Data, decisions and Strategy 2030:
Creating a data-driven decision space

Initial findings - January 2020

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Acknowledgments
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Contents

List of acronyms

Executive summary

Introduction

Scope and outcomes of the study

Theory

Overview

1. Analysis of the sample
   1.1. Structure of the survey
   1.2. Who contributed to the survey?
   1.3. What types of decisions were shared?

2. Initial findings
   2.1. Exploring results from the dyads
       a. There are more cases of data overload than data scarcity
       b. Reviews and feedback inform decisions, too much even
       c. Decision processes can sometimes be too participatory
   2.2. Exploring results from the triads
       a. Decisions are based on experience more than data or evidence
       b. Dealing with people is the main obstacle in decision-making
       c. Data is used more to confirm decisions than to motivate them
   2.3. There is a strong RC decision-making culture
       a. Dyads are the same across groups
       b. Triads are the same across groups

3. Hypothesis test results
   3.1. Hypotheses developed from the data and workshop
   3.2. Test results confirm there is a strong RC decision-making culture

4. Recommendations

Conclusion

References

Annexes
### List of acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI</td>
<td>Artificial Intelligence</td>
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<tr>
<td>FDRS</td>
<td>Federation-wide Databank and Reporting System</td>
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<tr>
<td>ICRC</td>
<td>International Committee of the Red Cross</td>
</tr>
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<td>IFRC</td>
<td>International Federation of Red Cross and Red Crescent Societies</td>
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<tr>
<td>MENA</td>
<td>Middle East and North Africa</td>
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<td>ML</td>
<td>Machine Learning</td>
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<td>NS</td>
<td>National Society</td>
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<td>NSD</td>
<td>National Society Development</td>
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<td>PAL</td>
<td>Participatory Action Learning</td>
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<td>PAR</td>
<td>Participatory Action Research</td>
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<td>RC</td>
<td>Red Cross and Red Crescent Movement</td>
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<td>SM</td>
<td>SenseMaker®</td>
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</tbody>
</table>
Executive summary

Through Strategy 2020 and Strategy 2030, the IFRC has shown a desire to embrace and harness the promises of the Data Revolution. Changes include moving towards more data-driven solutions, greater data literacy, greater uptake of data in decision-making and the adoption of Machine Learning (ML) systems. The shift is expected to occur at all levels, from volunteers through to senior leaders, and rests heavily on skills-building and data literacy to improve decision-making in the organisation.

This study is intended to build awareness in the Secretariat and among NS on how data-driven decisions can be taken in order to strengthen NS and the quality of RC operations and services. It will also serve to provide evidence for improving data literacy and FDRS data and analysis. These aims will be achieved by beginning a tracing of the contours of the decision space within which the RC operates. This report presents initial findings on general trends in decision-making in the Movement, focusing exclusively on the quantitative data collected from the survey. We gathered 1218 responses from every region and global staff. This included responses from NS, the IFRC, the ICRC and Reference Centres, from volunteers to senior leaders. The typical response, however, comes from young NS volunteers from the Americas.

SenseMaker® survey

The survey was carried out online and is based on the SenseMaker® (SM) framework, a method that combines the objectivity of numbers with the persuasiveness of stories. People naturally exchange micro-narratives with each other — short, open-ended stories about their experiences — creating and sharing new knowledge, inspiring others into action. SM works with this natural process — letting people share the experiences they think others should hear. People type, record or post a picture of a key moment (similar to a social media status update) on a specially configured app or webpage. SM's original ‘tagging’ method lets those who know the context best add layers of meaning to their own narratives. Tags provide ‘hard’ quantitative data that reveal meaning without machine interpretation of text or expert analysis. SM outputs are visual landscapes where all narratives are displayed as dots. Like pixels in a digital photograph, these cluster to form rich pictures of what’s really happening and why. SM is about detecting weak signals of emerging opportunities or threats, and triggering insights: sudden shifts to better stories that lead to breakthrough action.

We used two SM tagging tools. The first are triangles called triads, where each end of the triad represents a concept or quality. The closer respondents placed themselves to any point, the more that quality describes their narrative compared to the other two qualities. We also used dyads, which consist in a straight line connecting two opposing ideas or qualities. Dyads attempt to capture the idea of the Golden Mean, which is the desirable middle point between two extremes. The desired outcome for a dyad is therefore for answers to gather around the centre point of the line. Since each dyad extends from 0 to 1, the expected average and median is 0.5. Finally, we asked respondents some questions about themselves, such as their age, gender, and organisation.

Initial findings

Three dyads were used to test three hypotheses.

- We found that respondents tend to suffer from information overload (median response = 0.7), with 45% of data points lying above the desired area (0.4 to 0.6);
- Responses indicate reviews are used extensively, too much even (median response = 0.69), again with 64% of data points lying above the upper limit for expected values;
- Overall, respondents appear somewhat content with the top-down v. bottom-up balance in the RC (median response = 0.41). Nonetheless, nearly half of all respondents indicate the decision-making process was too participatory and 30% say it was too hierarchical. We
conclude that decision-making tends towards balancing participation and hierarchy well, but can be too participatory.

We also used three triads to examine some of our assumptions.

- Decisions are mostly based on personal experience rather than data or advice from others in 54% of the stories in the sample, and on data in 23% of stories;
- Dealing with other people is the major obstacle in decision-making processes in 47% of stories, followed by organisational processes with 27% of stories;
- Information is mostly used to confirm decisions once they are made in 45% of the stories in the sample, and helps inform the decision-making process in 31% of stories.

**Hypothesis test results**

We carried out a statistical analysis between the different groups in the sample – respondents’ age, gender, position, organisation, how they felt after the decision, and whether the decision was taken in a group or alone – and found few differences in responses between groups. Furthermore, a data interpretation workshop was held at the IFRC in Geneva in December 2019 to present the initial findings and to gather questions and comments from participants. These were turned into hypotheses which we tested at the same time. We found that:

- NS respondents feel more negative about decisions which are based on advice;
- Managers and senior leaders feel decision-making processes balance hierarchy and participation well;
- Managers tend to balance review use better than other groups;
- Decisions triggered by managers or leadership balance participation and hierarchy better;
- Decisions which are more participatory or taken as a group do not lead to better use of information or reviews;
- There is no gender difference in how decisions are made;
- reliance on experience increases slightly with age.

**Recommendations**

Based on the findings we developed, several key recommendations have been developed which are summarised in Table i below.

<table>
<thead>
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<th>Challenge</th>
<th>Recommendation</th>
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| Considering most of our decisions are based on personal experience and reviews, and suffer from information overload, how can we improve use of data in decision-making processes? | - In-depth analysis of existing SM stories  
- Understand barriers to evidence use through qualitative methods  
- Improve staff and leadership data literacy  
- Test Participatory Action Research (PAR) and Learning (PAL) approaches, starting with NS |
| How can we monitor decision-making periodically to observe shifts and inform leadership training on data- and evidence-driven decisions? | - Continue the SM exercise and scale-up to more NS  
- Integrate complexity thinking into leadership training |
| How do we integrate decision-making in existing IFRC/NSD initiatives? NSD leadership training, Learn to Change, FDRS, etc. | - Investigate and discuss on how FDRS and GO can be optimised as decision tools  
- Consider decision-making in terms of personal mastery, team learning, complexity, systems theory  
- Continue SM exercise as a decision log |
Introduction

Through Strategy 2020 and Strategy 2030, the IFRC has shown a desire to embrace and harness the promises of the Data Revolution. Changes include moving towards more data-driven solutions, greater data literacy, greater uptake of data in decision-making and the adoption of Machine Learning (ML) systems. The shift is expected to occur at all levels, from volunteers through to senior leaders, and will require the adoption of new habits, systems and, most importantly, new skills and knowledge. This requires a shift in people, processes and culture. Although the question of evidence and data production and use at the IFRC has been raised for several years (Mohammed 2012; Corboz 2015), only recently has the topic received treatment at a Federation-wide scale (Hankey and Pictet 2019). This study builds on this work to provide an initial glimpse into decision-making processes and how data is used at the RC.

Scope and outcomes of the study

This project is intended to build awareness in the Secretariat and among NS on how data-driven decisions can be taken in order to strengthen NS and the quality of RC operations and services. It will also serve to provide evidence to improve data literacy and FDRS programs.

The project aims are to provide practical recommendations to improve current decision-making processes by:

- Analysing the ways data and evidence are used in decisions at the secretariat and in National Societies at all levels, including volunteers;
- Identifying the factors that encourage or hinder the use of data and evidence in decisions;
- Studying and sharing positive cases of data-driven decisions to recommend practical solutions in terms of information management, organisational learning and management systems;
- Informing leadership and organisational learning interventions including the Management Induction Course and other middle to senior leader programs such as Solferino Academy and volunteer leadership courses.

The intended outcomes of the project are as follows:

- A greater focus on evidence and data in IFRC training and learning initiatives;
- Better and wider use of evidence and data in all aspects of RC work;
- Robust evidence on the use of evidence to improve the production and presentation of data in management systems.

Theory

Addressing these questions in decision-making requires an understanding of the decision-making landscape in the RC. Although this report only presents the initial findings and does not bring the data into discussion with theory, we briefly outline our theoretical assumptions. Decisions are effectively conditioned not only by the type of decision, what we know (Citroen 2011), what we expect from the decision (Doya 2008), but also by our age, gender (Best and Charness 2015; Rossi et al. 2019), how we are feeling (Lerner and Keltner 2000), and by unconscious patterns of thought (Newell and Shanks 2014). Part of the literature on psychology examines how these factors lead to the adoption of different decision-making strategies, such as quick and intuitive responses, slow and deliberate decisions, or decisions based on interpersonal understandings (Delaney et al. 2015). Decisions are also shaped by the enablers and blockers in the environment (Snowden 2015), and by our perception of cost, success and risk (Doya 2008), for example. These elements define the complexity of the environment and put more limits on our rational capacities – the more complex the environment, the harder it is to understand and predict (Lee 2011).
Drawing on the notion of 'problem space', which describes the problem-solver and environment within which they carry out their problem-solving (Ibid., pp. 10-13), we suggest the notion of decision space. A decision space refers to the structure of the environment within which a decision is being made (predictability, organisational context, etc.), and serves to understand the limits of rational action in decision-making processes at the individual and group level (framing effects, appeal to authority, etc.). It must also encompass an analysis of the decision-maker (age, gender, etc.), and the inputs and throughputs of the decision-making process (data and evidence, feedback, etc.). Different situations will then require the decision-maker to adopt different strategies based on the constraints of the decision and the environment (slow and deliberate, quick and instinctive, etc.). Mapping the decision space in this way is an attempt to optimise decision-making processes by defining the limits and possibilities of a decision. In the context of this study, a sketch of the RC decision space will ask what is the typical decision in the RC, and how is it made? Although we cannot answer this question in its entirety, we will attempt to draw an initial outline from which actionable insights and recommendations can be derived.

Overview
The study was based on an online survey developed using the SenseMaker® (SM) framework. The latter is a narrative-based approach designed to provide respondents with the tools to interpret the meaning of their narratives. The tools provide a way of testing an assumption or hypothesis, or of exploring which way a tendency is pulling. In this way, a SM survey provides both qualitative and quantitative data for capturing trends in complex settings. The hypotheses and assumptions grounding our questions were developed from the literature on decision-making, details for which can be found in Annexes 1 and 2. This report only addresses the findings developed from a preliminary analysis of the quantitative data. Analysis of the narratives will be carried out in a second report which will build on the findings presented here and bring the data into discussion with theory.

The rest of the report is composed of four parts. The first part discusses the survey before exploring the sample and types of decisions shared by respondents. The second part discusses the findings, and is divided into two sections. The first section presents the initial findings from the dyads and triads. This will include discussing the results of our initial hypotheses and assumptions. The second section considers if there are any significant differences between groups which might affect the findings. The third part presents the results of a data exploration workshop held at the IFRC in Geneva in December 2019. It summarises the hypotheses raised by participants during a workshop and the results of the statistical analyses done to test them. The fourth and final part provides some recommendations for integrating lessons on decision-making in information management, organisational learning and management systems.
1. Analysis of the sample

1.1. Structure of the survey

The survey was carried out online and relied on the SM framework. Respondents were first asked to describe their story. Most stories are only 2-3 sentences long and serve to prime respondents’ memory regarding the decision they will be sharing. Participants were then asked to give their narrative a title, which summarises the story concisely and gives insight into the core meaning of a narrative. We then asked respondents questions about their decision, such as what triggered the decision, how they used information, and what the major obstacle was during the decision-making process, for example.

Two tools were used for respondents to score their answer. Participants first provided their answers in triangles, called triads (Figure 1). Each end of the triad is a quality or an idea, called a signifier. The closer respondents placed themselves to any point, the more that quality describes their narrative compared to the other two signifiers.

Respondents also provided some answers in dyads, which depict two opposing and extreme qualities, also signifiers, connected by a line (Figure 2). Dyads attempt to capture the idea of the Golden Mean, which is the desirable middle point between extremes. The desired outcome for a dyad is therefore for answers to gather around the centre point of the line. Since each dyad ranges from 0 to 1, the expected average and median is 0.5 (the red line in Figure 2). Because of the variability associated with how individuals place their answers, we set a threshold between 0.4 and 0.6 for where we expect answers to fall (the shaded area in Figure 2).

Before leaving the survey, respondents were asked several questions concerning their decision and themselves in multiple choice questions. We asked them about:

- Whether the decision was taken alone or in a group
- How they felt after the decision was taken
- Their position
- Their age
- And so on

Figure 1. Triads are made up of three axes to form a triangle, with values ranging from 0 to 100 on each axis.
1.2. **Who contributed to the survey?**

**Respondent summary**
The typical response is from a young NS volunteer from the Americas:
- 54% of responses were from men, 46% were from women;
- 49% of responses are from 18-29 year olds (y/o), and 20% from 30-39 y/o;
- 71% of stories come from volunteers, followed by 21% from members of staff;
- 96% of stories come from respondents from NS, the rest from the IFRC (3%) and the ICRC;
- Most stories are from the Americas (92%), followed by stories from global (3%) and European respondents (2%).

This part briefly examines the sample and breaks it down based on respondent characteristics. An important distinction is made in this report; the sample consists in all the stories we collected, while respondents are not the unit of analysis. A total of 1217 narratives were contributed from three organisations – the IFRC, the ICRC, and National Societies – and from all regions – Africa, the Americas, Asia-Pacific, Europe, the Middle East and North Africa (MENA), and global workers. Individuals from all levels of the Movement participated, from volunteers to senior leaders, and of all ages. Despite this diversity, the distribution of stories by respondent age, region, position, and organisation is highly uneven. What is evident is that narratives from young people dominate the sample, with 49% of responses coming from 18-29 year olds (y/o), followed by 20% of stories from 30-39 y/o. There are also slightly more responses from men than from women, both across the sample (54% against 46%, respectively) and across all age groups, except for 18-29 y/o (24% from men against 25% from women; Figure 3). As a result, the analysis examines the results for the overall sample, and then analyses volunteers, staff, NS and the IFRC/ICRC separately.
Figure 3. Most stories are from respondents under 40 but are more evenly distributed across genders.

<table>
<thead>
<tr>
<th></th>
<th>Under 18</th>
<th>18-29</th>
<th>30-39</th>
<th>40-49</th>
<th>50-59</th>
<th>60 and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man</td>
<td>1.7%</td>
<td></td>
<td>11.9%</td>
<td>8.7%</td>
<td>6.0%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Woman</td>
<td>1.4%</td>
<td></td>
<td>25.2%</td>
<td>7.6%</td>
<td>7.2%</td>
<td>4.0%</td>
</tr>
</tbody>
</table>

|          | 3.1%     | 48.9% | 19.5% | 15.9% | 10.1% | 2.3%        |

Figure 4. Most stories are from volunteers and staff, with few coming from managers and senior leaders.

<table>
<thead>
<tr>
<th></th>
<th>Volunteer</th>
<th>Staff</th>
<th>Manager</th>
<th>Senior leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFRC</td>
<td>2.0%</td>
<td>1.1%</td>
<td>0.2%</td>
<td>3.2%</td>
</tr>
<tr>
<td>ICRC</td>
<td>0.1%</td>
<td>0.3%</td>
<td></td>
<td>0.4%</td>
</tr>
<tr>
<td>National Society</td>
<td>71.1%</td>
<td>18.8%</td>
<td>4.5%</td>
<td>1.6%</td>
</tr>
</tbody>
</table>

|          | 71.1%     | 20.9% | 6.1%    | 1.8%          |

Figure 4 depicts the number of stories broken down by which organisation respondents work for and what position they occupy. From this table, we see that stories from volunteers make up nearly three-quarters of the sample. This is followed by stories from staff, which make up a fifth of the sample. It is possible the distribution of narratives by position could reflect the real distribution of volunteers, staff, managers and leaders in the Movement (very few respondents shared more than one story). We also see that NS stories dominate the sample, constituting over 96% of responses, followed by stories from the IFRC. The break down by organisation could also reflect the real distribution of volunteers and staff by organisation. There are effectively more NS offices than IFRC offices, and over 14 million volunteers. Further analysis would be required to confirm these assumptions.

The map shown in Figure 5, below, depicts the number of stories from each of the five regions, namely Africa, the Americas, Asia-Pacific, Europe, and MENA, and a tag for global respondents was added as well. The distribution is highly uneven, with a majority of narratives (around 90%) coming from the
Americas, followed by 33 stories (approximately 3%) from global workers. Due to the low number of responses from most regions (around 1-2% each), we did not carry out comparisons between these groups. The analysis below, therefore, does not provide any findings on the different regions.

Figure 5. Stories came from respondents from every region, but mostly from the Americas.

1.3. What types of decisions were shared?

**Story summary**
The stories participants shared are mostly about strategy, triggered by crises or opportunities, and generally concern positive experiences:

- Decisions are evenly split according to whether they were taken in a group (49%) or alone (51%);
- They are mostly positive (33%) or very positive (41%);
- And about strategy or planning (51%), followed equally by management or administration (18%) and programs or operations (17%);
- They are mostly triggered by a crisis or opportunity (58%), or by managers or leadership (17%).

Just as the sample is highly uneven in terms of respondent characteristics, we found it to be unevenly distributed in terms of the types of decisions taken, why they were taken, and how they made respondents feel. Figure 6 breaks down stories by whether they were taken alone or as part of a group, and by how the decision made respondents feel. While positive and very positive stories make up most of the sample (just over 75%), they are evenly split across whether the decision was taken in a group or not (49% against 51%, respectively).
We chose to ask respondents what their decision was about in a triad to obtain more nuanced responses than would be possible with a multiple-choice question. Respondents could place their story between 'Strategy/planning', 'Programs/operations', or 'Management/administration'. Contrary to our expectations, answers clustered in well-defined groups near triad signifiers. The types of decisions taken in RC are skewed, with over half concerning 'Strategy/planning', and 18% being about 'Management/administration'. Despite our practical orientation, much of our effort effectively seems directed towards organisation and planning. This is particularly surprising considering the large number of volunteers in the sample, who we would expect to be taking decisions mainly at the operational level. This may also be a question of seasonal bias, which remains to be seen.

![Figure 6](image)

We can see this in Figure 7 below, which is broken down into four equal areas, shaded based on the number of stories in the area. Red tiles indicate more narratives in a given area, while blue tiles indicate less narratives. The stronger the colour, the stronger the tendency. When asked about what triggered the need to make a decision (Figure 8), nearly 60% of respondents indicated the trigger was a 'Crisis or opportunity', while 'Business as usual' represents only 15% of stories. Does this mean we are a reactive organisation and fail to plan adequately, or do we seize opportunities as they arise? At the same time, only 17% of decisions are triggered by managers or leadership, suggesting sufficient routines and procedures are in place to allow staff and volunteers to deal with unexpected events without needing instructions. Further investigation is needed to understand and validate this assumption.

Overall, the sample shows a highly uneven distribution of respondent characteristics. Does this mean the sample is biased, or can we rely on results describing all the narratives we collected? This will be discussed in the next part, after presenting the initial findings from the dyads and other triads.
Figure 7. Despite our practical orientation, most of our decisions are about planning and organisation.

What triggered the decision was...

Figure 8. Most of our decisions are triggered by crises or opportunities.
2. Initial findings

The findings are divided into two sections. We will first explore the assumptions and questions we used to develop the survey, and thereby present the initial results from the dyads and remaining triads. The second section considers if there are any significant differences between groups which might affect the findings, and presents the results of a visual and statistical analysis.

2.1. Exploring results from the dyads

Dyad summary

We tested some hypotheses using dyads, which tell us that:

- Participants tend to suffer from information overload in decision-making processes (median response = 0.7);
- Reviews are used extensively, too much even (median response = 0.69);
- Decision-making processes tend towards balancing participation and hierarchy well (median response = 0.41), but can be too participatory.

Three dyads were used in the survey and served to test three hypotheses. The first hypothesis suggested that decision-making processes in the RC suffer from a lack data and information. The second hypothesis suggested that reviews and feedback are not used enough in our decision-making processes. Finally, the last hypothesis suggested that decision-making processes are too hierarchical. The initial results are presented below.

a. There are more cases of data overload than data scarcity

The first dyad asked respondents how much information they had available for their decision. Answers could be placed anywhere between 'Absolutely no information' and 'Too much information'. Our initial hypothesis suggested that there would be a lack of information, and that the median would be below the range of expected values. In other words, we expected the curve to lean to left.

Contrary to our expectations, visual inspection of the distribution curve confirms that the majority of data points are located comfortably to the right of the centre point, with the sample median at 0.703 (Figure 9). This suggests respondents tend to describe their decision as involving 'Too much information'. A total of 64% of responses are effectively above the target area (we want responses to lie between 0.4 and 0.6), and 16% of responses cluster above 0.9. These surprisingly high values suggest there are far more cases of data overload than data scarcity. The range of expected values only captures a fifth of answers of answers but, encouragingly so, only 17% of responses had 'Absolutely no information'.

As a measure we of how far the sample is from our desired outcome, we can look at the difference between the sample median and expected median of 0.5 and find 0.2. Bringing that number down to 0.1 from the expected median, would be a reasonable target which also reaches the aim of finding a balance between too much and not enough information.
b. Reviews and feedback inform decisions, too much even

The second dyad (Figure 10) asked respondents to what extent they used existing reviews to inform their decision, with the possibility of placing answers between 'Not informed at all' and 'Exclusively informed'. Despite our prolific reporting culture, we did not expect reviews and feedback to be used extensively in decision-making. The shape of the curve of how answers are distributed is very similar to the previous dyad, leading to similar statistics. The median response is 0.696, and once again a total of 64% of responses above the upper limit of expected values and a tight cluster of responses (16%) gathers above 0.9. Only 16% of answers lie within the range of expected values. Encouragingly, however, there are only 20% of cases that are not informed at all by reviews. These values nonetheless suggest reviews and reports are used far too much.

The difference between the sample median and the expected median is 0.19. Again, bringing the difference down by 0.1 would bring the median within the range of expected values, meaning a balanced use of reviews in decision-making.

Data summary: How much were reviews used?
- Median: 0.69
- Too little review use: 20%
- The right amount of review use: 16%
- Too much review use: 64%
c. Decision processes can sometimes be too participatory

The third dyad (Figure 11) asked respondents how participatory or hierarchical the decision-making process was, with possible answers ranging from 'Too participatory' to 'Too hierarchical'. As a large international movement, we expected decisions in the RC to be constrained by organisational processes and therefore to be too hierarchical.

Unlike the previous two dyads, this distribution gravitates below the centre point, and has a far flatter curve. The median response is 0.41 and is therefore just within the range of expected values, suggesting decisions tend to balance top-down and bottom-up approaches. Nonetheless, 47% of responses are below the lower limit for expected values, while only 21% are within the range of expected values, and 32% are above the upper limit. These values suggest that decisions are somewhat balanced, but can be too participatory and are on occasion too hierarchical. We tentatively conclude that, overall, participatory and hierarchical approaches tend be balanced. But this is more a result of decisions occasionally being too hierarchical, and sometimes too participatory.
An analysis of the dyads has rejected all our initial hypotheses. First, the analysis rejected the hypothesis that there is a lack of data in decision-making. Instead, it confirmed that there are more cases of data overload in decision-making processes than data scarcity. Second, the analysis also rejected the hypothesis that reviews are not used in decision-making. We confirmed instead that reviews and feedback are used extensively, even too much, in decision-making processes. Finally, the analysis rejected the hypothesis that decision-making processes are too top-down. The statistical analysis suggests that the degree of participation is just within the threshold of being well-balanced. Visual analysis of the distribution, however, suggests that there are cases of decisions occasionally being too hierarchical, and sometimes too participatory, which results in the median being pulled towards the centre.

2.2. Exploring results from the triads

We used three triads to test three assumptions. The first triad checked the assumption that decisions are based on personal experience more than data. It asked what respondents based their decision on, with the signifiers being 'My experience', 'Data' and 'Advice from others'. The second triad checked the assumption that the biggest obstacle in decision-making in the RC is finding and using information. We asked participants what the main obstacle in the decision-making process was, with as signifiers 'Organisational processes', 'Other people', and 'Finding and using information'. The final triad checked the assumption that information is mostly used to confirm decisions after they are made. Respondents were asked how they used any information they had during for the decision-making process, and could place their answers between 'Motivate the decision', 'Confirm the decision' and 'Convince others'.
The three triads are shown in Figure 12, and are again shaded based on the number of stories in each area. The percentage of stories if also shown for each tile. What stands out is that one signifier dominates in each triad, gathering around 50% of answers, and the central tile always represents around 10% of answers. Values for the two remaining signifiers vary between 10-30%.

### a. Decisions are based on experience more than data or evidence

The data points, shown as blue dots in Figure 13, cluster towards 'My experience', a tendency which is confirmed by the mean, shown as a red triangle. The latter represents the central tendency in the triad, and is represented by three values, each of which is how far participants placed their answer along each axis of the triad. The mean value for 'My experience', at 53 points, is far above the mean value for the other signifiers, at 29 points for 'Data' and 18 points for 'Advice'. In other words, we tend to rely on our experience, and occasionally make use of data. Rarely, however, do we ask others for advice – is this a lost opportunity for learning?

The triad appears to confirm our assumption that we don't base our decisions on data enough but instead rely on personal experience. Our preference for relying on experience over data or advice appears constant across groups and positions, with some minor variations. This is confirmed by Figure 13, which depicts how answers are distributed along the one axis of the triad shown above, that decisions are based on personal experience. The more the curve leans to the right, the more decisions are based on experience. We aren’t interested in absolute values (how high the curve actually is), we only want to compare the shape of each curve. The variations between groups, we expect, are mostly due to variations in the sample size across groups – for example, there are very few responses from Senior leaders and managers.

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**Triad summary**

We also used three triads to examine some of our assumptions. We found that

- Decisions are mostly based on personal experience in 54% of the stories in the sample, and on data in 23% of stories;
- Dealing with other people was the major obstacle in 47% of stories, followed by organisational processes in 27% of stories;
- Information is mostly used to confirm decisions once they are made in 45% of the stories, and helps inform the decision-making process in 31% of stories.

---

**Data summary: The decision is based on...**

<table>
<thead>
<tr>
<th>Signifier</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience</td>
<td>54%</td>
</tr>
<tr>
<td>Data</td>
<td>23%</td>
</tr>
<tr>
<td>Advice from others</td>
<td>12%</td>
</tr>
<tr>
<td>All three</td>
<td>11%</td>
</tr>
</tbody>
</table>
While taking the decision I was focusing on...

The biggest hurdle while taking the decision was...

Any information we used helped to...

Figure 12. Answers cluster according to a similar pattern in each triad.
b. Dealing with people is the main obstacle in decision-making

As the plot in Figure 12 shows, answers tend towards 'Other people' as being the main obstacle in decision-making, followed by organisational processes. This is again confirmed by the mean, shown in blue, which tends towards 'Other people' (mean = 45, median = 44). This is followed by 'Organisational processes' (mean = 30, median = 16). Contrary to our initial assumption that information would be the greatest obstacle, we find that it is people, followed by organisational processes. This is not surprising since decisions are expected to be participatory. At the same time, the latter is a response to an overly bureaucratic culture, the basis of which is still present.

Contrary to our initial assumption, neither information nor organisational processes are a leading obstacle. Instead, the data suggests dealing with other people is the main obstacle. A look at the distribution of the X axis, that 'Dealing with other people' is a major obstacle for NS, across positions shows (Figure 14). The exceptions are IFRC and ICRC members of staff and managers, who appear to find people are slightly less of an obstacle than other groups, and instead seem to find organisational processes are as much of a problem as other people.
c. **Data is used more to confirm decisions than to motivate them**

The final triad asked respondents how they used any information at their disposal. Possible responses ranged between 'Confirm the decision', 'Motivate the decision' and 'Convince others'. Figure 12 shows how data points overwhelmingly cluster towards 'Confirm the decision'. In other words, we mostly use data and information to confirm our decisions once they have been made (mean = 45, median = 42). Encouragingly however, the next use is to motivate the decision, that is, to help inform the decision-making process (mean = 32, median = 16). Given our avoidance of others – we have a low reliance on advice and cite dealing with others as a leading obstacle – we are unsurprised to see that information is least used to convince others (mean = 22, median = 13).

The data appears to confirm our assumption that data is used once decisions have been made. Breaking the leading axis, 'Confirm the decision', down by organisation and position shows most groups gravitate towards describing information as having been used to confirm their decision (Figure 15). These groups effectively cluster around the sample median. IFRC and ICRC staff are again an exception, with a median value far below other groups (29 points, against a sample median of 42). Instead, IFRC/ICRC members of staff seem to use information to inform decision-making processes much more than any other group, as shown in Figure 16.

Having covered the summary results for the triads and examined some similarities between groups, the next part will consider if there are any statistically significant differences between groups which might alter the overall findings.
Figure 15. Information is used to confirm decisions post-hoc across organisations and positions.

Figure 16. But IFRC and ICRC members of staff will still tend to use information to inform decision-making processes more.
2.3. There is a strong RC decision-making culture

**Findings summary**
The results for each dyad and triad are highly similar across ages, genders, and positions. They are also similar across whether the decision was taken alone or as part of a group, and regardless of whether the story respondents shared is something which happens often or not. We also found many similarities in the key subsets examined, suggesting there is a strong RC decision-making culture.

The results from the previous sections suggest clear cut trends in how decisions are taken at the RC. A brief decomposition of the data by different demographic groups, such as age and position, seem to indicate that results may be similar across these groups. This part will examine the results for each group in more detail. The findings are summarised visually, starting with the dyads, then the triads.

a. Dyads are the same across groups
We first broke down the results for the dyads based on our four key subsets of interest, staff, volunteers, NS and the IFRC/ICRC subset (Figure 17). Unsurprisingly, the medians for each subset gather near the sample median. This is expected for volunteers and NS given that they constitute most of the sample. We are surprised to find that the medians for staff also tend towards the sample median. The exception here is the IFRC/ICRC subset median in the first and second dyads. Unlike other subsets, the median falls in or near the target area – IFRC/ICRC responses indicate that reviews are sometimes used to little, and find the amount of information to be just right. Our confidence in these values are low however due to the limited data for these groups and its spread in the dyad.

![Dyad medians by subset](image)

Figure 17. Dyad medians are similar across subsets, with the exception of the IFRC/ICRC subset.

Breaking dyads down by other features and examining their distribution tells us that responses are extremely similar across groups. Figure 18 represents each dyad (the columns) broken down by
different categories (the rows). The line inside each box represents the median value for a given group. What is apparent is that the median value for each group tends towards the sample median. Most variations are found between age groups, although these have a limited impact on results. Variations between regions are also found, but these are largely due to the limited number of narratives from most regions. We also carried out this exercise on the different subsets we examined and found similar results – demographic groups have a limited impact on dyad results.

Figure 18. Responses are similar regardless of the feature they are grouped by.
b. Triads are the same across groups

The previous section showed that the results for each dyad are extremely similar for staff, volunteer, NS and IFRC/ICRC subsets, and across demographic groups and kinds of decisions. We find this is also true for the triads. A visual examination of the data reveals the similarity in how responses are distributed per triad and per subset. Figure 19 depicts the results for each triad (each row), broken down by organisation (each column). The red tiles, which represents sections with the greatest number of responses, are the same for each subset. The exception is the IFRC/ICRC subset. Unlike other subsets, decisions in the IFRC/ICRC subset tend to concern management/administration rather than strategy or planning, the main obstacle tends to be organisational processes or all three obstacles (information, people and processes) rather than people being the main obstacle, and information tends to be used to motivate decisions rather than to confirm decisions. The remaining two triads follow the same pattern found in other subsets.

Figure 19. Answers to each triad show a similar pattern across organisations.
Examining the key triad axes by group again tells us there are few differences between demographic groups, such as age and gender, and kinds of decisions, how often they occur, how they left people feeling, and so on (Figure 20). A pattern seems apparent when responses to the fourth triad are broken down by age – individuals rely on their experience more as they get older – and by gender – men seem to rely on their experience more than women. We also found differences in how individuals felt regarding what they based their decision on. These questions will be tested in the next part.

**Figure 20.** Responses are similar for each triad when responses are broken down based on different features.
Key take away

This part explored the results from the dyads and triads, and considered the results for different demographic groups and types of decisions (frequency of the decision, how participants felt). The results tell us that we generally prefer relying on our experience to make decisions, any information we use is to confirm we're on the right track, and we don't like interference from others in our work. Although reviews are used extensively, if not too much, and there is generally an overload of data and information, decisions will tend to be based on personal experience rather than data. If data and information is used, it will help to confirm the right decision has been made - instead of making evidence-based decisions, we appear to make decision-based evidence. Participation is encouraged in the Movement, and sometimes seems to be a problem, sufficiently for other people involved in the process (or not) to become an obstacle. These results appear constant across most demographic groups and in most decision-making contexts. This suggests there is a strong RC decision-making culture which erases demographic differences in decision-making.

The next part will examine in more rigour if there are any differences between groups. It will present the hypotheses developed after examining the data and following a data interpretation workshop. The results will be presented graphically and discussed.
3. Hypothesis test results

Workshop summary
A data interpretation workshop was held at the IFRC in Geneva in December 2019 to present the initial findings and to gather questions and comments from participants. These were turned into hypotheses we could test statistically. We found that:

- NS respondents feel more negative about decisions which are based on advice;
- Managers and senior leaders feel decision-making processes balance hierarchy and participation well;
- Managers tend to balance review use better than other groups;
- Decisions triggered by managers or leadership balance participation and hierarchy better;
- Decisions which are more participatory or taken as a group do not lead to better use of information or reviews;
- There is no gender difference in how decisions are made;
- Reliance on experience increases slightly with age.

We did not find significant differences between other groups. This suggests there is a strong RC decision-making culture which overrides individual and demographic differences in decision-making.

Statistical tests were carried out on the data to obtain numeric validation of the tendencies suggested by visual analysis. Overall, we failed to find any significant differences between organisations, genders, the frequency of decisions, whether decisions were taken as a group or not, and how the decisions made respondents feel, when individual groups were tested against the rest of the sample. Additional hypotheses were developed from a data exploration workshop, which is described alongside the other hypotheses in the following section. The second section then presents the results of the statistical tests.

3.1. Hypotheses developed from the data and workshop
A data exploration workshop was held at the IFRC headquarters in Geneva on the 18th of December 2019. It was used as an occasion to present initial results and to gather questions, comments and interpretations from staff. Graphs presenting the data were displayed around in a meeting room and left for individuals to discover, and provided a visual platform to present and discuss the data with participants (Figure 21). The latter were then provided with post-it notes to add their thoughts and questions directly to the graphs.

Participants were surprised at some results, such as the finding that decisions can be too participatory or that we use reviews and feedback more often than not. Other findings were anticipated, such as our reliance on personal experience over data, and that decision-making processes suffer from information overload. Below are some comments and questions participants shared:

- "We complain about hierarchy but data show 'too much' participatory"
- "Too participatory → True for humanitarian sector?"
- "Are we happy about any decision taken, despite how the process was? Is any decision a good decision?"
- "Review use is high, does this mean we are learning from past experiences?"
- "Lots of people make decisions based on experience, but very few people ask for advice → Those who have experience aren’t asked for advice?"
- "Are people really the problem, or is it the process people are embedded in which is the problem?"
The comments and questions gathered from the workshop were organised into testable hypotheses. These were grouped with hypotheses we developed after analysing the data. To verify the hypotheses, we carried out tests which check the distances between observations across groups (see Annexe 3 for a description of the methods used and Annexe 4 for more detailed results). The results are summarised in Table 1. Hypotheses with a high enough median difference (Diff.) – 5 points or more – and low p-value – below 0.05 – are validated. That a hypothesis is rejected does not mean the result is not meaningful, it only means the two groups being compared are not different. Conversely, a validated hypothesis is not necessarily significant. The final column in the table indicates if a hypothesis is accepted or not. If it is rejected, the signification of the result is briefly described. The results have been brought to the same scale for easier comparison.

Table 1. Confirmed results do not deviate much from the rest of the sample.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Diff.</th>
<th>p-value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 NS decisions which are based on advice lead to more negative/very</td>
<td>8.6</td>
<td>3e-05</td>
<td>Accept the hypothesis</td>
</tr>
<tr>
<td>negative/very negative decisions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H2 Decisions based on experience lead to more positive/very positive</td>
<td>2.3</td>
<td>0.0238</td>
<td>Decisions based on experience are not more</td>
</tr>
<tr>
<td>outcomes</td>
<td></td>
<td></td>
<td>positive</td>
</tr>
<tr>
<td>H3 Decisions triggered by crises/opportunities lead to more positive/very</td>
<td>1.8</td>
<td>0.0631</td>
<td>Decisions triggered by crisis are not more</td>
</tr>
<tr>
<td>positive outcomes</td>
<td></td>
<td></td>
<td>positive</td>
</tr>
<tr>
<td>H4 Decision-making processes are more hierarchical for managers</td>
<td>11.4</td>
<td>0.0016</td>
<td>Accept the hypothesis</td>
</tr>
<tr>
<td>H5 Managers use information to convince others more</td>
<td>0.88</td>
<td>0.2731</td>
<td>Managers do not use info to convince more</td>
</tr>
<tr>
<td>H6 Managers feel people are an obstacle to a greater extent</td>
<td>-3.6</td>
<td>0.1374</td>
<td>Managers do not feel people are more of an</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>obstacle</td>
</tr>
<tr>
<td>H7 Managers feel processes are an obstacle to a greater extent</td>
<td>6.9</td>
<td>0.003</td>
<td>Accept the hypothesis</td>
</tr>
<tr>
<td>H8 Managers use reviews more</td>
<td>-10.9</td>
<td>0.0018</td>
<td>Managers use reviews less than other groups</td>
</tr>
<tr>
<td>H9 Decision-making processes are more hierarchical for senior leaders</td>
<td>13.1</td>
<td>0.0243</td>
<td>Accept the hypothesis</td>
</tr>
<tr>
<td>H10 Senior leaders use information to convince others more</td>
<td>0.75</td>
<td>0.3901</td>
<td>Leaders do not use info to convince more</td>
</tr>
<tr>
<td>H11 Senior leaders feel people are an obstacle to a greater extent</td>
<td>-6.5</td>
<td>0.1266</td>
<td>Leaders do not feel people are more of an</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>obstacle</td>
</tr>
</tbody>
</table>
H12  Senior leaders feel processes are an obstacle to a greater extent  10.5  0.0152  Accept the hypothesis
H13  Senior leaders use reviews more  3.6  0.2256  Leaders do not use reviews more
H14  Triggered by managers means less participation (more hierarchy)  7  0.0048  Accept the hypothesis
H15  Review use is encouraged by participation  1.4  0.1243  Participation does not change review use
H16  Review use is encouraged when decisions are taken as a group  -0.6  0.7258  Groups do not change review use
H17  Information is used to motivate decisions more when taken as a group  -0.1  0.5567  Groups do not change how information is used
H18  Men base their decisions on personal experience more than women  3.5  0.0077  Men do not base their decision on experience more
H19  Men use information to confirm their decisions more than women  1.2  0.1593  Men do not use info to confirm decisions more
H20  Reliance on experience increases with age
  - Under 18  --  0.1299  Under 18 do not differ
  - 18-29  --  0  Accept the hypothesis
  - 30-39  1.7  0.1576  30-39 do not differ
  - 40-49  5.5  0.0035  Accept the hypothesis
  - 50-59  6.9  0.0018  Accept the hypothesis
  - NA  NA  Not enough data points

The first three hypotheses consider how different types of decisions lead to more positive or negative sentiments, namely, if decisions based on advice lead to more negative/very negative outcomes (H1), if decisions based on experience lead to more positive/very positive outcomes (H2) and if decisions triggered by unexpected events lead to more positive sentiments (H3). Considering the limited number of negative responses, H1 only concerns NS stories. Hypotheses H4 to H13 ask how managers and senior leaders differ from the rest of the sample. H4 and H9 ask if managers and senior leaders feel decision-making processes are too hierarchical. H5 and H10 ask if managers use information to convince others more than other positions do. H6 and H11 consider if managers and leaders feel people are more of an obstacle to decision-making processes than other groups do, while H7 and H12 consider if organisational processes aren’t felt as more of an obstacle. Finally, H8 and H13 ask if managers and senior leaders use reviews more than other positions. Hypotheses H14 to H17 examine the effect of participation and group decision-making. H14 considers if decisions triggered by managers or leadership lead to more hierarchical decisions. H15 asks if review use is encouraged by participatory decision-making processes, while H16 examines if review use if encouraged when decisions are taken as a group. The last hypothesis in this group, H17, asks if decisions taken as a group lead to an increased use of information to motivate decisions. Finally, the last three hypotheses (H18 to H20) examine gender and age differences in decision-making. H18 and H19 consider if men base their decisions more on personal experience than women and if men use information to confirm their decisions more than women, respectively. The final hypothesis in this list, H20, examines whether reliance on experience in decision-making processes increases with age.

The next section will present the results for each hypothesis graphically.
3.2. Test results confirm there is a strong RC decision-making culture

Figure 22 below presents the results for H1 to H3 visually. The vertical bars, labelled by hypothesis, represent the median difference between the group being examined and the rest of the sample. Recall that the values for dyads and triads have been brought to the same scale for easier comparison. For the first three hypotheses, only H1 is validated. This means that for the NS subset, decisions based on advice tend to lead to more negative sentiments, with over half of NS respondents who felt negative or very negative after the decision scoring higher on advice from others by 8 points or more. This trend was found across all subsets, but was not validated for the IFRC/ICRC subset due to lack of responses. We nonetheless find that both NS staff and volunteers follow this tendency. H2 and H3, that decisions based on experience and triggered by managers/leadership lead to more positive outcomes were not validated. Again, these tendencies were confirmed across all subsets in the sample.

Figure 22. NS respondents indicate that decisions based on advice from others correlate with more negative sentiments. We suggest this is a common tendency across the RC.

Hypotheses H4 to H13 examine how managers and senior leaders differ from the rest of the sample. We found that only H4, H7, H8, H9 and H12 are validated, as summarised in Figure XX below. H4 and H9 indicate that managers and senior leaders feel decision-making processes are more hierarchical than other positions do, by a median difference of 0.11 and 0.13 points (represented as 11 and 13 points in Figure 23). In the context of the general findings, this means they find decision-making processes balance hierarchy and participation well. This trend is repeated for NS senior leaders and managers, with senior leaders finding decision processes are sometimes too hierarchical (median difference of 0.17 points). A deviation is found in IFRC and ICRC senior leaders, who instead find decision-making processes are too participatory, by a median value of 0.28 points (nearly a third of the length of the dyad). We suggest this exception is principally due to the limited number of responses from IFRC/ICRC senior leaders. H7 and H12 confirm that managers and senior leaders feel organisational processes will be an obstacle to a greater extent than other positions, by 6.9 and 10.5 points respectively. This suggests that managers and senior leaders will tend to find organisational processes to sometimes be as much or more of a problem than other people. This trend was again found for NS leaders and managers, while results for the IFRC/ICRC and staff subset lean in the same direction but are not reliable enough to validate. We suggest this is both because of a limited number of data points but also because the principal obstacle for IFRC/ICRC members of staff is also organisational processes. H8 suggested that managers use reviews more than other groups. We instead found the opposite – managers use reviews less, by a median difference of 11 points. In the context of the previous findings, this means managers make a more balanced use of reviews in decision-making processes. This finding was only validate for the IFRC/ICRC subset, and suggests that IFRC and ICRC managers effectively use reviews in a more balanced manner while NS managers will
tend to use reviews slightly too much. The rejected hypotheses confirm that managers and senior leaders do not differ from other groups in how they take decisions, a finding which was confirmed across subsets.

Hypotheses H14 to H17 considered whether group decisions and participation affect decision-making processes. H14 asked if decisions triggered by managers or leadership lead to more hierarchical decision-making processes. We found this was the case, with half of respondents who indicated their decision was triggered by leadership indicating the process more hierarchical by 7 points or more. This trend was remarkably constant across groups, with significant differences and results being validated for all but the IFRC/ICRC subset (with a p-value of 0.057). The remaining 3 hypotheses, which explored if decisions taken as a group led to increased review use and better information use, and if participatory decision-making processes lead to increased review use, were both rejected.

Figure 23. Managers and senior leaders feel decision-making processes balance hierarchy and participation well, and managers tend to have a more balanced use of reviews.

Figure 24. Decisions triggered by managers or leadership lead to processes which balance hierarchy and participation better, despite decisions which are taken as a group or which are participatory having no effect on decision-making processes.
This indicates that decisions which are taken as a group or which are participatory do not have a significant impact on how decisions are made. These results are summarised in Figure 24. Other statistical tests confirmed this is the case for features involving group decisions.

Hypotheses H18 to H20 considered age and gender differences in decision-making. H18 and H19 asked if men use their experience more in decision-making and if they use information to convince others more. The results failed to confirm the presence of any significant difference, further reinforcing the understanding that there are no gender differences in decision-making. This trend was found across all groups. These results are also presented in Figure 24. H20 considered if reliance on experience to make decisions increases with age. We tested each age group against the rest of the sample and did find that those under 30 tend to rely on their experience less (by a median of 7.5 points for 18-29 y/o), while older groups tend to rely on it more (by a median difference of 6.9 points for 50-59 y/o). In all, we find a 14 point difference between 18-29 y/o and 50-59 y/o. We were unable to test for the over 60 age group due to a lack of data points. The results shown graphically in Figure 25 clearly present this trend. Although there is a variation between age groups, the leading factor on which individuals base their decisions remains personal experience across ages. This trend was validated for the volunteer subset, but not for other subsets. While the trend is somewhat present, but lacks reliability, in other groups, this does suggest that this trend is principally due to volunteers. More data is needed to validate the findings for the other subsets, however.

Figure 25. Reliance on experience in decision-making processes appears to increase with age.

**Key take away**

The results from this part suggest there is a strong RC culture which guides decision-making at all levels of the Movement and in all organisations. We found limited differences between age groups and genders, suggesting the RC culture erases gender and age variations in decision-making. We also found few differences in decision-making whether decisions are taken alone or as a group, and whether they are more participatory or not. Together, these findings paint a narrative of how decisions are taken in the RC, providing an initial glimpse of the RC decision space, which broadly appear shared across all levels of the Movement. Table 2 summarises the main tendencies we draw from the findings.
Table 2. Summary of the main tendencies found in this report.

<table>
<thead>
<tr>
<th></th>
<th>Decisions are usually about strategy/planning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Decisions are usually triggered by crisis/opportunity</td>
</tr>
<tr>
<td></td>
<td>Decisions are usually based on personal experience</td>
</tr>
<tr>
<td></td>
<td>The main obstacle is usually other people</td>
</tr>
<tr>
<td></td>
<td>Information is usually used to confirm the decision</td>
</tr>
<tr>
<td></td>
<td>There is generally too much information</td>
</tr>
<tr>
<td></td>
<td>Reviews are used extensively, if not too much</td>
</tr>
<tr>
<td></td>
<td>Decision making processes are sometimes too participatory</td>
</tr>
</tbody>
</table>

There is a strong RC decision-making culture across positions, ages, genders, how often decisions are taken, how they make people feel and whether decisions are taken as a group or not.

The major deviation from the sample concerns the IFRC/ICRC subset, which tends to present less extreme results than the other subsets. This means it tends to balance the amount of information and use of reviews in decision-making processes well. IFRC/ICRC responses also indicate that decisions tend to focus on management/administration, and that processes tend to be more of a problem than people. Finally, IFRC/ICRC respondents tend to use information to motivate their decision rather than confirm it. We nonetheless found few significant differences between groups within the IFRC/ICRC subset, again indicating the presence of a strong culture which mitigates individual differences. We suggest that as more data is gathered, the results for this subset may tend more towards the sample results. The following part will draw on the findings to present some challenges relating to data and information use in decision-making which can be addressed in 2020.
4. Recommendations

An initial exploration of the data has brought several insights into the types of decisions we take, how we take them, and the role data and information play in decision-making processes. These findings provide a first look into challenges to reaching the Strategy 2030 goals. Below are three challenges which we can address in 2020:

1. Considering most of our decisions are based on personal experience, written reviews and feedback, and suffer from information overload, how can we improve use of data and evidence in decision-making processes?
   - In-depth analysis of existing SM stories and data
     Continue analysis of the SM data and examine the narratives in-depth to corroborate statistics and establish causality between current findings;
   - Understand barriers to evidence use through qualitative methods
     Use focus group discussions or interviews to better understand barriers to the use of data and evidence;
   - Demystify data and Artificial Intelligence (AI)
     Provide more data literacy opportunities. Do data exploration sessions which include hands-on work and data visualisation. Introduce AI and ML concepts to introduce to staff and managers.
   - Test Participatory Action Research (PAR)
     Participatory Action Learning (PAL) in NS (starting with Mexican Red Cross) as a component of leadership training. Use this as a basis for gathering data regularly and developing a PAR initiative.

2. How can we monitor decision-making periodically to observe shifts in the landscape and inform leadership training on data- and evidence-driven decisions?
   - Continue the SM exercise and scale-up to more NS
     Turn into a log exercise where people journal one (or more) decision a month to see if there is an evolution over time. Encourage staff and volunteers to keep a decision diary and log these into SM;
   - Integrate complexity thinking into leadership training
     Participants log their decisions and reflect on their experience and how they can improve the way decisions are taken in their teams. Introduce complexity and systems thinking. Explore tools for visualising and understanding complex phenomenon.

3. How do we integrate decision-making in existing IFRC/NSD initiatives? NSD leadership training, Learn to Change, FDRS, etc.
   - Leadership training
     See above;
   - Data platforms
     Create a panel of decision-makers to investigate and discuss on how FDRS and GO can be optimised as decision tools within their teams;
   - Learn to Change
     Consider decision-making tools and processes in terms of personal mastery (including data literacy), team learning, complexity and systems thinking. Introduce diagramming and other visual tools.
Conclusion

This report provided a graphical and statistical exploration of the data gathered from a SM survey into decision-making in the RC. The study analysed ways in which data and evidence are used in decisions across RC organisations and at all levels, and provided practical recommendations for improving decision-making processes.

The first part discussed the survey before examining the sample and types of decisions shared by respondents. The second part explored the findings and was divided into three sections. The first section presented the initial findings from the dyads and triads. The dyads invalidated all our initial hypotheses, with only the IFRC/ICRC subset differing from the rest of the sample. Two of our assumptions were confirmed and one was rejected after examination of the three remaining triads. Again, the IFRC/ICRC subset is the only subset to deviate from the rest of the sample in three out of five cases. The second section considered if there are any significant differences between groups which might affect the findings. We found graphical evidence to suggest that there is a strong RC decision-making culture which means there are few significant differences across ages, genders, organisations, positions, and regions. The third part tested group differences through statistical tests, and presented the results of a data exploration workshop held at the IFRC in Geneva. It summarised the hypotheses raised by participants during the workshop alongside other hypotheses we developed. The second section then presented the results for the sample and the subsets examined, again finding few differences between groups. The final part provided some recommendations for integrating the findings developed above in information management, organisational learning and management systems.

In the context of a shift towards more data-driven decision-making, the findings indicate there is a significant gap between our current state and our aspirations. A next iteration of the analysis will explore relations among the findings developed in this report and develop them by exploring the narratives shared by respondents in the next report. The latter will also bring the data into discussion with theory and develop the basis for mapping the RC decision space. This will provide a basis for measuring progress in changing the IFRC decision-making culture. In this way, we hope to explore with more accuracy how decision-making processes can support organisational learning and change in the RC, and lead to better outcomes at all levels of the Movement.
References


Annexes

Annexe 1. Literature review

Decisions were long seen as the outcome of rational processes of thinking and deliberation in order to reach the most rational outcome. In this way, decisions were expected to maximise personal gains. Despite decades of theoretical elaboration, a growing body of evidence suggested that individuals didn’t always maximise rationality in decision-making, and often repeated patterns of irrational behaviour (Dillon 1960; Kahneman and Tversky 1983; Baddeley 2010).

The limits of this perspective led to the development of the notion of bounded rationality, which describes how the limits on our knowledge and what we can perceive set limits on how effectively we can exercise our reason when taking a decision (Lee 2011). Drawing on these lessons, dual-process models were replacing the one-dimensional rationalist models. The former hold that individuals make use of two decision-making modes. The first is a slow, ponderous and rational process (the rational style), the second is a quick, intuitive and affective process (the affective/experiential style). Which mode is used will depend on the type of decision being made – does it need to be made in the heat of the moment or can time be taken to evaluate the best option? Variations on this base model contrast, for example, fast (intuitive) versus slow (rational) thinking (Kahneman, 2011). Drawing on dual-process models, Scott and Bruce (1995) developed four decision-making profiles in an attempt to capture the diversity of decision-making strategies individuals adopt. First, the rational style, which matches the ‘rational’ style in dual-process models. Second, the intuitive style, which relies on feelings, and third, the spontaneous style, which makes decisions promptly, reflect the affective/experiential style of dual-process models. They identified a further two models which do not conform with dual-process models. The dependent style seeks assistance from others, while the avoidant style altogether postpones decision-making. Drawing on Scott and Bruce (1995), more recent empirical research has narrowed the number of profiles to three, namely, the affective/experiential profile (quick and intuitive decisions), the independent profile (slow and deliberate decisions), and the interdependent style (decisions based on interpersonal understandings; Delaney et al. 2015). The key lesson from decision-making profiles is that individuals will all exhibit different profiles depending on a variety of intrinsic and extrinsic factors. As a result, profiles may co-occur within the same individual (ibid.).

Numerous studies have identified some of the factors which affect how we make decisions. This work has drawn attention to the way age, gender (Best and Charness 2015), different emotional states (Lerner and Keltner 2000), whether we are making normative or descriptive decisions (Bialaszek et al. 2018), the effect of the unconscious on decision-making (Calvillo and Penaloza 2009; Newell and Shanks 2014), power and confidence (Fast et al. 2011), self-control (Kool et al 2013; Vohs et al. 2008), for instance. The key contribution from this area is that decisions are affected by personal factors and positionality (Rothmann and Coetzer 2003). Other factor-based models draw more heavily on neuroscience, and explore how estimated cost (Kool et al. 2010), information quantity and quality (Mark and Snowden 2006; Lee 2011), resource availability (Lee and Cummins 2014; Bourreau et al. 2015), estimated reward value and outcomes (Doya 2008), and prediction errors (Rangel and Clithero 2012) affect how we make decisions, and what role the structure of the brain plays in each case. Research in this area has emphasised how decisions are shaped by the enablers and blockers in the environment (Snowden 2015), and our perception of these.

Decision-making and evidence-based practice (EBP) is also a widely discussed topic in the organisational science and management literature, and draws heavily on the developments discussed above. Initial forays into decision-making in organisations first described the process as being highly rational and about maximising gains, a grounding assumption which was eventually replaced by the understanding that organisations make irrational decisions just as much as humans do (Brunsson 1982). Subsequent research bears may of the same marks as the psychology literature. Research
describes, for example, the role of emotions (Virlics 2013), the effect of risk, resource use (O’Reilly and Tushman 2011) and allocation (Sharma et al. 2014), and predictability of the environment (Reed et al. 2019). Other topics are unique to organisations, such as levels of trust in scientific evidence (Rynes et al. 2018), the relation between conflict and decision-making in groups (Troth 2009), information dissemination and organisational learning for decision-making (Gary and Wood 2011; Oliver et al. 2014), for instance.

The key obstacles to more evidence-based decisions and practice tend to gather around organisational issues, social issues, and personal issues relating to evidence use. The first concerns problems around the dissemination of information and evidence (Haines and Donald 1998), lack of resources and tools for evidence-based decision-making (Armstrong et al. 2013), and organisational culture frameworks (Gary and Wood 2011; Straßhelm and Kettunen 2014) for instance. Social issues relate to the lack of social structures or habits for sharing knowledge and skills (Oliver et al. 2014), and conflicts of interest and conflicts between groups (Rynes et al. 2018), and the expectation to use and interpret data and evidence adequately (Sharma et al. 2014). Several responses are suggested to respond to these issues. At an organisational level, research suggests better transparency and openness regarding the aims of EBP (Briner and Walshe 2013) can favour its uptake by staff and managers. This is deeply linked to the question of motivation, where individuals don't just need to understand the logical value of evidence but also need to be motivated enough to use it appropriately (Marenco 2017; Brunsson 1982). The literature also suggests putting in place knowledge brokers and developing better knowledge networks between practitioners (Armstrong et al. 2013). Beyond access to information is the question of the quality of evidence and data acquired, and how to use it. The literature consequently suggests improving staff, manager and leadership skills through training (Oliver et al. 2014). Nonetheless, empirical research suggests that practitioners will not need knowledge of the entire business/operating environment but only need to grasp the key principles. Instead, better mental models can fill the gaps between what we know and what is (Gary and Wood 2011). Despite the diversity of solutions offered, research concludes that, ultimately, the specificity of each context means solutions will need to be adapted to each case (Marenco 2017) and to each target group (Grol and Grimshaw 2003). Furthermore, the value of experience in an organisational setting cannot be replaced by data evidence, but neither should it supervene data and evidence either. Instead, both elements should be used to inform each other and correct each other’s limits (Briner and Walsh 2013).
Annexe 2. Theory

In order to avoid imposing excess structure and meaning on the development of the survey, we draw on several theoretical traditions in the psychology literature and management literature.

Our grounding point is the work on decision-making profiles carried out by Delaney et al. (2015). The project is grounded in Delaney et al.’s (2015) work on decision-making profiles. Building on Scott and Bruce’s (1995) development of the dual-process model, which offered five decision-making profiles, the authors empirically identify three decision-making profiles. The first mode, the experiential profile, represents the notion of quick, spontaneous decision-making. It is characterised by its reliance on intuition and emotion, and its rapid execution. The second style, the interpersonal profile, is based on needing advice or assistance from other people. It is a profile which captures the social context of decision-making such as delegating decisions, asking for advice, or making decisions with others. Finally, the independent profile makes decisions in a slow and deliberate manner, without being driven by emotion, quick reactions or advice. It is not necessarily characterised by rationality but rather by its lack of spontaneity (Delaney et al. 2015, p. 6).

At the same time, no individual relies solely on one decision-making profile. Instead, different situations require us to make decisions in different ways, and personal characteristics will affect our preferences for certain strategies over others. Extrinsically, we find that the structure of the environment moderates several key factors in decision-making. Doya (2008), for instance, examines the interlinking of saturation rate for reward, expected delay for the reward, and probability of success. While we seem to want to maximise gain, our capacity to value expected rewards is far from exact, partly owing to lack of information. Environmental factors, such as probability of success and expected delay, will then feed into the valuation process to fill this lack of knowledge. If a similar decision has already taken place in the past, memory will feed information into the decision-making process to plug any knowledge gaps where possible, thereby replacing or complementing our reliance on probability or expected delay to value expected rewards. Knowledge and probability are two tightly linked concepts in this context. The former defines how far out into the environment our perception and understanding extends, the latter introduces variability and stochasticity which limits our knowledge and creates noise (Doya 2008, pp. 411-412). Together, they constitute the boundary of any decision-making process (Lee 2011, p. 13). We fall back to the notion of boundary as described in systems theory and complexity theory (Morin 2005 pp. 160-161).

This boundary, and how much noise is present within it, will modulate whether new and riskier options are attempted or whether more conservative and safe options are favoured. This choice will also depend on availability of resources – low availability resources will lead to more exploratory and risky behaviour, while high availability of resources will favour more frugal behaviour (Doya 2008, pp. 411-414; Lee and Cummins 2004). The choice of risk versus safety, exploration versus routine, will also depend on framing effects. The focus shifts here from the environment qua 'nature' to the environment qua organisation. The framing effect refers to the way in which extrinsic normative assessments of a decision, which are extrinsic to the decision itself, affect decision-making. It describes how framing information in a positive or negative light, or in terms of risk or gains, will affect how individuals process the information being received (Piñon and Gambara 2005, pp. 325-326). Positively framed information will tend to be associated to positive ideas and therefore be accepted more readily than negatively framed information, while decisions framed in terms of risk will lead to less information processing by the decision-maker (Del Missier et al. 2012, pp. 333-334).

The final step down is to examine how these external elements cascade down to the individual and modulate decision-making – the focus shifts here from extrinsic to intrinsic features. Best and Charness (2015), for example, examine how framing effects are modulated by age, finding that younger individuals tend to choose riskier options than older individuals, even in the context of positive
framing. Not only framing effects but also decision-making profiles are affected by personal characteristics. Delaney et al. (2015, pp. 6-7) study the way gender and age impacts which decision-making profile individuals fall into. Women, for instance, will have a higher chance than men of being in the interpersonal profile, and less chance of being in the affective/experiential profile, while growing older by one year is linked with a 1% increase in the chance of being in the independent profile.

Rather than enumerate all possible factors, intrinsic and extrinsic, which factor into decision-making, the above seeks to highlight the interrelation between the environment, knowledge of the environment, and the decision-maker in affecting how decision-making processes are conceived and implemented. Given the potential complexity of such a picture, what is needed is a theory or model for conceptualising the decision-making landscape of an organisation. Drawing on the notion of 'problem space', we suggest the idea of a decision space.

A problem space is the conceptual space within which problem-solving activities take place. An important feature here is that this space is conceptual, that is, it is endogenous to the problem-solver (their mind) through the construction of a mental model of the task environment (Lee 2011, p. 11). Yet this mental model is grounded in perception of the environment, the problem, and understanding of the problem-solver. The result of this construct is a model which captures both the structure of the task environment — the complexity of the setting — and the "limits of rational adaptation to task requirements" (Newell and Simon, in Lee 2011, p. 11). The dual analysis of agent and context can then be used to reduce the complexity of the model and exclude useless features to find a solution, thus resulting in an "irreducible problem space" (ibid.). The lesson to draw from this concept is that there is an interplay between the decision/judgement process of the thinking agent on the one hand, and the structure and complexity of the environment and problem being solved on the other. A decision space expands the concept of problem space to the organisational level. In this sense, it draws away from the particularities of individual decision-making to the decision-making tendencies of a body of individuals. It also seeks to draw attention to the complexity of the environment and interrelatedness of actions and consequences across scales.

Using the tendencies identified in this report, we find some elements to begin a contour of an RC decision space. The impetus for decisions tends to be unexpected events, which implies a low degree of predictability of the environment. This is reasonable considering the activities the RC engages in. As an organisation, we try to compensate by building data systems which collect vast amounts of information, too much even. With the prevalence of review use, we find that decision-making processes are saturated with data and information. As a result, the amount of noise around the boundary of the decision space, defined by the amount and quality of information we have and complexity of the environment, is extremely high. That the main type of decision we take is strategic seems to be a reasonable consequence of a low predictability and high noise environment — since different threats and opportunities are constantly arising and the boundaries of what know shift, we need to reassess our options. Furthermore, the need to take decisions frequently and, presumably, rather rapidly means we rely on our experience, affect and past patterns of actions to respond to new problems and decisions. Given the complexity of this setting, it is unsurprising that having to work with other people adds another layer of complication we feel we don't need.

Adding layers of understanding to this sketch drawn from data, combined with adequate theoretical constructs (complexity theory and neuroscience may prove to be a fruitful alliance), will provide the basis for drawing the landscape of RC decisions. The latter can then be used as a blueprint for analysing specific situations by progressively eliminating unnecessary elements until an irreducible decision-space is defined. Once done, this should help identify best solutions to organisational problems, key leverage points can be identified to optimise decision-making processes, and bottlenecks and blockages can be resolved (Meadows 1999). In this way, the hope is that this a model of this kind can best capture both how organisational features affect decision-making, but also how decision-making
feeds back into the organisation. We effectively follow Bettis-Outland in the assertion that decision-making is a key feature of organisational learning since the "decision-making approach an organization uses directly impacts organization learning" (Bettis-Outland 2012 pp. 816). An appropriate theory of decision-making therefore needs to capture organisational learning, just as an adequate theory of organisational learning needs to capture decision-making. The next section describes how the theory was used in the development of the survey.

From theory to survey
The project relies on a SenseMaker® survey, which is a set of survey tools for capturing trends and signals in complex social settings. SM is based on the Cynefin framework, which defines five levels of contextual uncertainty. The first level describes simple contexts, where there are few elements and linear relations of causality between them. These settings are easy to understand and predictable. Action in this context is based on best practice. The second level describes complicated contexts. Causality in this context is also linear, but the large number of elements in the system make much harder to understand and conceptualise. Action in this setting is based on good practice. The third level is the complex context. These are dynamic systems which display non-linear relations between elements, leading to unpredictable outcomes when action is taken within them. Action here proceeds through small iterations of finding what direction the system is moving in and nudging it in the desired direction. The fourth level is the chaotic context, which describes a setting where there is no relation between action and outcome, leading to total unpredictability. Suggested action here is to developed novel practice to bring the system back to a simpler state. The final state describes disorder. This context represents complete disagreement between constituent elements, where "cacophony rules" (Gorzen-Mitka and Okreglicka 2014 p. 406). Action here should break the system down to individual elements and identify which of the other four states they are in.

SM is designed to probe complex settings by combining the objectivity of numbers with the persuasiveness of stories. People naturally exchange micro-narratives with each other — short, open-ended stories about their experiences — creating and sharing new knowledge, inspiring others into action. SM works with this natural process — letting people share the experiences they think others should hear. People type, record or post a picture of a key moment (similar to a social media status update) on a specially configured app or webpage. SM's original ‘tagging’ method lets those who know the context best add layers of meaning to their own narratives. Tags provide ‘hard’ quantitative data that reveal meaning without machine interpretation of text or expert analysis. SM outputs are visual landscapes where all narratives are displayed as dots. Like pixels in a digital photograph these cluster to form rich pictures of what’s really happening and why. SM is about detecting weak signals of emerging opportunities or threats, and triggering insights: sudden shifts to better stories that lead to breakthrough action.

Among the tools offered by SM, those used for this report, are dyads and triads. Dyads depict a line connecting two opposing concepts or qualities, called signifiers. A dyad represents the idea of the Golden Mean, the even point between two extremes. Since a dyad extends from 0 to 1, an expected mean and median is 0.5. Triads depict three signifiers in an isosceles triangle, where each end of the triangle is a concept or quality. The closer respondents placed themselves to any point, the more that quality describes their narrative compared to the other two signifiers. SM tools therefore provide a means of capturing more nuanced answers than conventional survey tools. Some of the triads were developed from the theoretical traditions described above, as will be described below. We purposefully explored a wide range of concepts to avoid imposing too much order or meaning into each triad, and to provide a more modular approach when exploring the data and testing theory.

The first triad asked participants what their decision was about, with signifiers drawn from our personal experience in the sector, as were the signifiers for the second triad, which asked respondents...
what triggered their decision. The third triad asked participants what the main obstacle to their decision was. We gathered the core problems to decision-making drawn from the EBP literature, which highlights organisational issues, information access and use issues, manager characteristics, and social/interpersonal issues. We grouped the latter two issues to obtain three signifiers: 'Organisational processes', 'Finding and using information' and 'Dealing with other people'. The fourth triad asked participants what they based their decision. We directly drew our signifiers from the three decision-making profiles elaborated by Delaney et al. (2015). Given that we are examining an organisational context, we directly related the independent profile, which emphasises the deliberate and slow-paced nature of the decision, with rationality and the use of data. In effect, we expect slow and deliberate decisions in an organisational context to be decisions which are relying on analysis, and therefore data and evidence. The final triad asked respondents how they used information at their disposal. These triads draw on the literature on EBP, decision-making profiles and our experience. The first two signifiers, 'To confirm the decision' and 'To motivate the decision' draw on the understanding that, in a data-driven context, data and evidence should be used before a decision is made rather than to confirm a decision post-hoc. The third signifier, 'To convince others', refers to the social context behind information use.

Rather than drawing on theory, our dyads were based on hypotheses to test drawn from our experience and assumptions. The first dyad asked participants how much information they had at their disposal. We hypothesised that results would indicate we suffer from a lack of information. The second dyad asked participants if reviews were used in the decision-making process. We again hypothesised that decisions would suffer from a lack of review use. The final dyad asked participants how participatory or hierarchical they felt the decision-making process was. We hypothesised that decision-making processes would be too hierarchical. Finally, the factors we used were developed with the aim of disaggregating the data for more granular analysis.
Annexe 3. Methods

Data collection
Data was collected online using the SenseMaker® platform. Links to the survey were distributed through IFRC mailing lists to global and regional IFRC actors who were asked to share with their respective NS. Individual emails were also sent to several existing contacts in order to maximise the response rate. Sampling therefore relied on snowballing.

Data processing
Data was processed, analysed and visualised using the R programming language. This provided us with the capabilities offered by the SM Analyst platform (which runs R behind the scenes) with additional analytical power and more options for visualisation.

Analysing the dyads
SM dyads are based on the principle that the desired distribution of answers should be a normal curve with a mean of 0.5 and be mesokurtic (kurtosis value near 3). The results for each dyad are provided in Table 4 and confirm that the data do not follow a normal distribution centred at 0.5. In order to verify the hypothesis which grounds each dyad, we estimated the population mean and median via bootstrapping. For each dyad, we generated 20000 simulations to estimate the population parameters. We then repeated another bootstrap of the data (again with 20000 simulations) at the closest limit from the range of expected values (0.4 or 06) to calculate the p-value for our confidence that the population median is (not) in the range of expected values. This achieved two important ends. First, we validated or rejected the hypothesis for each dyad. The results for each dyad are presented below. The results for the first dyad are shown in Figure 27, where the distribution of medians obtained from the original dataset in red, with a distribution of medians centred at 0.6 shown in grey. The blue shaded area indicates the range within which we are confident the population median falls, namely 0.69 and 0.72. As there is no overlap between each group of data, we can confirm that the population median falls outside the range of expected values. We can consequently confirm that staff and volunteers feel too much information feeds into decision-making processes.

Figure 27. Medians for simulated samples at the observed median and the expected median do not overlap, meaning we are confident the population median is above the range of expected values.
We repeated the exercise for the second dyad and found the population median to lie between 0.68 and 0.71, as shown in Figure 28. Again, there is no overlap between the two groups of data, confirming that the sample median is out of the range of expected values.

Figure 28. The simulated samples do not overlap, meaning we are confident the population median is above the range of expected values.

Lastly, our confidence in the population median for the third dyad has a much wider interval, and lies between 0.38 and 0.44, as shown in the graph below. There is an extensive overlap between the data simulated at the sample median, shown in red in Figure 29, with the data simulated at the lower limit, shown in grey. In effect, 73% (p = 0.736) of the data simulated at the sample median are above 0.4.

Bootstrapping also allowed us to find the distribution of simulated means and medians to approximate a normal distribution, as shown for the second dyad in Figure 30. This means the Central Limit Theorem (CLT) applies. In other words, we can expect that, as more stories are added to the sample, observed statistics will more closely approximate true population parameters.
Analysing the triads

Another approach was needed to assess triads given that one is a closed space where each two variables condition a third. This is because the closure constraint means the sum of each axis must sum to 100 (or 1 is the data is normalised). This is a consequence of the newly introduced Z axis resulting from the difference between 100 (the total) and the sum of the X and Y axes, such that $Z = 100 - (Z + Y)$. A higher value in one axis necessarily implies a lower value in two others (see Delong 2017 for a longer discussion on SM triads). Given this condition, normal distributions are not to be expected. We consequently checked potential distributions through Cullen-Frey graphs, which use the skewness and kurtosis of a distribution to suggest a potential model which may fit. For each signifier, the graphs suggested that the data follows a beta distribution. Signifiers with a high mean and median approximated a beta distribution where $\alpha = \beta = 0.5$, while axes with a low mean and median...
approximated a distribution where \( \alpha = 1 \) and \( \beta = 3 \). Summary statistics for each triad signifier are also provided in Table 6. These statistics also served in the direct comparison across variables.

**Wilcoxon rank sum tests for hypotheses**

In order to test hypotheses using triad variables, we ran Wilcoxon rank sum tests with continuity correction. This is a non-parametric alternative to the paired t-test, and is also called a Mann-Whitney U test. Broadly speaking, this test ranks observations from each test group based on its value, and then sums the ranks for each group separately. Similar distributions should have an approximately even result because we expect the data from each group to be more evenly spread throughout the common ranking. Different distributions will have different results since, when ranked together, the data will show a more patterned distribution. The power of this test is therefore that it takes into account the shape and centre of the data when calculating the difference between two samples. In practical terms, for each hypothesis we segregated the group of interest from the dataset and tested it against the rest of the data in order to obtain distances between the group of interest and the rest of the sample. The test results provide a measure for how much each group differs (the median difference between observations in each group) and the confidence interval (CI), both of which are expressed in the same units used for the triad or dyad. The results also calculate the likelihood our results are due to chance, the p-value. The lower the p-value the more confident we can be in the results. The hypothesis is then either accepted – the differences between groups are statistically significant and warrant further investigation – or rejected – the differences are not significant. We also provide the statistic W, which indicates the sum of the ranks for the first test group. These results are provided in Table 1 in the analysis. A more detailed account of the results is also provided in Table 8 below, which also provides the CI and W.

**Areas under curve**

Another option to the methods described above is to take a probabilistic approach by calculating the area under curve (AUC) for each variable, which we achieved using Reimann sum approximation. Joint probabilities for two or three variables could then be calculated using standard methods. This provided an accurate way of calculating where data points fall as well as providing a tool for calculating where we can expect data points to fall. Although this approach was not extensively pushed in this report, we hope to develop it more in the following stage of the project. Tables providing the AUC for dyads and triads are provided in Table 5 and Table 7, respectively.
Annexe 4. Supplementary data and tables

Table 3. Dyad summary statistics

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Dyad 1: Too much v. not enough information</th>
<th>Dyad 2: Reviews not used v. used extensively</th>
<th>Dyad 3: Too participatory v. too hierarchical</th>
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<tbody>
<tr>
<td>Mean</td>
<td>0.663</td>
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<td>0</td>
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<td>0.515</td>
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<td>Q 2 (median)</td>
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<td>0.696</td>
<td>0.412</td>
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<tr>
<td>Q 3</td>
<td>0.873</td>
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<tr>
<td>Maximum</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sum</td>
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<td>574.448</td>
<td>395.02</td>
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<tr>
<td>Variance</td>
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<td>St. deviation</td>
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<td>Kurtosis</td>
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<td>-1.065</td>
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Table 4. Dyad AUC

<table>
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<tr>
<th>Cut-off</th>
<th>Dyad 1: Too much v. not enough information</th>
<th>Dyad 2: Reviews not used v. used extensively</th>
<th>Dyad 3: Too participatory v. too hierarchical</th>
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<td>1</td>
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<tr>
<td>Kurtosis</td>
<td>Skewness</td>
<td>Variance</td>
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</tr>
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<td>-----------</td>
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<td>----------</td>
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<tr>
<td>0.532</td>
<td>0.335</td>
<td>0.367</td>
<td>0.987</td>
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Table 5. Triad summary statistics

Table 6. Trial AUC
### Table 7. Results of Wilcoxon rank sum tests

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<tr>
<th>id</th>
<th>hypo</th>
<th>p_val.</th>
<th>side</th>
<th>CI low</th>
<th>CI hi</th>
<th>Diff.</th>
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</thead>
<tbody>
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<td>1</td>
<td>Decisions which are based on advice lead to more negative/very negative decisions</td>
<td>3.00E-05</td>
<td>greater</td>
<td>4.36</td>
<td>Inf</td>
<td>8.60</td>
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<td>2</td>
<td>Decisions based on experience lead to more positive/very positive outcomes</td>
<td>0.02385</td>
<td>greater</td>
<td>0.37</td>
<td>Inf</td>
<td>2.28</td>
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<tr>
<td>3</td>
<td>Decisions triggered by crises/opps lead to more positive/very positive outcomes</td>
<td>0.06309</td>
<td>greater</td>
<td>-0.086</td>
<td>Inf</td>
<td>1.78</td>
</tr>
<tr>
<td>4</td>
<td>Decision-making processes are more hierarchical for managers</td>
<td>0.00164</td>
<td>greater</td>
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<td>5</td>
<td>Managers use information to convince others more</td>
<td>0.27311</td>
<td>greater</td>
<td>-1.59</td>
<td>Inf</td>
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</tr>
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<td>6</td>
<td>Managers main obstacle is people to a greater extent</td>
<td>0.13737</td>
<td>less</td>
<td>-Inf</td>
<td>1.82</td>
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<td>7</td>
<td>Managers main obstacle is processes to a greater extent</td>
<td>0.003</td>
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<td>2.67</td>
<td>Inf</td>
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<td>8</td>
<td>Managers use reviews more</td>
<td>0.00177</td>
<td>less</td>
<td>-Inf</td>
<td>-0.043</td>
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<td>9</td>
<td>Decision-making processes are more hierarchical for senior leaders</td>
<td>0.02434</td>
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<td>0.016</td>
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<td>10</td>
<td>Senior leaders use information to convince others more</td>
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<td>11</td>
<td>Senior leaders main obstacle is people to a greater extent</td>
<td>0.12663</td>
<td>less</td>
<td>-Inf</td>
<td>2.42</td>
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<td>12</td>
<td>Senior leaders main obstacle is processes to a greater extent</td>
<td>0.01527</td>
<td>greater</td>
<td>2.17</td>
<td>Inf</td>
<td>10.53</td>
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<td>13</td>
<td>Senior leaders use reviews more</td>
<td>0.22567</td>
<td>greater</td>
<td>-0.0423</td>
<td>Inf</td>
<td>0.036</td>
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<td>14</td>
<td>Triggered by managers means less participation</td>
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<td>0.0241</td>
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<td>Review use is encouraged by participation</td>
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<td>0.014</td>
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<td>Review use is encouraged when decisions are taken as a group</td>
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<td>Information is used to motivate decisions more when taken as a group</td>
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<td>Men base their decisions on personal experience more than women</td>
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<td>Men use information to confirm their decisions more than women</td>
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<td>20</td>
<td>Reliance on experience increases with age - under 18</td>
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<td>-15.6</td>
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<td>Reliance on experience increases with age - 18-29</td>
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<td>Reliance on experience increases with age - 30-39</td>
<td>0.15762</td>
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<td>-1.15</td>
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<td>23</td>
<td>Reliance on experience increases with age - 40-49</td>
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<td>9.35</td>
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<td>24</td>
<td>Reliance on experience increases with age - 50-59</td>
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<td>2.89</td>
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<td>25</td>
<td>Reliance on experience increases with age - over 60</td>
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</table>

### Table 8. Unanswered questions from the workshop

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are we data-driven or donor-driven?</td>
</tr>
<tr>
<td>Is data being manipulated to confirm our hypotheses?</td>
</tr>
<tr>
<td>Decisions mainly concern strategy/planning – is this a seasonal bias?</td>
</tr>
<tr>
<td>Those who have experience aren’t asked for advice?</td>
</tr>
<tr>
<td>We use reviews, are we learning from past experiences?</td>
</tr>
<tr>
<td>Are we happy about any decision taken, despite how the process was?</td>
</tr>
<tr>
<td>Are tougher decisions more satisfactory?</td>
</tr>
<tr>
<td>Question</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
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<tr>
<td>How much is the decision-making process constrained by the culture? or do decisions create the culture?</td>
</tr>
<tr>
<td>Are culture and decision two-sides of the same coin?</td>
</tr>
<tr>
<td>Are autocratic decisions a result of no participation and no review use? Do these lead to more negative feelings?</td>
</tr>
<tr>
<td>How are respondents understanding crisis and opportunity?</td>
</tr>
<tr>
<td>Is the RCRC mainly a reactive organisation?</td>
</tr>
<tr>
<td>Are people really the problem, or is it the processes people are embedded in?</td>
</tr>
</tbody>
</table>
Annexe 5. Annexe references


