure produces a country-level score that is anchored in behavioral validation but can be calculated using existing international survey data. It is therefore suitable for heat maps at a given point in time and for exploratory comparisons across WVS waves.

## 5. HEAT-MAP OUTPUT

### 5.1 PURPOSE AND SCOPE

The heat map is the main visual output of D5.3. Its purpose is to present the Democratic Resilience Index in a format that is easy to interpret for researchers, policymakers, project partners, and the wider public. The map displays index values for all European countries for which the required WVS data are available. Countries without sufficient data are shown as unavailable rather than estimated.

The heat map is designed to communicate three types of information: differences in democratic resilience across countries, differences within countries by demographic group, and changes between WVS waves where the same country appears in more than one wave. This design follows the proposal objective of visualizing democratic resilience by country and demographic group and of laying the basis for later panel analysis.

See the link to the interactive map displaying the Democratic Resilience Index: [https://rpubs.com/encode/D5\\_3\\_heatmap\\_democratic\\_resilience\\_index](https://rpubs.com/encode/D5_3_heatmap_democratic_resilience_index)

### 5.2 COUNTRY-LEVEL VIEW

The default view presents a European map colored by the Democratic Resilience Index. The color scale is kept consistent across countries and waves, so users can make meaningful comparisons when switching between WVS wave 6 and WVS wave 7. The country-level view is the entry point into the tool: it allows users to identify broad geographic patterns and select individual countries for more detail.

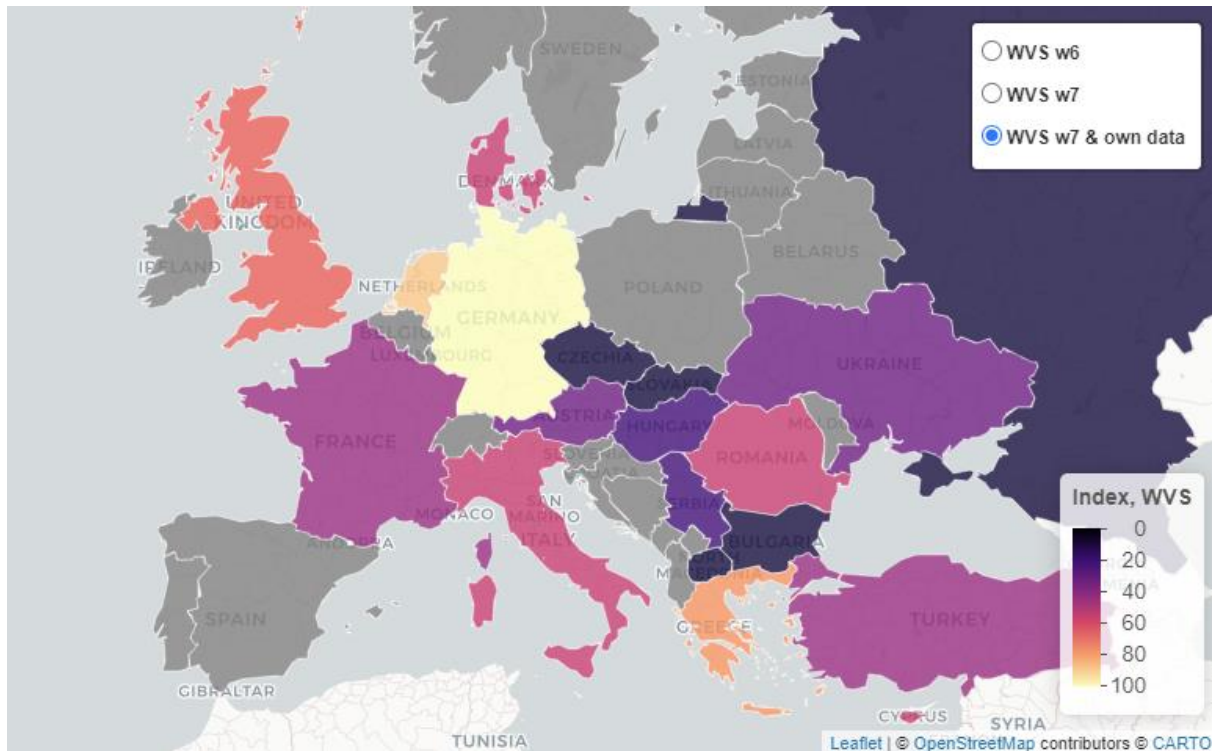


Figure 2: Democratic Resilience Index by country. The figure shows the WVS-based Democratic Resilience Index on a 0-100 scale for European countries with the required WVS data. Higher values indicate stronger estimated democratic resilience. See interactive map here: [https://rpubs.com/encode/D5\\_3\\_heatmap\\_democratic\\_resilience\\_index](https://rpubs.com/encode/D5_3_heatmap_democratic_resilience_index)

### 5.3 SOCIO-DEMOGRAPHIC BREAK-DOWN

When a user selects a country, the interface displays a breakdown of the index by gender and age group. The gender breakdown shows whether democratic resilience differs across men, women, and other categories where the data allow reliable aggregation. The age-group breakdown shows whether resilience is stronger among older or younger citizens.

The break-down view should be interpreted as descriptive evidence. Because subgroup estimates may be based on smaller samples, the interface should either report uncertainty intervals or clearly flag cases where subgroup sample sizes are too small for reliable interpretation.

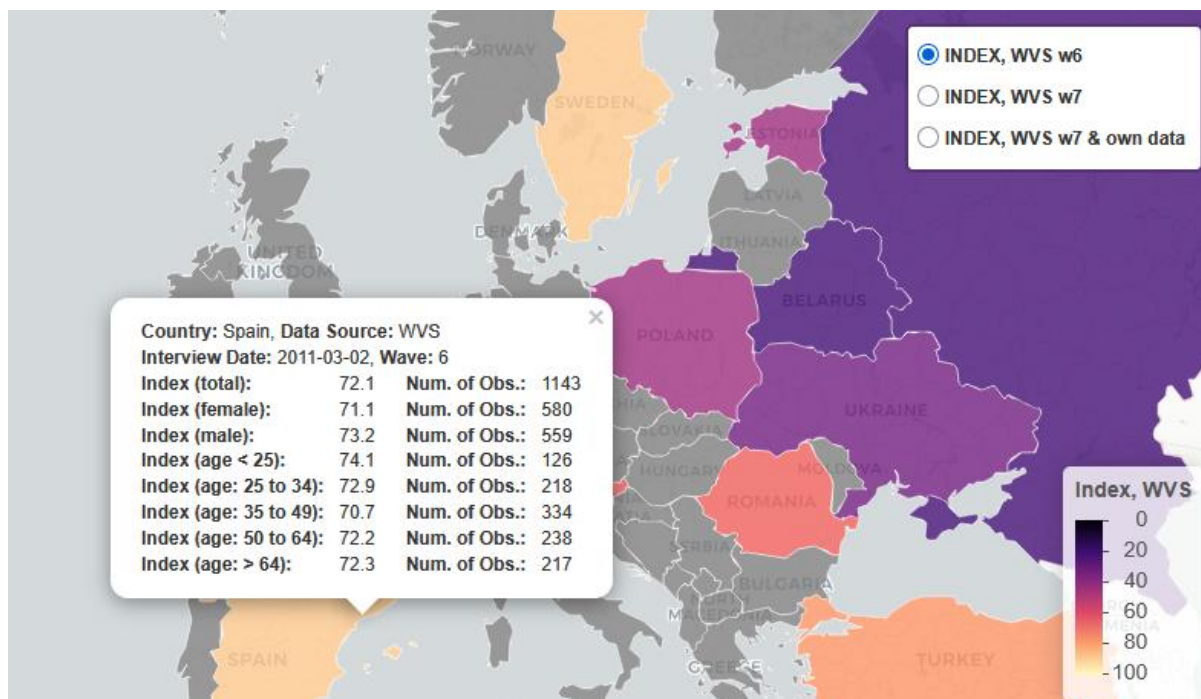


Figure 3: Democratic Resilience Index by demographic group for selected country. The figure shows index values by gender and age group. Subgroup estimates should be interpreted descriptively and with attention to sample size.

## 5.4 WAVE COMPARISON AND PANEL POTENTIAL

The interface allows users to switch between WVS wave 6 and wave 7 for countries observed in both waves. This is not a true individual-level panel, because WVS waves survey new samples rather than reinterviewing the same people. However, repeated country-level measurement provides a first basis for studying change over time and for motivating later panel-data collection using the validated short module.

## 6. EXTERNAL VALIDATION: COMPARISON WITH V-DEM

### 6.1 MOTIVATION

To assess whether the Democratic Resilience Index captures a meaningful dimension of democratic health, D5.3 compares it with the V-Dem Electoral Democracy Index. The purpose is not to show that the citizen-level index duplicates institutional democracy measures. Instead, the comparison asks whether the citizen-level resilience measure is positively associated with a widely used country-level democracy indicator while still measuring something distinct.

The Democratic Resilience Index differs from institutional democracy measures such as the V-Dem Electoral Democracy Index. V-Dem primarily captures country-level institutional features, such as electoral competition, suffrage, clean elections, and freedoms of association and expression. By contrast, the Democratic Resilience Index is built from citizen-level survey responses that have been validated against behavioral measures of Voice and Vote resilience. The comparison with V-Dem is therefore an external validity check, not an attempt to reproduce an existing institutional index.

### 6.2 RESULTS

*Table 8: Correlation of the Democratic Resilience Index and V-Dem Electoral Democracy Index*

| WAVES         | CORRELATION | P-VALUE | METHOD                                              |
|---------------|-------------|---------|-----------------------------------------------------|
| Wave 6        | 0.664       | 1.9%    | Pearson's correlation                               |
| Wave 7        | 0.456       | 5.0%    | Pearson's correlation                               |
| Waves 6 and 7 | 0.473       | 2.0%    | Pearson's correlation of average index across waves |
| Waves 6 and 7 | 0.577       | 17.5%   | Repeated-measures correlation coefficient           |

The correlations are positive and moderate in size. For WVS wave 6, the correlation is 0.664; for WVS wave 7, it is 0.456. The pooled average correlation across waves is 0.473. These results support the claim that the index measures something connected to national democratic quality. At the same time, the correlation is far from one, which means the index is not simply reproducing institutional democracy measures.



## 6.3 CAVEATS

Two caveats need to be noted. First, the number of countries with the required data is limited, so the estimates should be interpreted as indicative rather than definitive. Second, when analyzing changes over time for countries observed in both waves, the relationship between changes in the Democratic Resilience Index and changes in the V-Dem index is not statistically significant. In other words, levels of citizen-level resilience are meaningfully related to institutional democracy, but short-term changes may differ across the two measures.

## 7. CONCLUSIONS AND RECOMMENDATIONS

### 7.1 MAIN CONCLUSIONS

1. D5.3 translates the behavioral validation framework from D5.2 into a scalable monitoring tool.
2. The validated survey module retains strong predictive power while sharply reducing the number of questions required for measurement.
3. A WVS-based Democratic Resilience Index allows comparison across European countries with available data.
4. The heat-map interface makes the index accessible by country, gender, age group, and survey wave.
5. The positive correlation with the V-Dem Electoral Democracy Index supports the usefulness of the new measure while showing that it captures a distinct citizen-level dimension.

### 7.2 RECOMMENDATIONS FOR MONITORING AND POLICY

1. Use the validated short module for repeated, low-cost measurement of democratic resilience across countries.
2. Report heat-map results together with subgroup sample sizes and uncertainty indicators where possible.
3. Use the tool to identify groups and countries where democratic resilience appears comparatively fragile, then complement the heat-map evidence with qualitative and country-specific analysis.
4. Prioritize follow-up surveys using the validated module, so the project can move from repeated country comparisons toward stronger panel-based diagnosis.

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## 9. APPENDIX

### 9.1 INTERPRETATION OF EXPERIMENTALLY VALIDATED SURVEY QUESTIONS

Table 1 reports the survey questions that most consistently predict democratic resilience in the validation exercise. The signs indicate the direction of the association with resilience. A positive sign means that higher values on the scale, or selecting the relevant response option, are associated with higher resilience. A negative sign means that they are associated with lower resilience. These associations should be interpreted as predictive relationships, not as causal effects.

**1. Free elections.** Respondents who consider free elections essential to democracy are more likely to show democratic resilience in both the Voice and Vote measures. This confirms that attachment to electoral choice is closely linked to the willingness to protect core democratic rights.

**2. Fighting rising prices as the most important priority.** Choosing “fighting rising prices” over democratic voice or freedom of speech is negatively associated with resilience. This does not imply that economic concerns are anti-democratic. Rather, when economic security is prioritized over participatory rights, respondents are less likely to treat Voice and Vote as non-negotiable democratic goods.

**3. Not voting in the last national election.** Respondents who report not having voted in the last national election show lower resilience in both outcomes. This suggests that past electoral participation is a useful indicator of how strongly individuals value political voice and voting rights.

**4. Encouraging others to vote.** Respondents who say they would never encourage others to vote show lower Vote resilience. This item captures not only personal participation, but also willingness to support democratic participation among others.

**5. Equal treatment of immigrants in the labour market.** Disagreement with the statement that nationals should be prioritized over immigrants when jobs are scarce is positively associated with resilience. This points to a link between universalistic values and democratic resilience.

**6. Immigration and crime.** Respondents who reject the statement that immigration increases crime show higher Vote resilience. This suggests that inclusive attitudes toward out-groups are associated with stronger commitment to democratic rights.

**7. Protection against poverty.** Respondents who attach greater importance to government protection against poverty show higher Vote resilience. This indicates that support for social inclusion and protection of vulnerable citizens forms part of the broader democratic-resilience profile.

**8. Trust in family.** Lower trust in family is negatively associated with Voice resilience. This item should be interpreted cautiously because it appears within a broader trust battery. Its

predictive value may reflect the balance between close interpersonal trust and wider social trust, rather than family trust in isolation.

**9. Avoiding public-transport fares.** Respondents who consider fare evasion more justifiable show lower Voice resilience. This suggests that everyday rule-compliance is linked to respect for democratic procedures and public obligations. It may also indicate a weakening citizen–state social contract: democratic states rely on citizens’ compliance to finance public goods and welfare provision, while citizens’ willingness to comply depends partly on the belief that the state uses these resources fairly and effectively. When fare evasion is seen as acceptable, this reciprocal relationship between citizens and the state appears more fragile.

**10. Strong leader above the law.** Acceptance of a strong leader who is above the law is negatively associated with resilience in both Voice and Vote. This is one of the clearest indicators: democratic resilience is lower among respondents who are more open to unconstrained executive authority.

**11. Confidence in labour unions.** Lower confidence in labour unions is positively associated with Vote resilience in the current selection. This result should be interpreted with caution because it may be context-dependent. In some countries, distrust of unions may reflect historical or institutional legacies rather than a general rejection of civil society.

**12. Cheating on taxes.** Respondents who consider tax cheating more justifiable show lower Vote resilience. This reinforces the connection between democratic resilience and respect for shared rules. Similar to fare evasion, it may indicate a fraying citizen–state social contract: democratic states rely on citizens’ tax compliance to finance public goods and welfare provision, while citizens’ willingness to comply depends partly on the belief that the state uses these resources fairly and effectively. When tax cheating is seen as acceptable, this reciprocal relationship between citizens and the state appears more fragile.

**13. Perceived bribery in public services.** Respondents who think that ordinary people frequently need to pay bribes, give gifts, or do favours to access services show lower Vote resilience. This suggests that perceived corruption can weaken citizens’ attachment to democratic rights and institutions.

**14. Freedom of opposition parties.** Respondents who consider it important that opposition parties can criticize the government show higher Vote resilience. This item captures support for pluralism, accountability, and democratic contestation.

**15. Government explanation of decisions.** Respondents who value government explanations to voters show higher Voice resilience. This suggests that transparency and justification by public authorities are associated with stronger democratic commitment.

**16. Discussing politics before voting.** Greater emphasis on voters discussing politics with people they know is negatively associated with Voice resilience in this selection. This result should be interpreted cautiously. One possible interpretation is that the item may capture social conformity within close networks rather than independent deliberation.

**17. Social media use for political information.** Very active use of social media for political information is negatively associated with resilience. Because the scale runs from daily use to

never using social media, the positive coefficient means that less frequent use is associated with higher resilience. This connects to WP3: social media users are a selected group, and those who use social media intensively may be more exposed to emotionally charged, polarizing, or low-trust political content. In this sense, intensive social media use may be associated with lower democratic resilience, or with behaviours and attitudes that contribute to lower resilience.

## LIST OF ACRONYMS

| ACRONYM | FULL NAME                                                               |
|---------|-------------------------------------------------------------------------|
| ASM     | ASM Research Solutions Strategy                                         |
| D5.2    | Deliverable 5.2                                                         |
| D5.3    | Deliverable 5.3                                                         |
| ENCODE  | Unveiling emotional dimensions of politics to foster European democracy |
| ESS     | European Social Survey                                                  |
| LASSO   | Least Absolute Shrinkage and Selection Operator                         |
| OLS     | Ordinary Least Squares                                                  |
| UCPH    | University of Copenhagen                                                |
| UNIVIE  | University of Vienna                                                    |
| V-Dem   | Varieties of Democracy                                                  |
| WP      | Work Package                                                            |
| WVS     | World Values Survey                                                     |

