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Mapping the Digital Landscape: An Analysis of Party Differences between Conventional and Digital Policy Positions

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***Abstract*—**Although digitization is a buzzword in almost every election campaign, the political parties leave voters largely in the dark about their specific positions on digital issues. In the run-up to the 2019 elections in Switzerland, the 'Digitization Monitor' project (DMP) was launched in order to change this situation. Within the framework of the DMP, all 4,736 candidates were surveyed about their digital policy positions and values. The DMP is designed as a digital policy supplement to the existing 'smartvote' voting advice application. This enabled a direct comparison of the digital policy attitudes according to the DMP with the topics of the 'smartvote' questionnaire which are comprehensive in content but mainly related to conventional policy areas. This paper's main research goal is to analyze and visualize possible differences between conventional and digital policy areas in terms of response patterns between and within political parties. The analysis is based on dimensionality reduction methods (multidimensional scaling and principal component analysis) for the visualization of inter-party differences, and on standard deviation as a measure of variation for the evaluation of intra-party unity. The results reveal that digital issues show a lower degree of inter-party polarization compared to conventional policy areas. Thus, the parties have more common ground in issues on digitization than in conventional policy areas. In contrast, the study reveals a mixed picture regarding intra-party unity. Homogeneous parties show a lower degree of unity in digitization issues whereas parties with heterogeneous positions in conventional areas have more united positions in digital areas. All things considered, the findings are encouraging as less polarized conditions apply to the debate on digital development compared to conventional politics. For the future, it would be desirable if in further countries similar projects to the DMP could emerge to broaden the basis for conclusions.

***Keywords*—**Comparison of political issue dimensions, digital awareness of candidates, digital policy space, party positions on digital issues.

I. Introduction

DIGITAL transformation as cross-cutting development permeates all aspects of our lives: the state, the economy, our privacy [1]. However, the way political actors react to digitization and how it translates into democratic decision-making is still underexplored. This applies in particular to political parties and their representatives that form important links between citizens and the political elite. The aggregation of political demands, their translation into political programs and their articulation within the political institutions belong to the most important functions of parties [2]. Especially in multi-layered upheaval phases, such as those caused by digital development, citizens expect parties to offer positive perspectives and a credible framework for shaping digital transformation.

Digital change triggers different political reactions: In some policy areas, digitization may lead to a partial softening of previously rigid political conflicts as digitization opens up new problem-solving approaches. The regrouping and re-arrangement of political majorities can serve a solution-oriented policy and the development of common visions. At the same time, digital development may harbor the nostalgia for a return to an earlier, better time. Some disruptive political events in recent years most likely are a consequence of inadequate political responses to the challenges of digitization and that policy makers have done little to build trust. It is striking how little strategic competence political parties have developed regarding digitization and how strongly this field is occupied by authorities and administrations. This situation is preventing citizens to get an overview of party positions on digitization and to make an informed choice at the ballot box.

Against this background, the DMP was launched before the 2019 Swiss parliamentary elections. The project represented a first attempt to anchor the digitization issue in people's minds and to put the topic in all its breadth on parties' election campaign agendas. The aim was to raise awareness among candidates, parties, the media and the public. At the same time, transparency was to be created about political positions regarding important dimensions of digitization.

This paper provides an analysis of the DMP data addressing the following questions:

1) How can the DMP data be used and what findings can be derived in relation to the digital policy positions of the parties (particularly in comparison to conventional policy areas)?
2) What insights can be gained from the DMP for the implementation of future projects with a similar focus?

II. Data Basis

In the run-up to the 2019 Swiss elections, candidates as well

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as party officials constantly used empty campaign phrases emphasizing the importance of digitization. However, references to concrete policy positions in this regard remained scarce which are demonstrated, for example, by the lack of position papers from the parties on digitization, or by the low quantity and quality of proposals submitted to parliament on this subject [3]. The basic idea behind the DMP was to place the issue of digital transformation more visibly on the election campaign agenda and to contribute to raising awareness of the topic and to a deeper engagement with the issue among candidates, the media and voters. Candidates should make their current attitude and future visions regarding a digital society transparent in order to provide voters with a suitable informational basis for their vote choice.

The DMP's core element was the questionnaire which was compiled in a collaborative effort by the communities of the five project partners[1]. The DMP survey comprised of 20 questions, some of which were divided into several sub-questions which resulted in a total of 53 items. In addition, the project was also provided with the candidates' answers regarding a selection of four items from the Swiss voting advice application (VAA) "smartvote" with a direct link to digitization[2].

The questions were methodologically and thematically broad-based. On the one hand, some questions referred to the candidates' personal assessments and values about digital development, like e.g. "How do you assess the current effects of digitization?" or "What is your position on the following statement: The ongoing digitization offers significantly more opportunities than risks". On the other hand, questions were asked on very specific issues, for instance "Do you support the experimental creation of digital municipalities to test new forms of democratic citizen participation and decision-making (e.g. participatory budgets)?" or "Should Switzerland introduce a fundamental right to digital integrity in its constitution, including the right to digital self-determination and the right to be forgotten?"

The DMP was designed as opt-in survey within the widely used "smartvote" VAA platform (for an overview of VAAs and their usage see [4], [5]). This means that all candidates from all parties have been given free access to the DMP questionnaire.

An initial finding can be derived from the fact that only 21.2% of the 4,736 candidates completed the DMP survey[3]. By way of comparison: with "smartvote", which comprised 75 questions, the response rate was almost 85%, and the comprehensive candidate survey of the official Swiss Election Study (Selects)[4] had a response rate of 45%. Despite the high level of media coverage and rhetorical lip services by party officials, in fact, digitization appears to be much less important and only arouses moderate interest among candidates. This also demonstrates that the DMP's goal of raising the awareness for the consequences of digital transformation remains urgent. The good news, on the other hand, is that despite the rather low response rate, the DMP data are nevertheless highly informative. By means of a comparative analysis of the responses from the DMP and the "smartvote" data it could be shown that despite the considerable differences in the participation rate there is no systematic bias between the two tools: Participants in the DMP have very similar response patterns compared to "smartvote" participants, which means that the analysis of DMP data aggregated at party level still provides a meaningful overall picture [6].

III. Empirical Analysis

A. Party Positions on e-Democracy Issues

In addition to the awareness objective, the DMP intended to create a data basis to measure the sentiment among political actors towards digital development. The insights gained in this way can be helpful in shaping the future of the digital transition since they provide information about the issues on which common views predominate or where strong polarization among candidates or parties prevails. Referring to the extended analysis by [6], this section summarizes the main findings regarding digital democracy and digitization policy.

Within all major Swiss parties (see details in Section III *B*), a remarkably positive basic attitude towards digitization can be observed (both with regard to the current situation and the future): In each party, more than 87% say that digitization has "rather positive" or "clearly positive" overall effects. Furthermore, the results of the DMP point out that the actual level of political conflict of some issues is massively overblown by Swiss media. This currently applies to the expansion of the 5G mobile network, to applications in the area of e-health (electronic patient files), to the introduction of an e-ID, and to the debate on tightening Swiss data protection regulations. In these areas, DMP data analysis clearly shows that resistance towards these issues among candidates and parties is significantly lower than suggested by media reports. Thus, the DMP data are useful to identify areas in which a very loud and (social) media-savvy but nevertheless relatively small group of people is trying to influence public opinion in its favor.

There are, of course, also topics that are characterized by fundamental ideological cleavages. On the one hand, there is the classic left-right antagonism, which essentially addresses the role of the state and the extent of state intervention in the economy. In the field of digital development, many questions arise about new state regulations. Examples of this are governmental restrictions for the operators of online

[1] Bern University of Applied Science (project lead), Universities of Geneva and Zurich, Swiss Internet and ICT industry association (Swico), and the voting advice platform "smartvote".

[2] For DMP questionnaire (German, French, and Italian) and data, see [9]. For "smartvote" questionnaire to the 2019 Swiss election, see [10]. The four digitization-related items comprise (1) expansion of 5G mobile network, (2) stronger regulation of online brokerage services (like Airbnb and Uber), (3) the introduction of e-voting, and (4) the candidates' position on the statement "The ongoing digitalization offers significantly more opportunities than risks."

[3] The response rate increases to 26.6% if partially completed questionnaires are considered.

[4] See [11].

platforms, be it social media or online brokerage services. On the other hand, there are questions where a conflict between progressive (or liberal) attitudes and defensive (or conservative) positions can be identified. Particularly regarding questions addressing general personal values and attitudes towards digitization, parties ideologically inclined towards liberalism tend to be optimistic, whereas classic left-wing and conservative parties tend to be more skeptical. This is due to different motivations, though: while left-wing parties are concerned about privacy and employee protection, conservatives are more concerned about preserving their traditions and identity, which seem to be threatened by rapid digital development.

The DMP also points to issues that find general support across all parties. For example, in principle, all parties agree with stronger measures to combat the negative excesses of social media platforms (e.g. dissemination of "fake news"). And we find even majorities claiming that social media platforms should be subject to the same rules as traditional media. The controversial point, however, is whether this should be done by means of state regulation or through self-regulation of the industry (which is subject to the mentioned left-right conflict).

One last point is noteworthy: According to DMP data, the use of artificial intelligence (AI) in the context of state decisions, for example, in the area of jurisdiction or administrative decisions, is met with great skepticism as there is no majority in any party in favor of accelerating this development. Obviously, there is a considerable gap between the assessment of political actors and the role AI already plays in research and industry.

B. Differences between Conventional and Digital Questions

The following sections are devoted to the question of how response patterns differ between "conventional" policy areas (i.e., issues without obvious links to the digital transformation) on the one hand and digitization issues on the other. This is relevant because the patterns of political conflict define the structure of the discourse on digital issues and ultimately the shape of future policies on digital development. The analysis thus provides an indication of how difficult (or how easy) consensus-building between and within the parties in the field of digitization could become.

Based on the observations mentioned in the section above that the (Swiss) parties find it difficult to integrate new digital issues into their programs and election platforms, we formulate the following two working hypotheses:

1) Digital issues have a lower degree of inter-party polarization compared to conventional policy areas (i.e., the positions of the parties or candidates overlap more strongly in the digital area than in conventional spheres).
2) In the digital sphere, the parties have a lower degree of internal party unity than in conventional policy areas (i.e., the average standard deviation of the answers to digital questions is higher than to conventional issues).

To test the hypotheses, two different sets of questions have been defined from the questionnaires of the "smartvote" VAA and the DMP: The first set contains 57 non-digitization-related "smartvote" items, the second set contains 36 questions on digitization (33 of which were taken from the DMP and three from the "smartvote" survey)[5]. Care was taken to select similar types of questions, that is all questions concerning specific political issues (as opposed to, for example, questions about values or sentiments). In addition, attention has been paid to ensure that the answer options for all selected questions are scaled at least ordinally, i.e. they can be put in a logical order. Moreover, all scales were standardized to the value range from 0 to 100.

The analysis focuses on the candidates of the six largest Swiss parties which accounted for approximately 90% of the voters in the 2019 elections. These are (in order of political positioning from left to right): Greens (GP, party color: light green), Social-democrats (SP, red), Green-liberals (GLP, olive green), Christian-democrats (CVP, orange), Economic liberals (FDP, blue), and the national-conservative Swiss People's Party (SVP, dark green). In this paper, we present the results of the analysis as far as possible in a generalized manner. For this reason, a detailed description of the Swiss party system is not given here (for details, see [7]).

Of the total of 1,235 available answer sets, only candidates who completed both the DMP questionnaire and the "smartvote" survey were considered for the present analysis (N = 990).

1) Positions in the Political Space

We analyzed two sets of questions (conventional/digital) separately using the method of multidimensional scaling (MDS). Each candidate is assigned a position in a two-dimensional political space defined by the answer patterns in the 57 or 36 questions (for the application of MDS analysis in political science, see [8]). For the correct interpretation of the results it should be noted that the two calculated two-dimensional maps do not represent a common space. In addition, the coordinates in each map reflect relative positions (relationships of the points to each other) which are not part of an absolute frame of reference. This means that positional differences between the two calculated maps cannot be interpreted.

Fig. 1 shows that the arrangement of the candidates or parties between the two maps does not differ fundamentally. In particular, the line-up on the first dimension, which is considered the dominant left-right axis in many countries, shows great similarities between the two plots. Pearson's correlation coefficient between the coordinates of the conventional and the digital configuration of the political space amounts to $r = 0.821$ for the first dimension and $r = 0.621$ for the second. It cannot be overlooked, however, that the between-party discrimination is weaker in the visualization of the digital policy space (Fig. 1 (b)) than in the conventional policy space (Fig. 1 (a)). The transitions between the dot clouds are somewhat smoother in the digital policy space, whereas in the conventional policy space the party clouds

[5] The 33 items from the DMP questionnaire (cf. footnote 2) comprise questions DM_05 to DM_08, DM_10 to DM_17, DM_19, and DM_20.

overlap less.

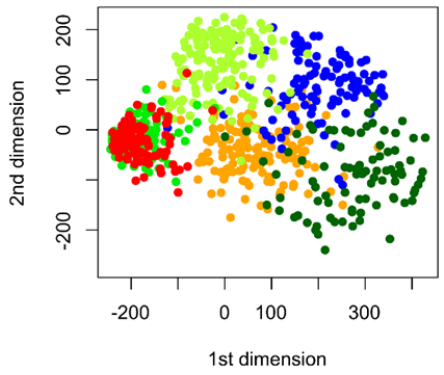

Fig. 1 (a) Spatial analysis of candidate positions (MDS coordinates), defined by 57 conventional policy issues. Party colors: see text

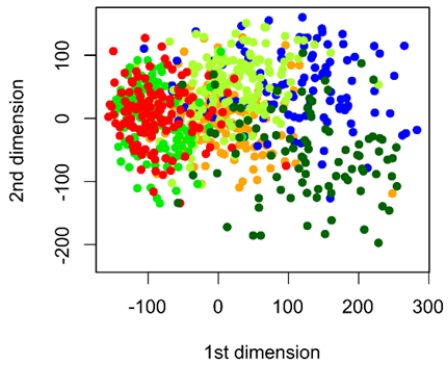

Fig. 1 (b) Spatial analysis of candidate positions (MDS coordinates), defined by 36 digitization issues. Party colors: see text

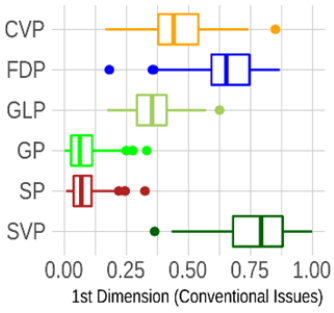

Fig. 2 (a) Boxplot of MDS coordinates of dimension 1, conventional issues (standardized scales)

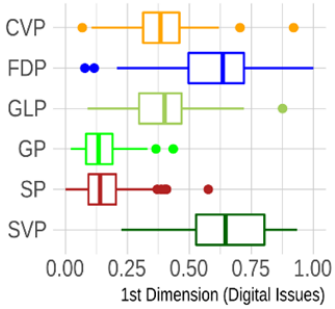

Fig. 2 (b) Boxplot of MDS coordinates of dimension 1, digitization issues (standardized scales)

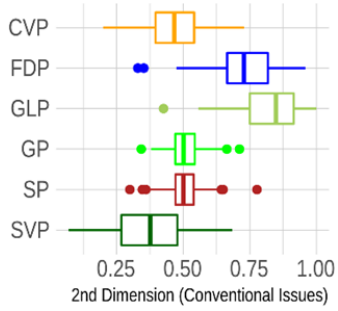

Fig. 2 (c) Boxplot of MDS coordinates of dimension 2, conventional issues (standardized scales)

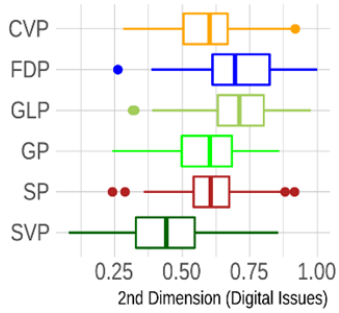

Fig. 2 (d) Boxplot of MDS coordinates of dimension 2, digitization issues (standardized scales)

TABLE I
DIGITIZATION QUESTIONS CONTRIBUTING AT LEAST 5% TO THE DEFINITION OF THE TWO-DIMENSIONAL POLITICAL SPACE (BASED ON CORRESPONDENCE ANALYSIS RESULTS)

	Item	Contribution to Dimension
Dim. 1	1.1 Technological progress and voluntary action enough to ensure that digitization contributes to sustainable development	17.6%
	1.2 Self-regulation instead of state regulation for social media and similar online platforms	15.9%
	1.3 No new privacy protection to allow good AI-based products	11.8%
	1.4 Expansion of 5G mobile network	7.0%
	1.5 Introduction of unconditional basic income due to digitization	6.6%
	1.6 Introduction of international "robot tax"	5.4%
	1.7 Stricter regulation of online brokerage services like Airbnb and Uber	5.3%
Dim. 2	2.1 Increased teaching of ICT skills in compulsory education	19.5%
	2.2 Increased teaching of ICT skills at higher education institutions	10.8%
	2.3 Use of AI to support state decisions	9.1%
	2.4 Technological progress and voluntary action enough to ensure that digitization contributes to sustainable development	8.0%
	2.5 Easier work permits for foreign ICT professionals	5.8%
	2.6 Self-regulation instead of state regulation for social media and similar online platforms	5.7%
	2.7 Introduction of e-collecting (online collection of signatures for initiatives/referenda)	5.0%

Dim. = Dimension.

The boxplots in Figs. 2 (a)-(d) depict the distributions separately for the two dimensions. The distribution for the first dimension (left-right) is shown in Figs. 2 (a), (b), the same for the second dimension in Figs. 2 (c), (d). The boxplots

underscore the previous impressions from Fig. 1 since they show that party positions on digitization issues are closer together and thus less polarized than the positions on conventional issues. In addition, we applied correspondence analysis (principal component analysis for categorical data) to determine which questions make the strongest contribution to the definition of the two dimensions in the digital policy space. Table I lists all items contributing more than 5%. The analysis shows that the issues which strongly determine the first dimension are often directly or indirectly related to government regulatory issues. There is also a clear difference in content to the issues that define the second dimension. Two questions contribute significantly to the definition of both dimensions.

2) Party Unity

The MDS analysis provides only a rough overall picture which is reduced to two dimensions (see [8]). Moreover, due to the caution required when interpreting MDS results (see previous section), Figs. 1 and 2 might be visually deceptive for the evaluation of party cohesion. Thus, in order to obtain an accurate assessment of the internal coherence of the parties, the average standard deviation was calculated for the 57 conventional items and the 36 digitization issues respectively. The results of this evaluation (see Table II) give a clear picture: Parties with a high degree of party unity in conventional policy areas are less homogeneous in digitization questions (this applies to SP, GP and GLP). On the other hand, parties that are less united in conventional policy areas tend to show greater homogeneity in digitization issues (this applies mainly to the CVP, but also to the FDP and SVP). These two groups are, on the one hand, parties to the left of the center and, on the other, parties to the right of the center. Whether this finding applies exclusively to the Swiss case or whether it holds up in an international perspective, too, must remain open here.

The assessment of the two hypotheses formulated at the beginning of this chapter leads to different conclusions: The first hypothesis is confirmed, according to which digital issues show a lower degree of inter-party polarization compared to conventional policy areas. Regarding the second hypothesis, which postulated a lower degree of party unity in digitization topics, data analysis has revealed a mixed picture: In parties with homogeneous positions in conventional policy areas, a lower degree of unity can be observed in digitization issues. On the other hand, parties that act heterogeneously in conventional areas are more homogeneous in digital areas. In other words, the level of party unity between the six parties converges on digital issues. The overall conclusion of this section is that the parties have more common ground in issues on digitization than in conventional policy areas. This applies both to the polarization between the parties and to the unity within the parties. This finding is encouraging as it presents an opportunity that the future debate on digital development of society, the state and the economy can take place under less polarized conditions than has otherwise become customary in current politics.

TABLE II
AVERAGE STANDARD DEVIATION AND DIFFERENCE BY PARTY (MIN .= 0, MAX .= 100)

Party	No. of Cases	Avg. Std. Dev. (57 conv. issues)	Avg. Std. Dev. (36 digital issues)	Diff.
CVP	134	31.5	26.8	-4.8
FDP	107	32.4	31.4	-1.1
GLP	153	24.3	27.0	+2.7
GP	128	17.2	22.2	+5.0
SP	127	17.2	24.2	+7.0
SVP	90	33.3	33.1	-0.2

No. = Number, Avg. = Average, Std. Dev. = Standard Deviation, Diff. = Difference.

IV. CONCLUSION

The previous sections have shown that the DMP does not only serve to raise awareness among political actors, the media and the electorate for the changes and challenges brought by digitization, it also provides useful insights about sentiments, positions and chances of success for digitization policies. Our analysis revealed the most important patterns and dimensions in the debates on various topics of future digital development. As the results show, digitization issues fit into the familiar political space. There is, however, a greater chance of reaching cross-party consensus on digital issues than on conventional issues in present-day politics.

The DMP has considerable potential in at least three directions. First, it would be enriching to set up similar projects in other countries in order to be able to draw comparisons. Provided that there is enough coordination in terms of content and methodology, precious insights could be gained into the attitude of political actors to digitization across different regions and political systems. Such comparative data are particularly interesting for issues that can only be resolved through international cooperation. Possibly the best starting point for such projects are existing non-partisan VAAs in the countries concerned, which deal with the recording of political positions anyway and which have the necessary know-how, the contacts to the parties and candidates, the infrastructure and, as non-partisan organizations (universities or NGOs), also a positive reputation. In the case of the cooperation between the DMP and "smartvote" VAA, this approach has proven to be successful, even if the participation of the candidates has not yet reached the desired level. As a first-time pilot project, the DMP in 2019 decided not to implement its own VAA-like web application, which would have enabled citizens to compare themselves directly with the candidates. A fully developed project would have to consider direct communication and interaction with citizens, especially since our experience with media coverage was rather sobering[6]. Here, too, cooperation with existing VAA tools seems a good idea.

Second, the DMP currently focuses on the candidates or parties before elections. An expansion to include additional groups such as senior and management staff of the public

[6] The DMP's findings were echoed in some specialized ICT newspapers, but despite our efforts none of the major newspapers or broadcasters showed interest.

administration, experts from the businesses or NGOs (e.g., civic tech sector), and representative surveys of citizens would open up a holistic perspective by comparing perceptions of the challenges and future prospects of digitization and drawing conclusions for shaping digital development in a way that is acceptable to society.

Finally, these enhancements of the DMP could, in combination with a permanent monitoring of the actual course of the political debate, including government actions and voting behavior in parliament, provide the base for a well-grounded overview and assessment of the digital landscape in our respective countries.

REFERENCES

[1] Jacob, D., Thiel, T.: Einleitung. In: Jacob, D., Thiel, T. (eds.) Politische Theorie und Digitalisierung, pp. 7-26. Nomos, Baden-Baden (2017).
[2] Pettitt, R. T.: Contemporary Party Politics. Palgrave Macmillan, Houndmills / Basingstoke (2014).
[3] Neuroni A., Kissling-Näf I., Riedl R.: E-Government und smarter Staat: Die Schweiz auf halbem Weg. In: Stember J., Eixelsberger W., Spichiger A., Neuroni A., Habbel F.-R., Wundara M. (eds.) Handbuch E-Government, pp. 163-180. Springer Gabler, Wiesbaden (2019).
[4] Marschall, S.: Profiling users. In: Garzia, D., Marschall, S. (eds) Matching Voters with Parties and Candidates: Voting Advice Applications in Comparative Perspective, pp. 93–104. ECPR Press, Colchester (2014).
[5] Germann, M., Gemenis, K.: Getting out the vote with voting advice applications, Political Communication 36(1),149–170 (2019).
[6] Fivaz, J, Neuroni, A., Schwarz, D., Ferri, C.: Digitalisierungsmonitor 2019. Analysebericht mit Fokus auf digitale Demokratie und Digitalisierungspolitik in der Schweiz. BFH, Bern (2020).
[7] Ladner, A.: Die Positionierung der Schweizer Parteien im internationalen Vergleich. In: Mazzoleni, O., Meuwly, O. (eds.) Die Parteien in Bewegung. Nachbarschaft und Konflikte, pp. 201-228. NZZ Libro, Zürich (2013).
[8] Hutter, S., Kriesi, H.: Politicizing Europe in times of crisis. Journal of European Public Policy 26(7), 996–1017 (2019).
[9] FORSbase: Digitalisierungsmonitor 2019 (dataset), https://forsbase.unil.ch/project/study-public-overview/16500/0/, last accessed 2020/05/13.
[10] Smartvote: National Council elections 2019, https://www.smartvote.ch/de/group/2/election/19_ch_nr/home, last accessed 2020/05/13.
[11] FORS: Selects (Swiss Election Study), https://forscenter.ch/projects/selects/, last accessed 2020/05/13.