

Operationalising and Representing Conceptual Variation for a Corpus-driven Encyclopaedia

A pilot study

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HUMANITARIAN
ENCYCLOPEDIA



UNIVERSIDAD
DE GRANADA

 **LexiCon** research group

The Humanitarian Domain

Diverse and fragmented

- was recently professionalised (Eberwein & Saurugger 2013)
- comprises diversely specialised organisations (Dauvin & Siméant-Germanos 2002)
 - with inter- and intra-organisational and national cultural differences (Sezgin & Dijkzeul 2015); and
- suffers from fragmented knowledge cumulation (Vestegaard 2021: 113)



The Humanitarian Domain

A Quest for Shared Understandings

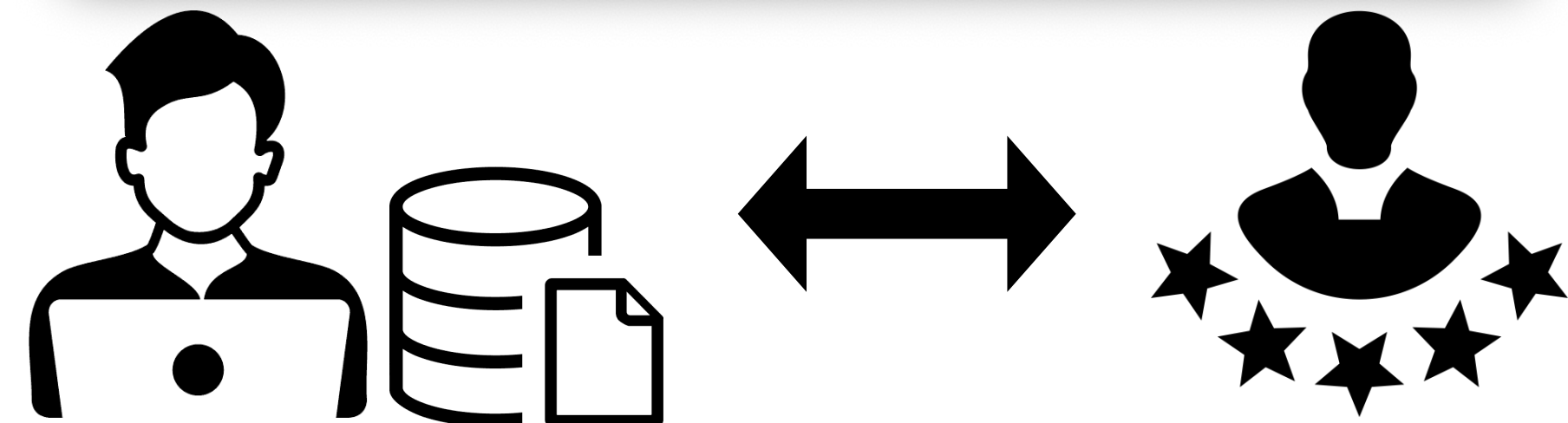
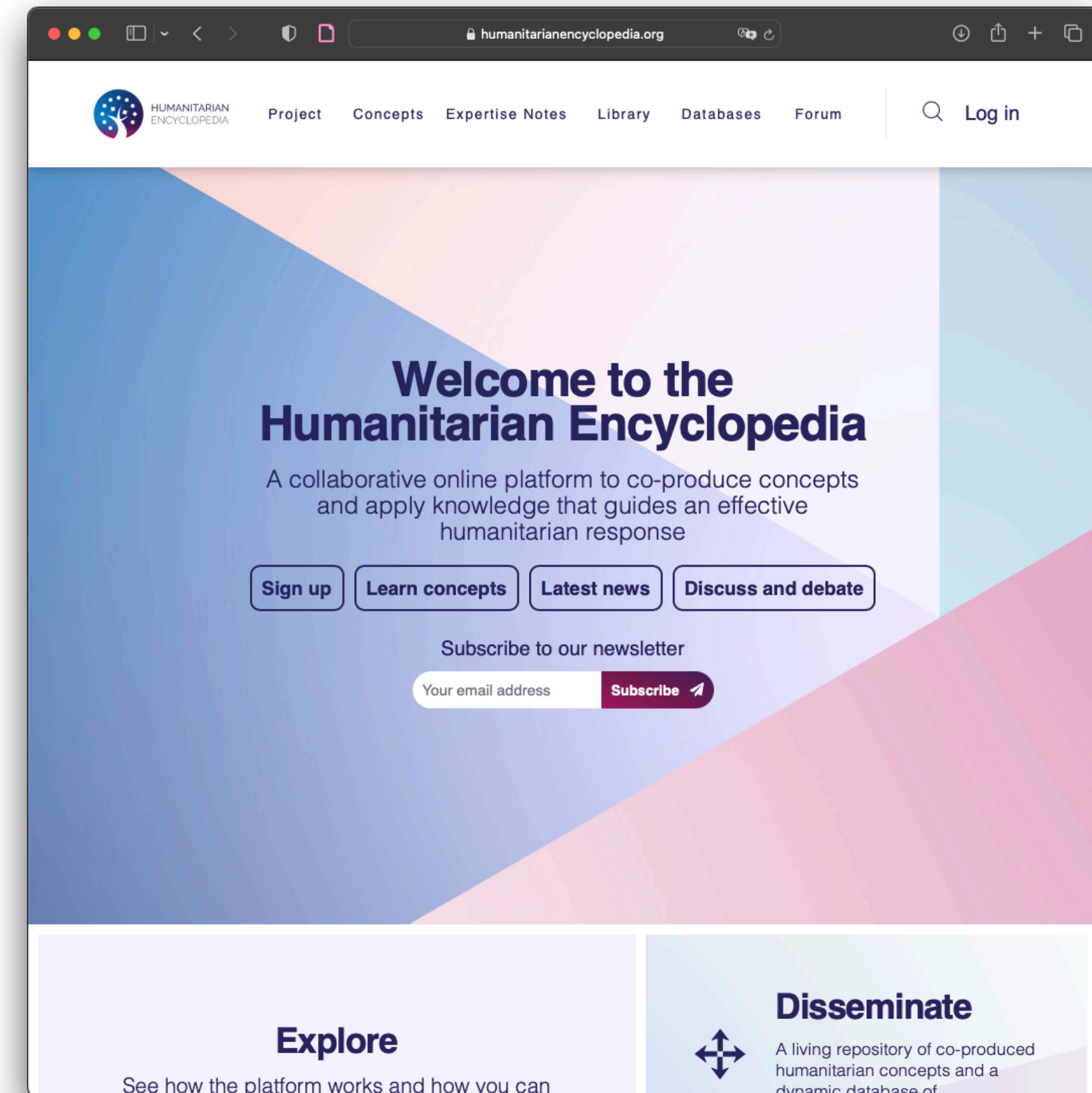
- crucial for stakeholder coordination (OCHA 2012);
- builds trust (WHS 2015);
- helps solve disagreements (ODI, 2007);
- improves performance (ALNAP 2010);
- enables measurement of phenomena (IFRC 2016);
- guides decision-making (IFRC 2016);
- is an objective of training and workshops (CARE Australia 2013);
- requires constant revision (FAO 2018); and
- is yet to be accomplished (IFRC 2011).



The Humanitarian Encyclopedia (HE)

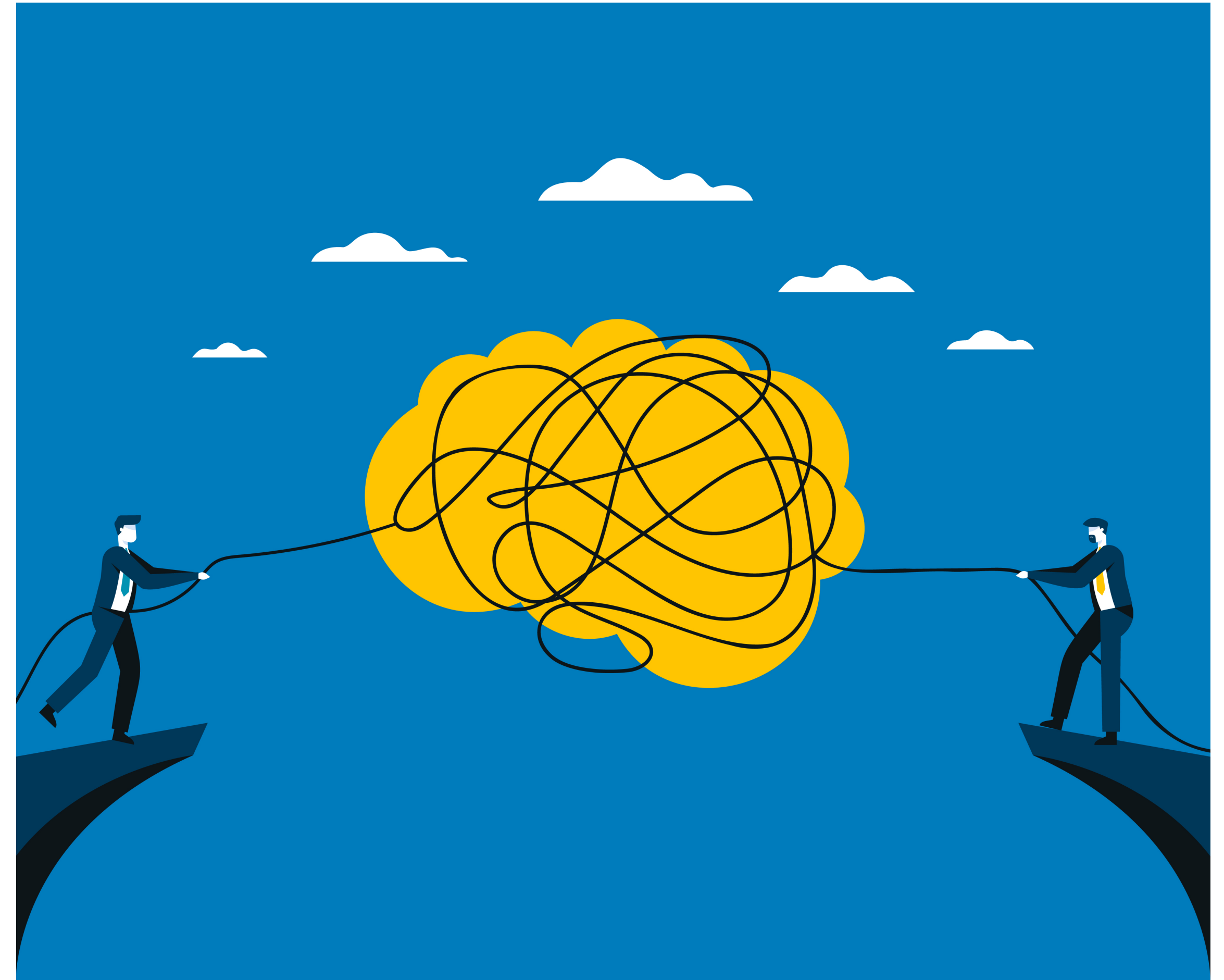
A Corpus-driven Project

- aims to foster shared understandings through a descriptive and collaborative approach;
- uses knowledge transfer between experts and linguists to:
 - describe concepts based on lexical data through Frame-based Terminology (Meyer 2001, Marshman 2022);
 - minimise biases and content gaps; and
 - study conceptual variation thanks to corpus metadata.



Conceptual variation

- affects the intentions and extensions of concepts
 - GENE (Gericke & Hagberg 2010)
 - HYPOTHESIS (Donovan et al. 2015)
 - SPORT y FISH (Hampton 2020)
- results in fuzzy and highly multidimensional conceptualisations (León-Araúz 2017, 215)



The Four Humanitarian Principles

A Case Study

- HUMANITY, IMPARTIALITY, NEUTRALITY and INDEPENDENCE
- Solidly conceptualised and well understood in non-Western cultures (Hansen 2008, 125)
- Not that well understood by humanitarian organisations and affected people (Abu-Sada, 2012)



General Objectives



- Explore a method to detect conceptual variation in textual sources
- Facilitate data interpretation for linguist analysts
- Improve linguistic reporting for entry authors

Specific Objectives



- Determine meaning by deriving characteristics from lexical data
- Associate elucidated characteristics to a typology of humanitarian organisations
- Compare the distribution of characteristics across organisation types to detect variation
- Represent data to identify areas of conceptual variation

Studying ‘Soft’ Concepts in Textual Sources

Kantner & Overbeck (2020)

- Create methods and workflows combining corpus linguistics and qualitative analysis.
- Operationalise complex concepts in semantically valid ways.
- Visualise data with suitable disaggregation options.

Cathleen Kantner and Maximilian Overbeck
**Exploring Soft Concepts with Hard
 Corpus-Analytic Methods**

Abstract: Corpus-analytic studies are currently experiencing a veritable boom in the social sciences. However, three crucial barriers impede the methodological quality and long-term reputation of these promising new technologies: Firstly, creating and pre-processing very large text corpora is still a laborious and costly enterprise. Secondly, the semantically valid operationalization of complex theoretical concepts remains a problem. Thirdly, scholars need flexible data output and visualization options to connect the data generated by computational methods with the discipline’s existing research. We will conclude that it is possible to solve these problems. However, hermeneutically sensitive uses of computational methods will take much more time, work, and creativity than often assumed. The reflected appropriation of big data methods in the social sciences has only just begun.

Zusammenfassung: In diesem Beitrag argumentieren wir, dass drei methodische Barrieren die Verbreitung korpusanalytischer Methoden in den Sozialwissenschaften erschweren. Erstens bereitet es immer noch einen sehr hohen Aufwand, große Textkorpora zu erstellen und aufzubereiten. Zweitens ist das Problem der semantisch validen Operationalisierung komplexer geistes-, sozial- und kulturwissenschaftlicher Begriffe noch völlig unzureichend gelöst. WissenschaftlerInnen sind daran interessiert, über die Analyse manifester Textinhalte komplexe gesellschaftliche Sinnzusammenhänge zu rekonstruieren. Drittens erlauben viele der für linguistische Fragestellungen designten Tools kaum eine sozialwissenschaftlich anschlussfähige Ergebnisdarstellung. Die Effizienz der neuen Methoden bleibt hinter den hohen Erwartungen zurück, wenn es nicht gelingt, diese mit jedem neuen Forschungsprojekt verbundenen zeitraubenden Arbeitsschritte zu standardisieren. Allerdings kann es hierfür keine one size fits all Lösungen geben,

Note: An earlier version of this contribution in German language can be found in: Cathleen Kantner and Maximilian Overbeck (2018). "Die Analyse 'weicher' Konzepte mit 'harten' korpuslinguistischen Methoden". In: *Computational Social Science: Die Analyse von Big Data*. Ed. by Andreas Blätte, Joachim Behnke, Kai-Uwe Schnapp, and Claudius Wagemann. Baden-Baden: Nomos Verlag, pp. 163–189.

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<https://doi.org/10.1515/9783110693973-008>

Studying Conceptual Variation in Textual Sources

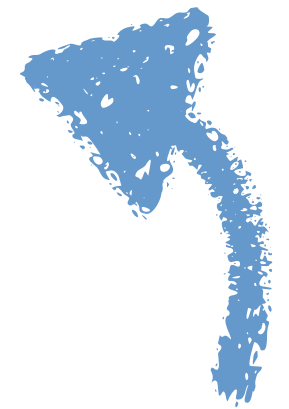
A Proposed Methodological Pathway

1. Extract textual evidence of conceptual description from a corpus
2. Elucidate characteristics to enable comparison
3. Compare and quantify characteristics to determine a semantic core
4. Consolidate characteristics with corpus metadata into a single dataset
5. Visualise and disaggregate data for interpretation

Studying Conceptual Variation in Textual Sources

A Proposed Methodological Pathway

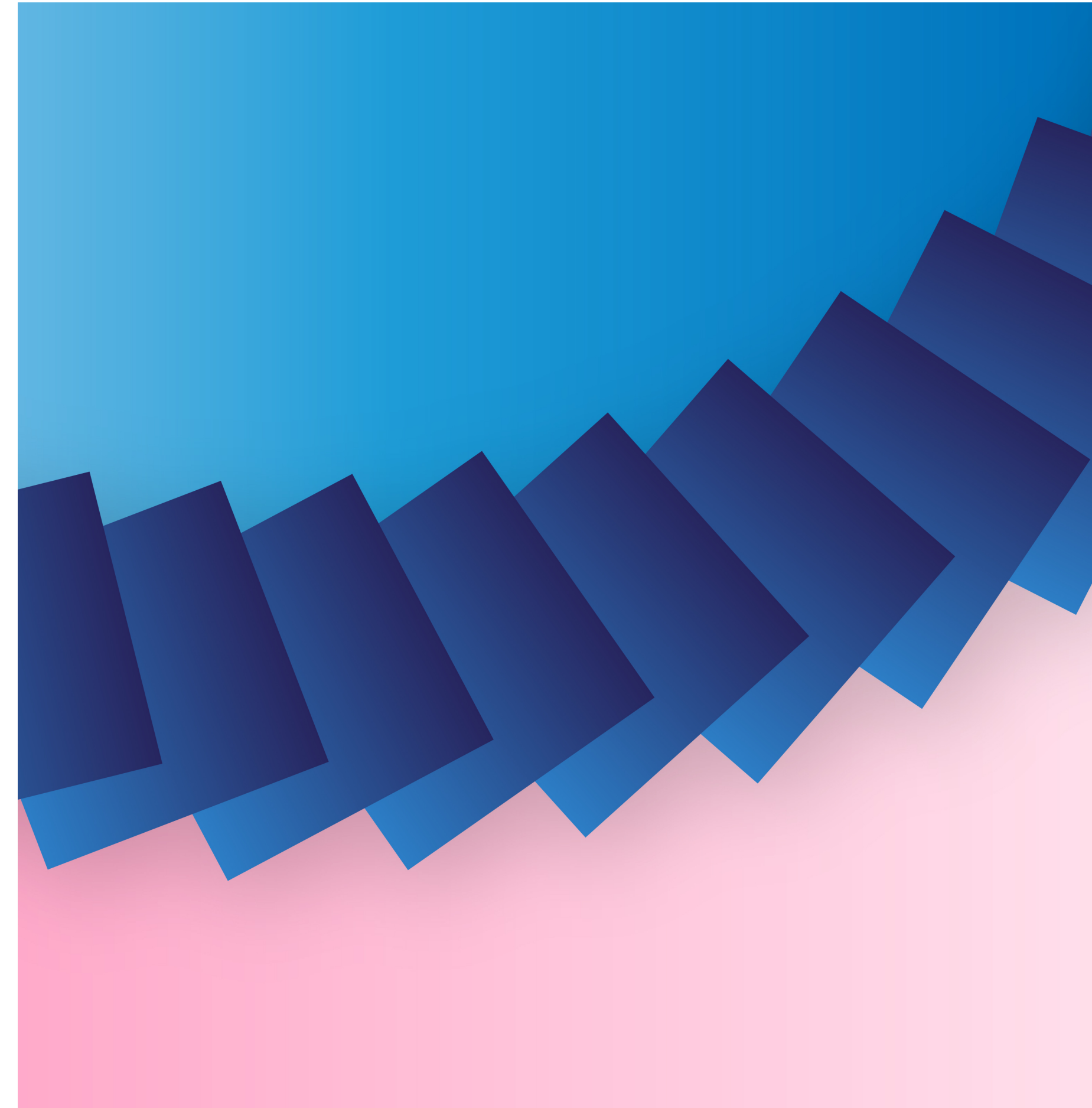
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The HE Corpus

1. Extract textual evidence of conceptual description

- contains 4,824 humanitarian documents (84,926,707 tokens, 71,201,157 words)
- with metadata for organisation types: NGOs, IGOs, RC, Net, Found, State, RE, C/B and Project.
- uploaded onto Sketch Engine (Kilgarriff et al. 2014)



Definition extraction with Sketch Engine

1. Extract textual evidence of conceptual description

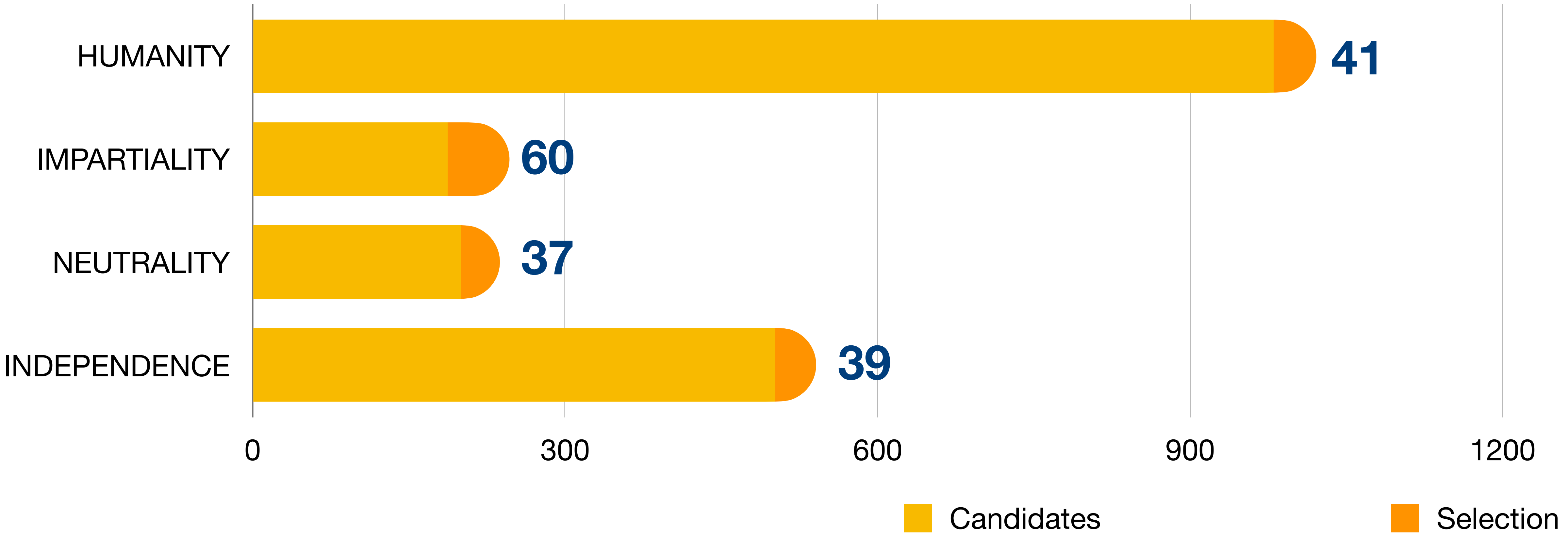
- Definitions are
 - the starting point in conceptual analysis (Sierra et al. 2010, 76)
 - high-density units (León-Araúz & Reimerink 2019)
- extracted with verbal patterns and paralinguistic patterns through
 - CQL concordance queries
 - Lemma context filter

Strategy	Pattern
CQL query	be a, be not, be one, be the
Lemma context filter	call, categorise, concept, conceptualise, conceptualize, consider, deem, define, definition, entail, idea, imply, involve, mean, meaning, notion, refer, require, requirement, term, understand, word, : (colon), ((opening round bracket)

A Sample of 177 Definitions

1. Extract textual evidence of conceptual description

Number of definitions manually curated from context candidates



Studying Conceptual Variation in Textual Sources

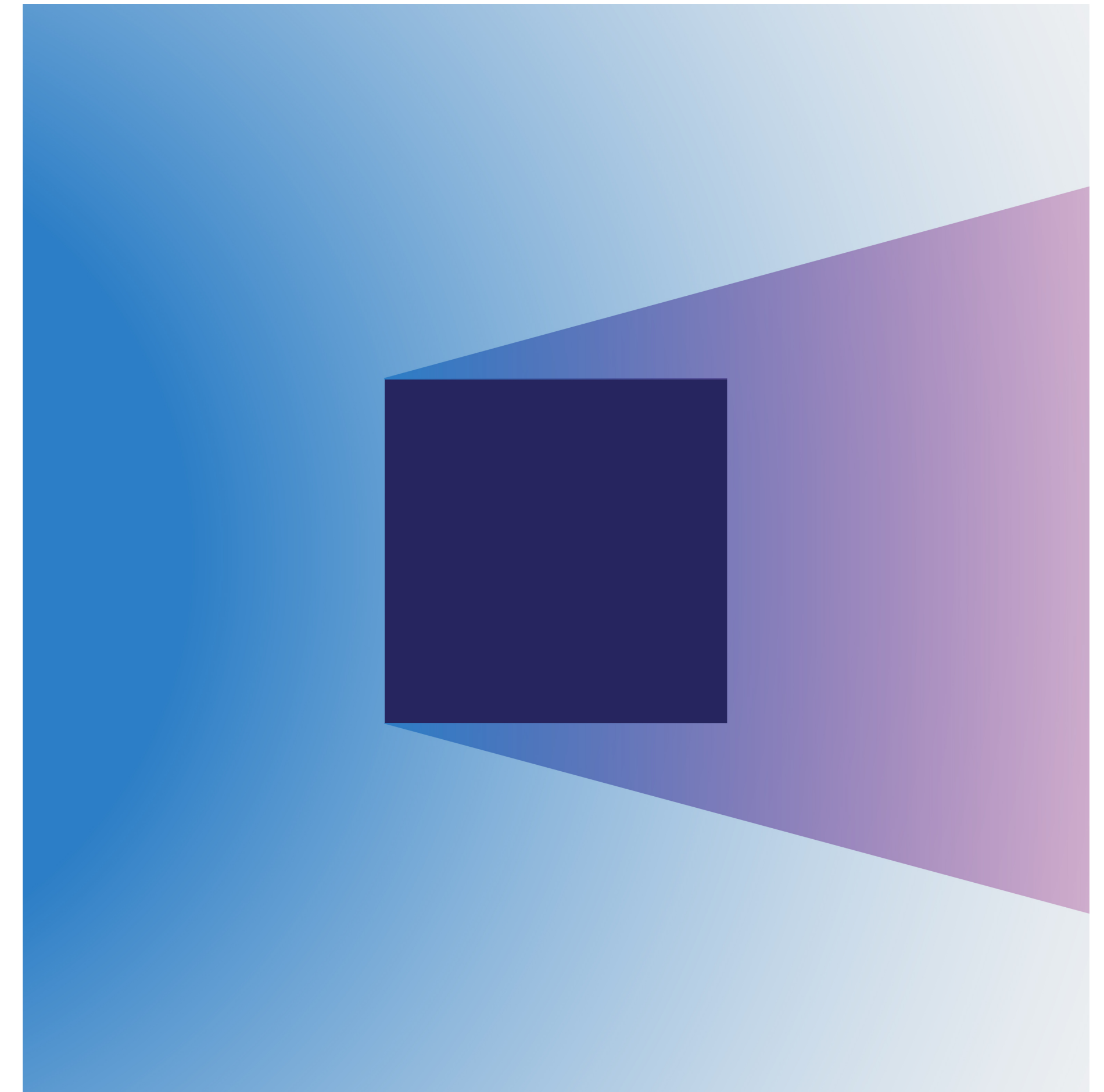
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Content Analysis: Inductive Coding

2. Elucidate characteristics to enable comparison

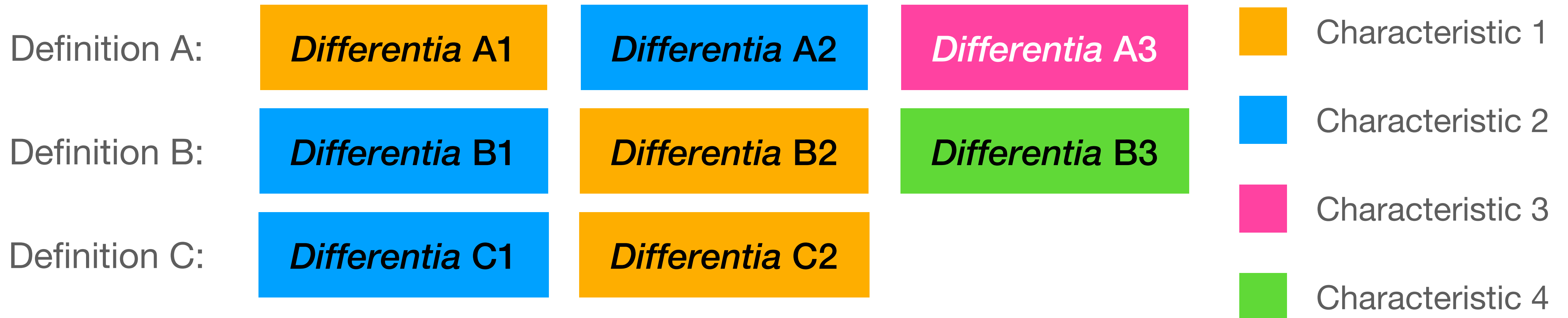
- Content Analysis provides inductive coding techniques to:
 - derive characteristics from open data observation (Kyngäs 2020, 14)
 - subsume lexically diverse descriptions (León-Araúz 2019, 128)
 - into comparable semantic categories (Bengtsson 2016, Lindgren 2016)



Inductive Coding with Taguette

2. Elucidate characteristics to enable comparison

- *Differentiae* were coded with Taguette (Rampin & Rampin 2021)



Inductive Coding: IMPARTIALITY Examples

2. Elucidate characteristics to enable comparison

D1: The principle of impartiality requires us to take appropriate action according to the level of suffering. (NGO)

D2: Impartiality: Reaching the most vulnerable and marginalised, selected on the basis of need alone, regardless of their race, religion or nationality. (RE)

D3: ...impartiality, meaning the implementation of actions solely on the basis of need, without discrimination between or within affected populations. (C/B)

D4: Impartiality requires humanitarian actors to make no distinctions on the basis of nationality, race, gender, religious beliefs, class or political opinions in their operations, responding on the basis of humanitarian need alone. (NGO)

Inductive Coding: IMPARTIALITY Examples

2. Elucidate characteristics to enable comparison

■ Needs-based assistance

D1: The principle of impartiality requires us to take appropriate action according to the level of suffering. (NGO)

D2: Impartiality: Reaching the most vulnerable and marginalised, selected on the basis of need alone, regardless of their race, religion or nationality. (RE)

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Inductive Coding: IMPARTIALITY Examples

2. Elucidate characteristics to enable comparison

 Non-discrimination

D1: The principle of impartiality requires us to take appropriate action according to the level of suffering. (NGO)

D2: Impartiality: Reaching the most vulnerable and marginalised, selected on the basis of need alone, **regardless of their race, religion or nationality.** (RE)

D3: ... impartiality, meaning the implementation of actions solely on the basis of need, **without discrimination between or within affected populations.** (C/B)

D4: Impartiality requires humanitarian actors to make **no distinctions on the basis of nationality, race, gender, religious beliefs, class or political opinions in their operations,** responding on the basis of humanitarian need alone. (NGO)

Inductive Coding: IMPARTIALITY Examples

2. Elucidate characteristics to enable comparison

 Target the most vulnerable

D1: The principle of impartiality requires us to take appropriate action according to the level of suffering. (NGO)

D2: Impartiality: **Reaching the most vulnerable and marginalised**, selected on the basis of need alone, regardless of their race, religion or nationality. (RE)

D3: ... impartiality, meaning the implementation of actions solely on the basis of need, without discrimination between or within affected populations. (C/B)

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Inductive Coding: IMPARTIALITY Examples

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D4: Impartiality requires humanitarian actors to make no distinction on the basis of nationality, race, gender, religious beliefs, class or political opinions in their operations, responding on the basis of humanitarian need.

- Needs-based assistance
- Non-discrimination
- Target the most vulnerable

Studying Conceptual Variation in Textual Sources

A Proposed Methodological Pathway

1. Identify textual evidence of conceptual description in a corpus
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Semantic Profiles of Principles

3. Quantify characteristics to determine a semantic core

- HUMANITY: 13 codes, 98 tags, 2.37 tags per definition, (1-5 tags)
- IMPARTIALITY: 11 codes, 108 tags, 1.77 tags per definition, (1-3 tags)

Code	Example	Tags
Anywhere	<i>Humanity: human suffering must be addressed <u>wherever it is found</u>.</i>	24
Alleviate human suffering	<i>...humanity (meaning the centrality of saving lives and <u>alleviating suffering</u>...</i>	19
Prevent human suffering	<i>Humanity: to <u>prevent</u> and alleviate <u>human suffering</u>...</i>	10
Save human lives	<i>...humanity (meaning the centrality of <u>saving lives</u> and alleviating suffering...</i>	10

Code	Example	Tags
Non-discrimination	<i>Impartiality requires humanitarian actors to <u>make no distinctions on the basis of nationality, race, gender, religious beliefs, class or political opinions in their operations</u>...</i>	44
Need-based assistance	<i>Impartiality: we provide our assistance to those who are suffering, <u>according to need</u>.</i>	33
Target the most vulnerable	<i>...impartiality of assistance, requires us to <u>provide aid to those who need it most</u>...</i>	10
Urgency prioritisation	<i>Impartiality requires humanitarian actors to make no discrimination..., <u>giving priority to the most urgent cases of distress</u>.</i>	9

Semantic Profiles of Principles

3. Quantify characteristics to determine a semantic core

- NEUTRALITY: 11 codes, 68 tags, 1.62 tags per definition, (1-3 tags)
- INDEPENDENCE: 4 codes, 47 tags, 1 tag per definition, (1 tag)

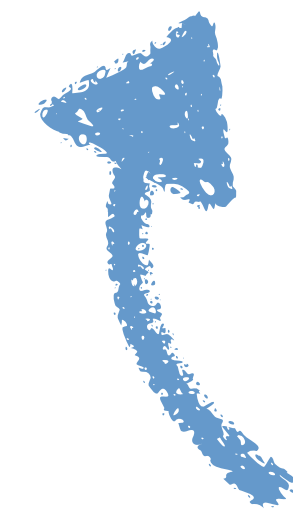
Code	Example	Tags
No side-taking in conflicts	<i>The principle of neutrality means that <u>in a situation of conflict, no one takes sides with one of the parties involved.</u></i>	20
No engagement in controversies	<i>Neutrality: Humanitarian actors must not... <u>engage in controversies of a political, racial, religious or ideological nature.</u></i>	15
No favouring conflict parties	<i>...neutrality (<u>the humanitarian actors do not favour any part of a given conflict</u>)...</i>	12
No political or religious affiliation	<i>Neutrality – <u>we are not affiliated to any political or religious constituency.</u></i>	3

Code	Example	Tags
Autonomy	<i>Operational Independence: our humanitarian actions are <u>autonomous of any political, economic, military or other objectives of its donors or other actors.</u></i>	28
No political or religious affiliation	<i>Independence: <u>from any religious or party-political affiliation.</u></i>	6
Holistic approach to services	<i>Sustaining independence requires a holistic approach which incorporates other key local services such as housing, education...</i>	2
Transfer responsibility to locals	<i>Independence: <u>transfer the infrastructure to local responsibility.</u></i>	1

Studying Conceptual Variation in Textual Sources

A Proposed Methodological Pathway

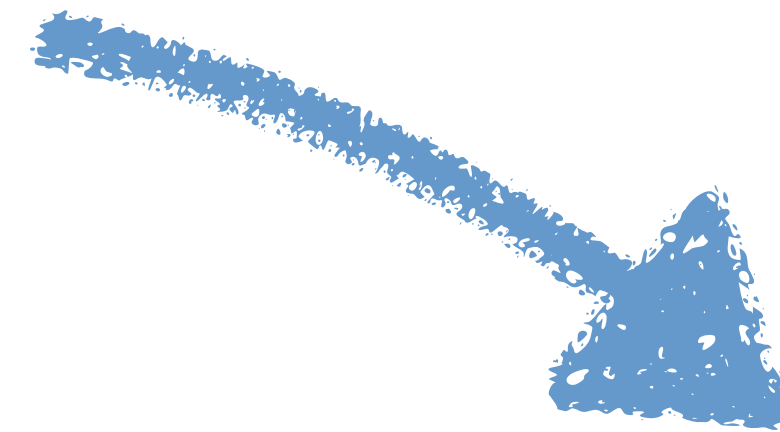
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Data Consolidation

4. Consolidate characteristics with corpus metadata into a single dataset

- Organisation type and other metadata



- Comparable *differentiae* across organisation types

- Decomposed definitions



TAGUETTE



Studying Conceptual Variation in Textual Sources

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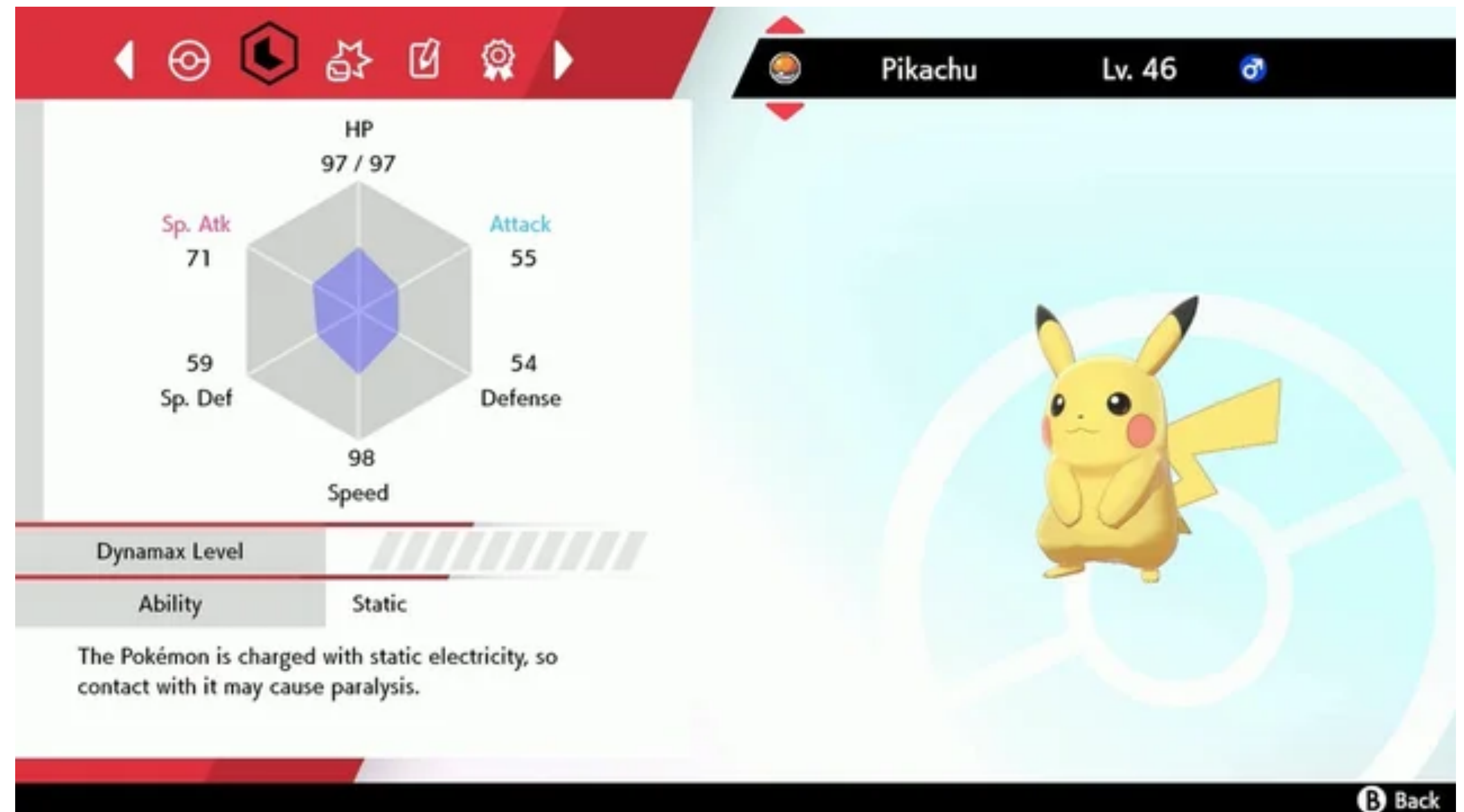


Data Visualisation: Radar Charts

4. Visualise and disaggregate data for interpretation



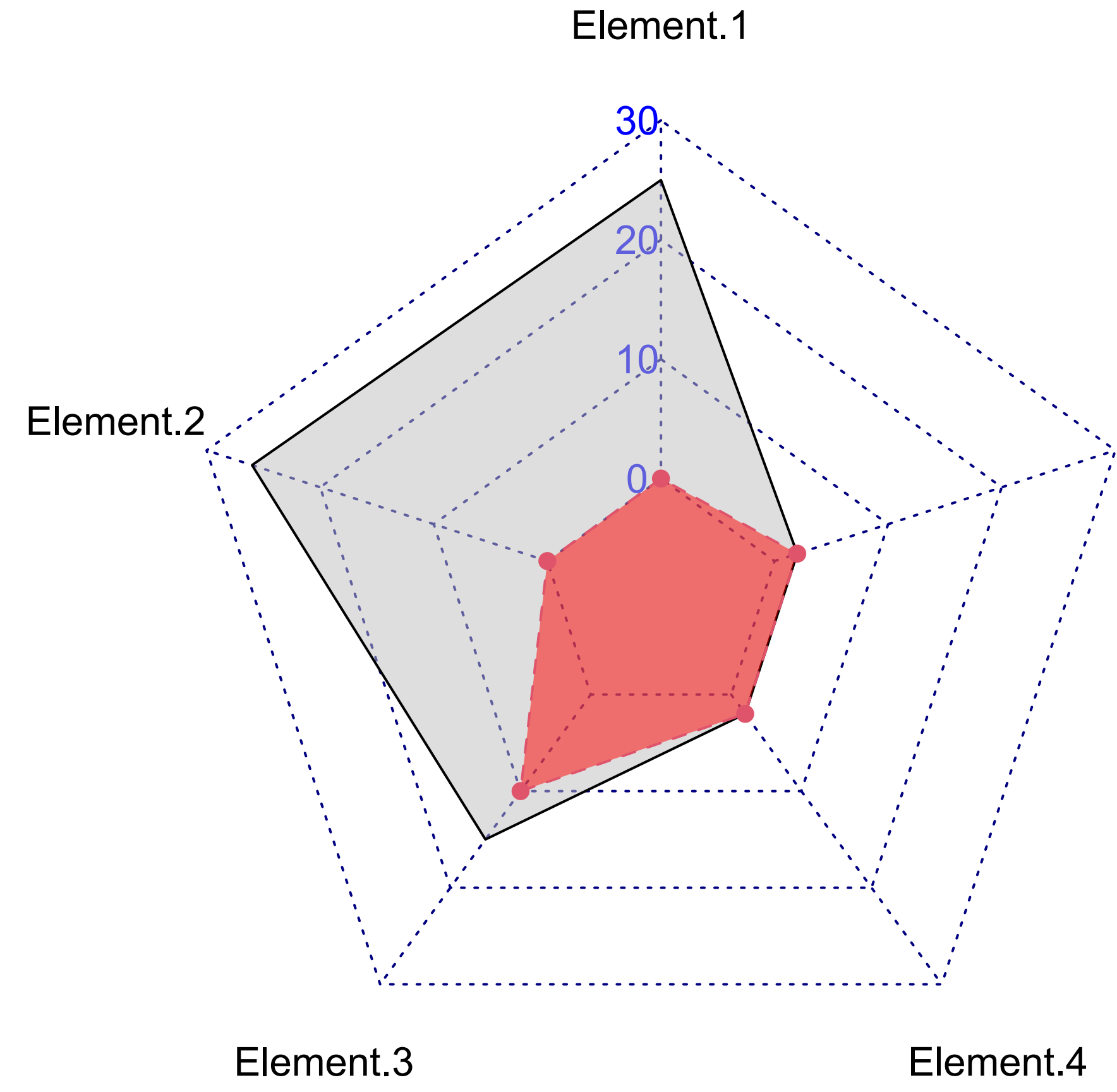
- Package fmsb version 0.7.5 (Nakazawa 2023)



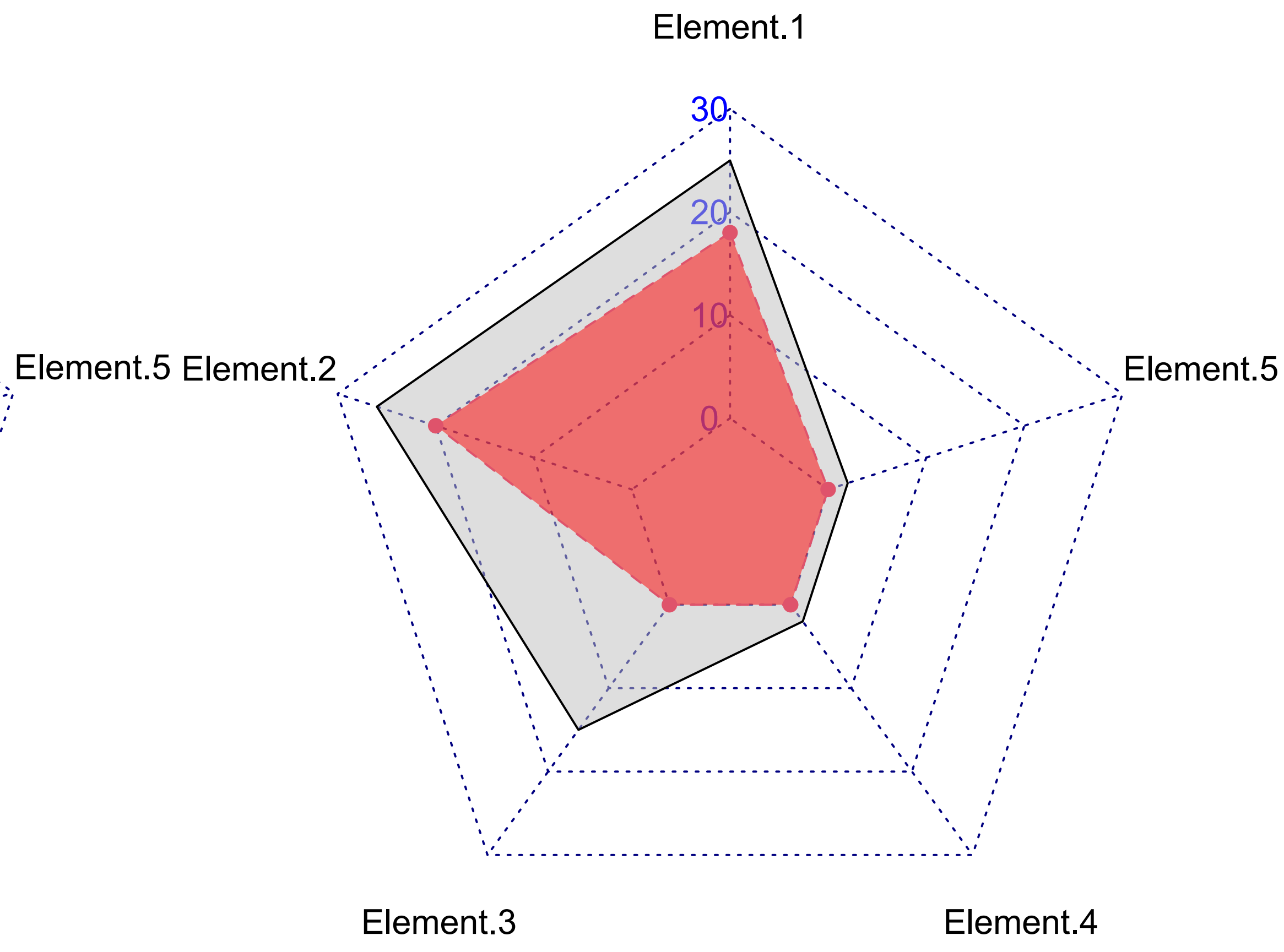
Data Visualisation: Radar Charts

4. Visualise and disaggregate data for interpretation

Organisation type 1

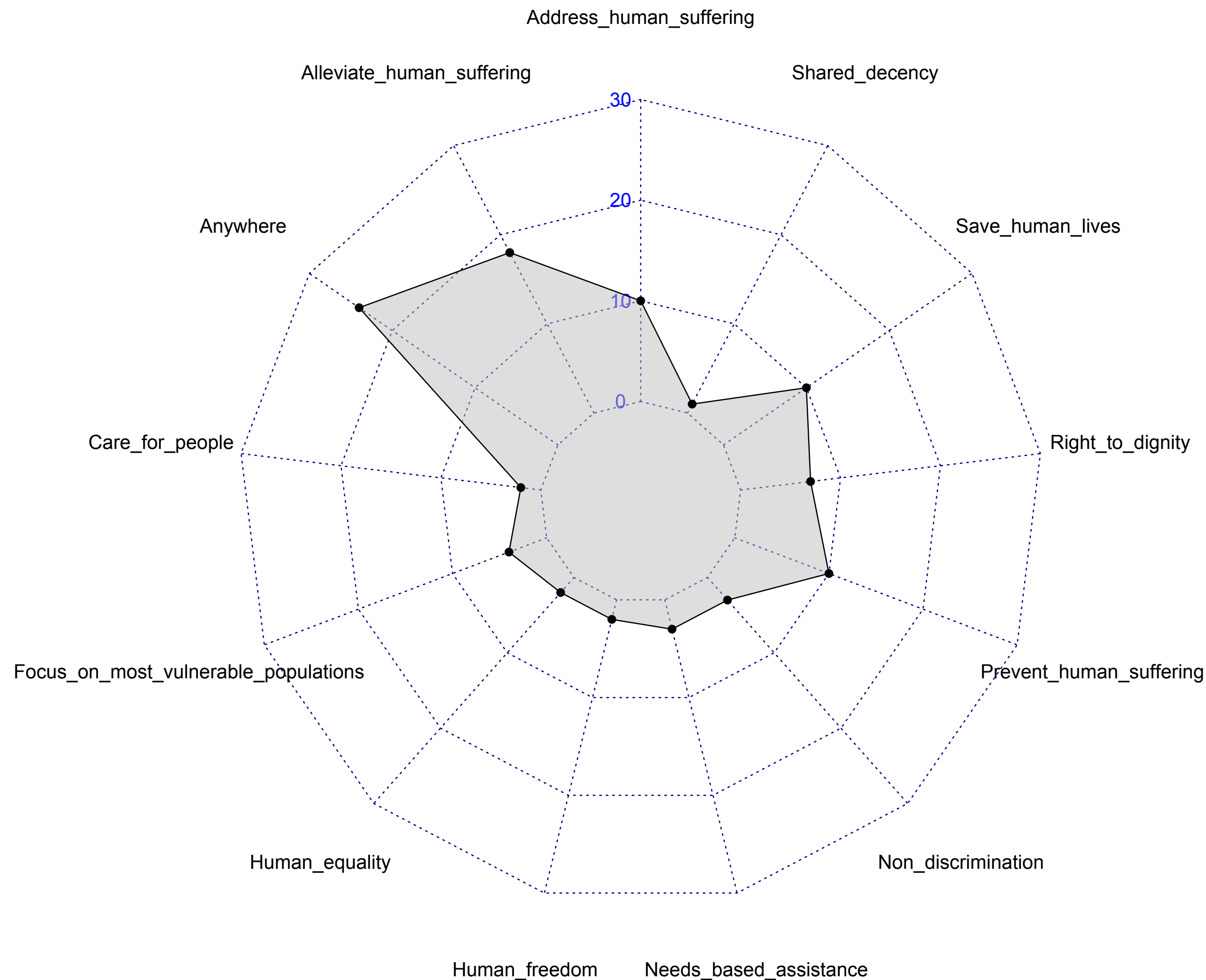


Organisation type 2



Visualising Semantic Profiles

HUMANITY

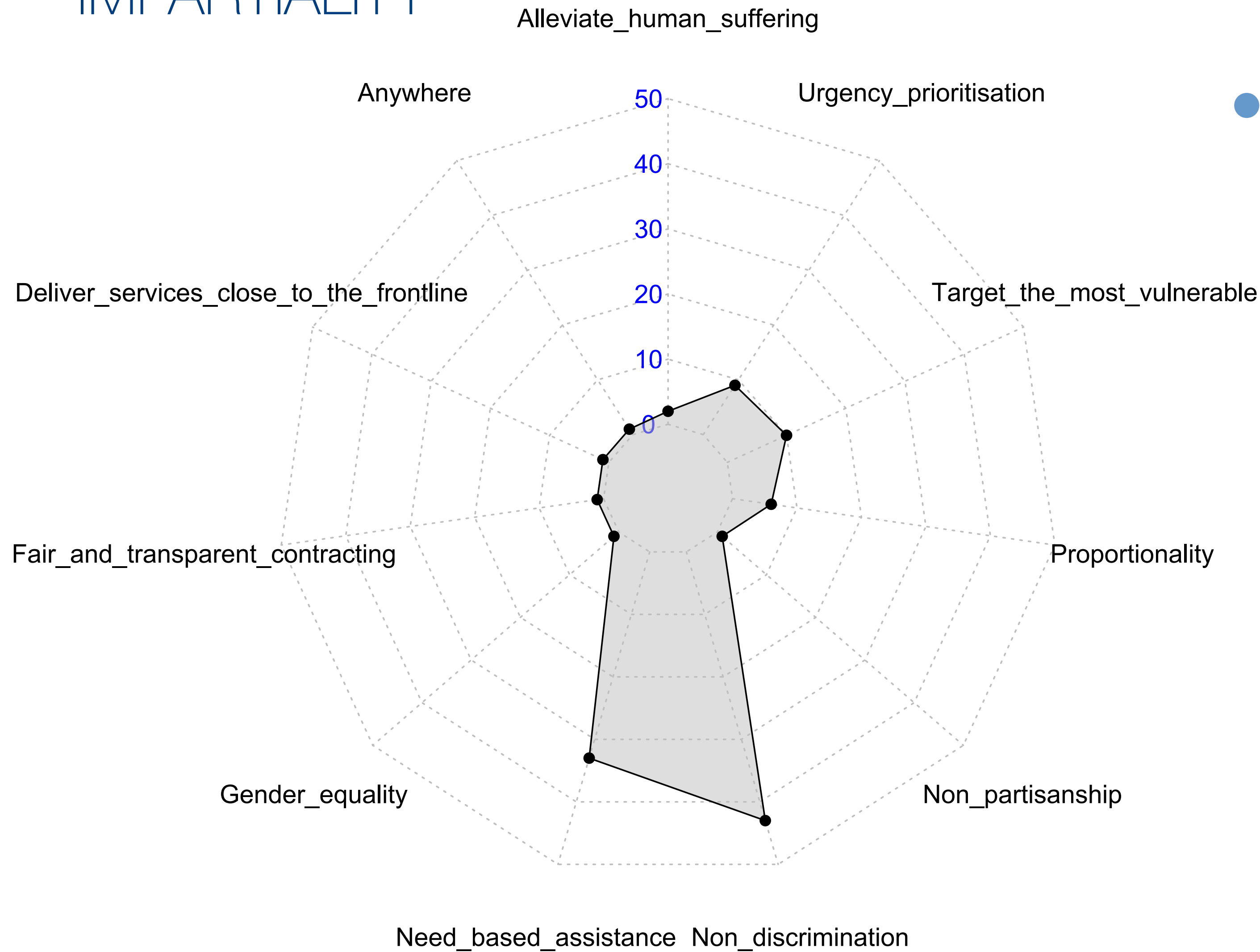


- Semantic core:

- Anywhere
- Alleviate_human_suffering
- Address_human_suffering
- Save_human_lives
- Prevent_human_suffering
- Right_to_dignity

Visualising Semantic Profiles

IMPARTIALITY



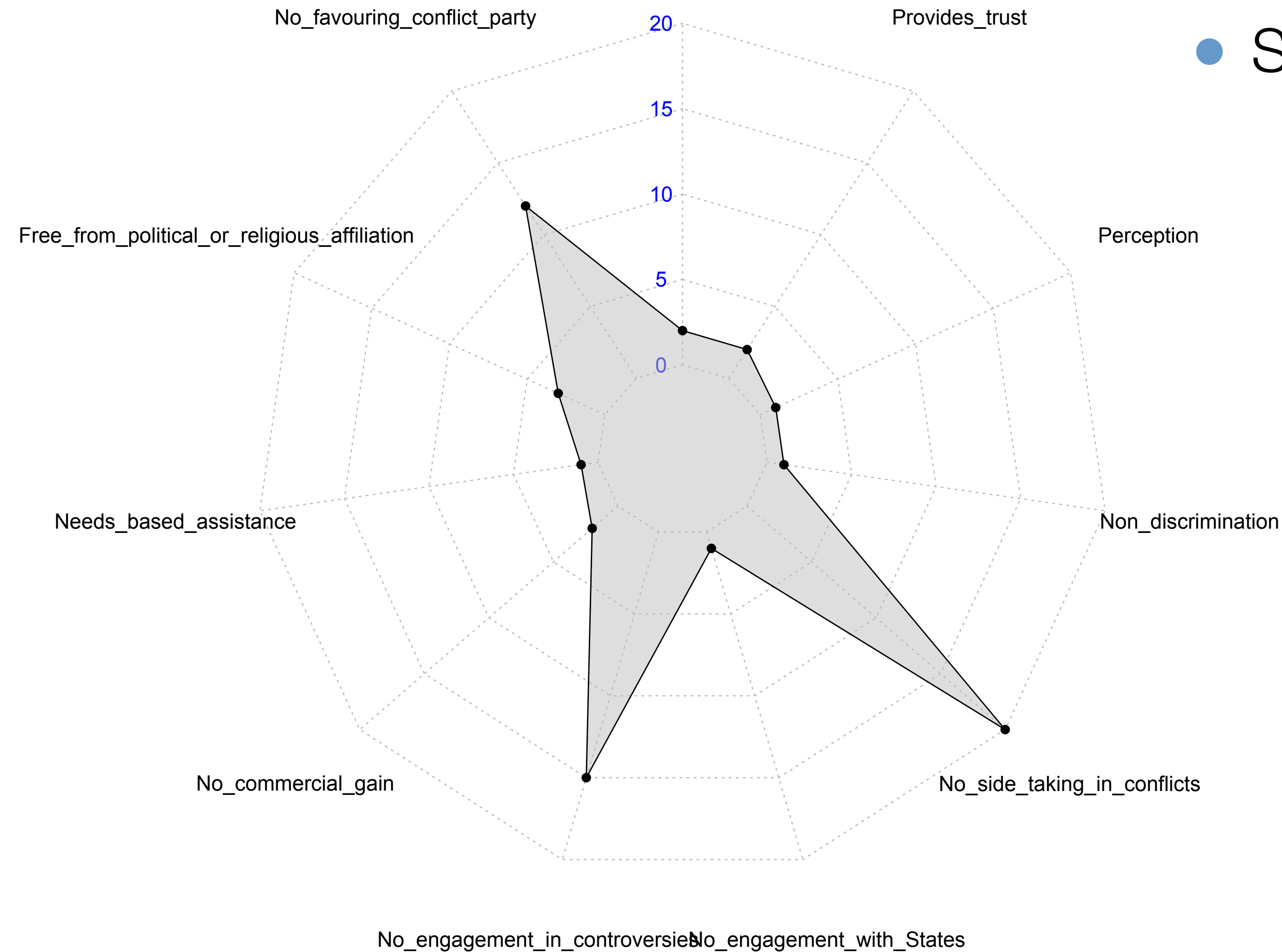
- Semantic core:

- Non_discrimination
- Need_based_assistance
- Target_the_most_vulnerable
- Urgency_prioritisation
- Proportionality

Visualising Semantic Profiles

NEUTRALITY

Abide_by_national_and_international_law

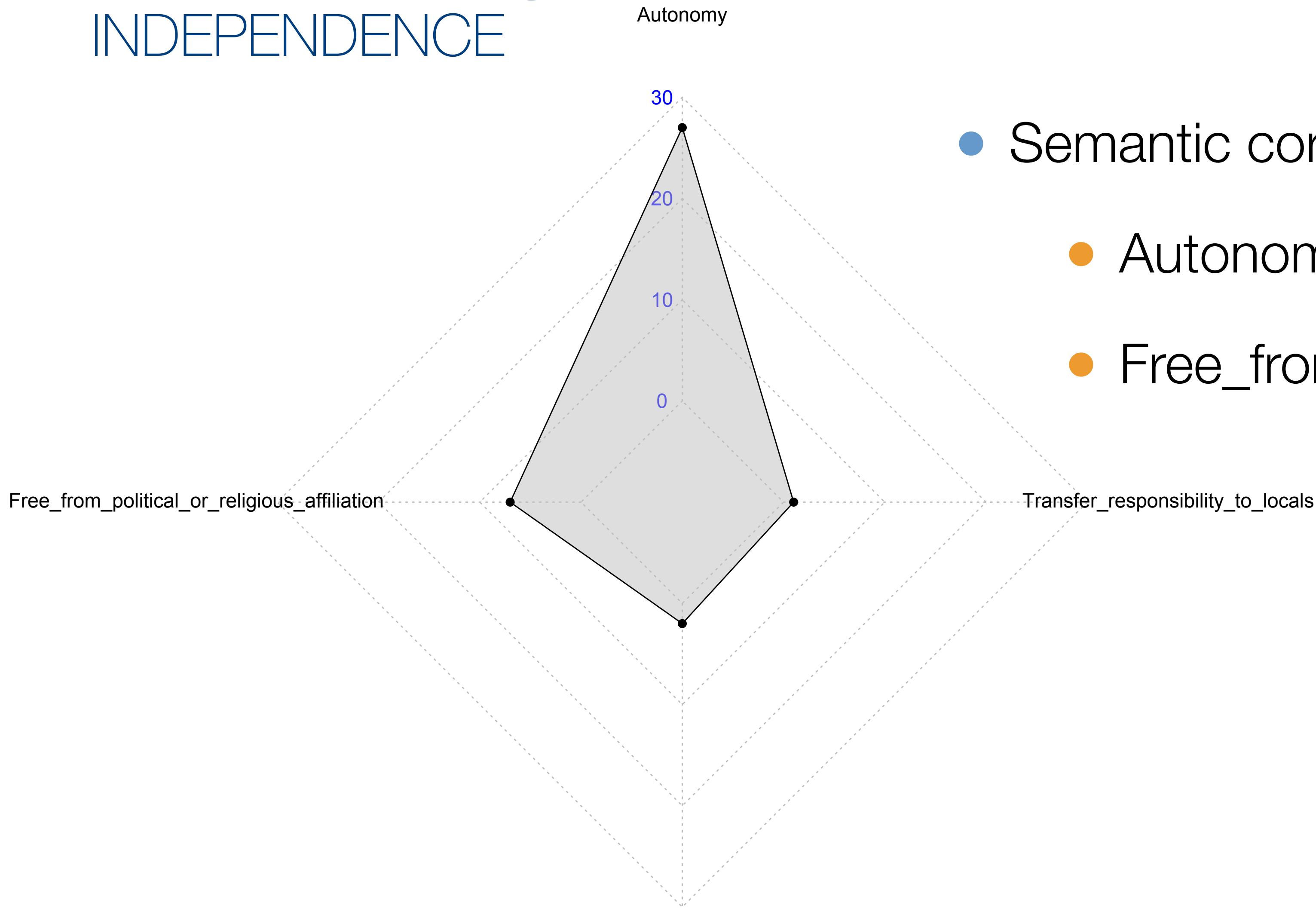


- Semantic core:

- No_side_taking_in_conflicts
- No_engagement_in_controversies
- No_favouring_conflict_parties

Visualising Semantic Profiles

INDEPENDENCE



- Semantic core:
 - Autonomy
 - Free_from_political_or_religious affiliation

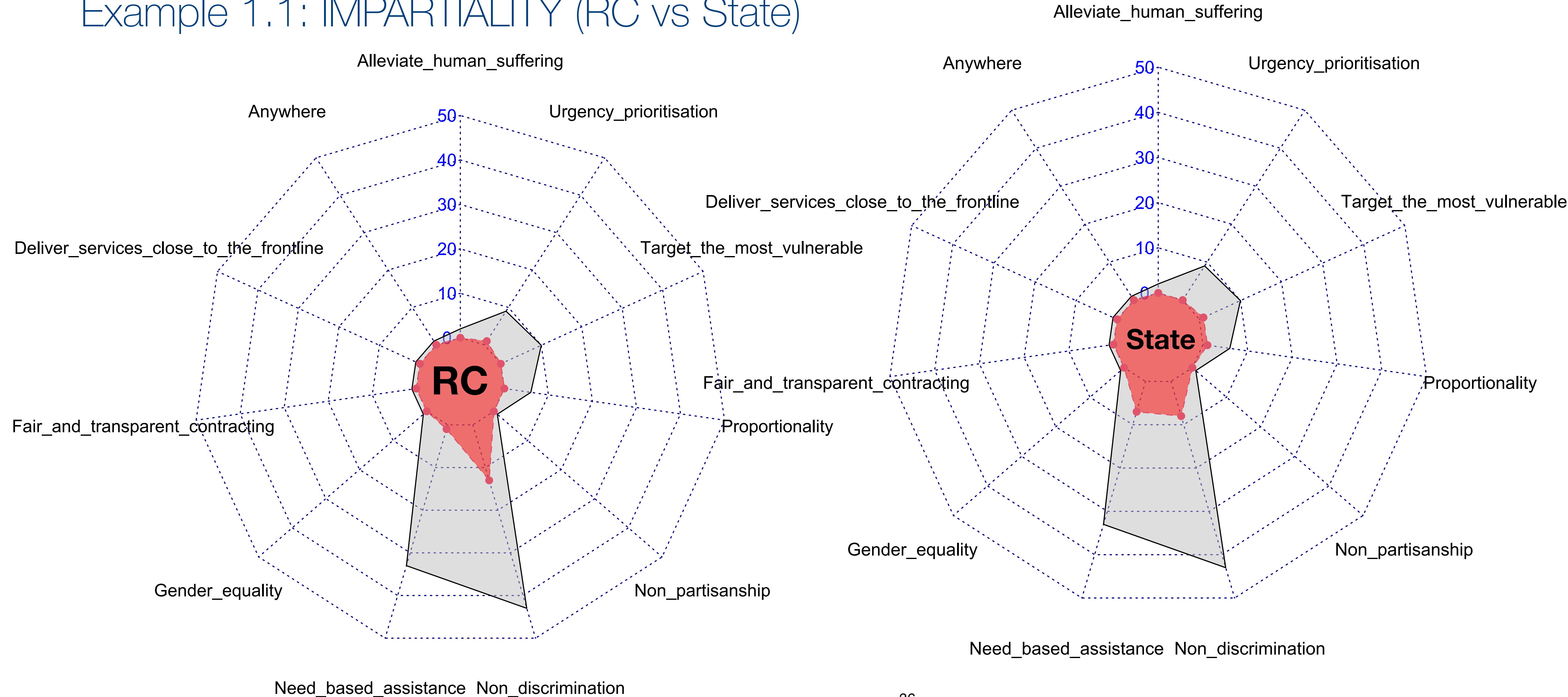
Peripheral confusion?

Semantic core characteristics found as marginal in other concepts

	HUMANITY	IMPARTIALITY	NEUTRALITY	INDEPENDENCE
Anywhere	24	1		
Alleviate human suffering	19	2		
Target the most vulnerable	4	10		
Needs-based assistance	3	33	1	
Non-discrimination	3	44	1	
Free from political or religious affiliation			3	6

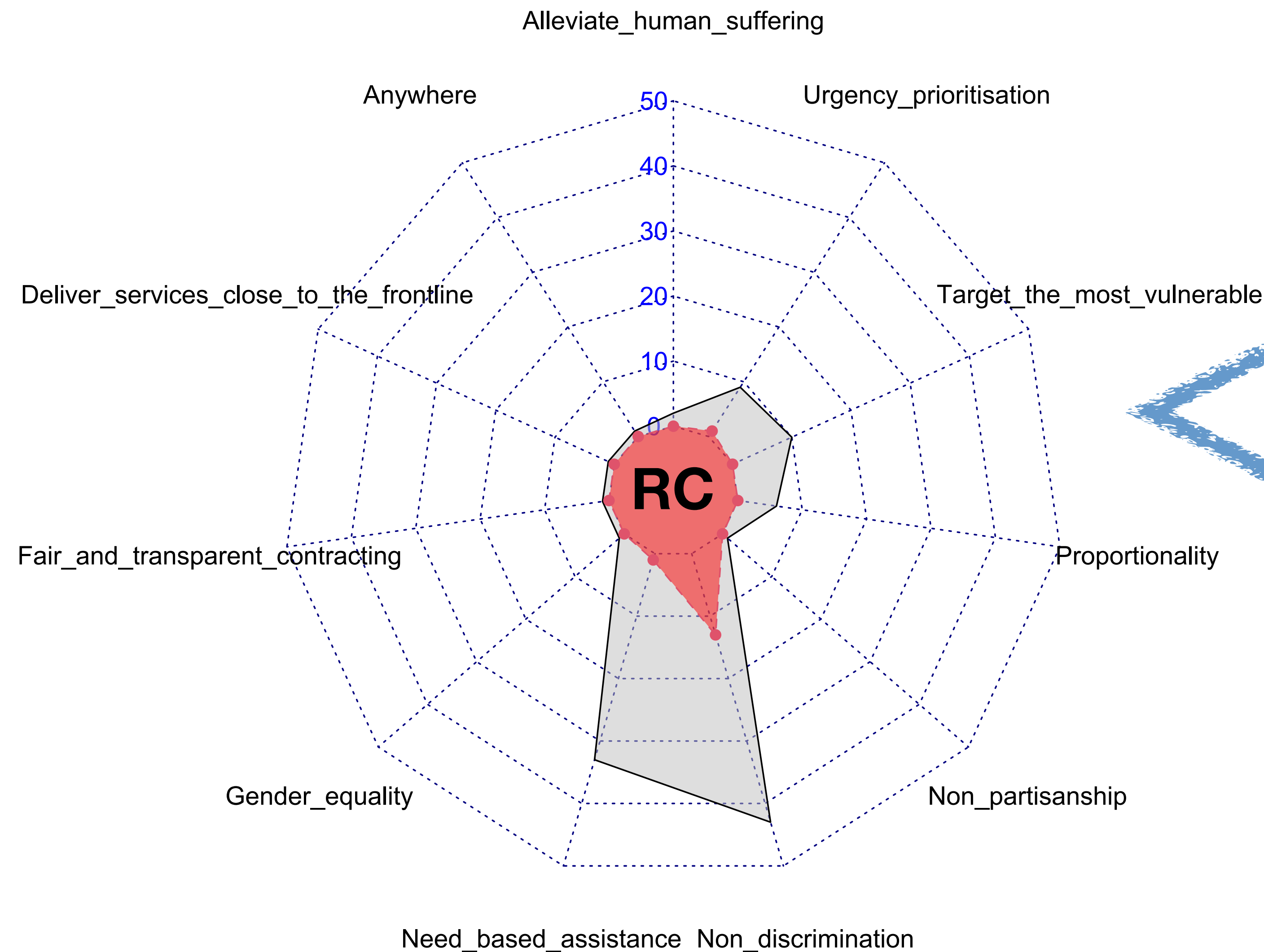
Distribution by organisation type

Example 1.1: IMPARTIALITY (RC vs State)



Distribution by organisation type

Example 1.1: IMPARTIALITY (RC vs State)

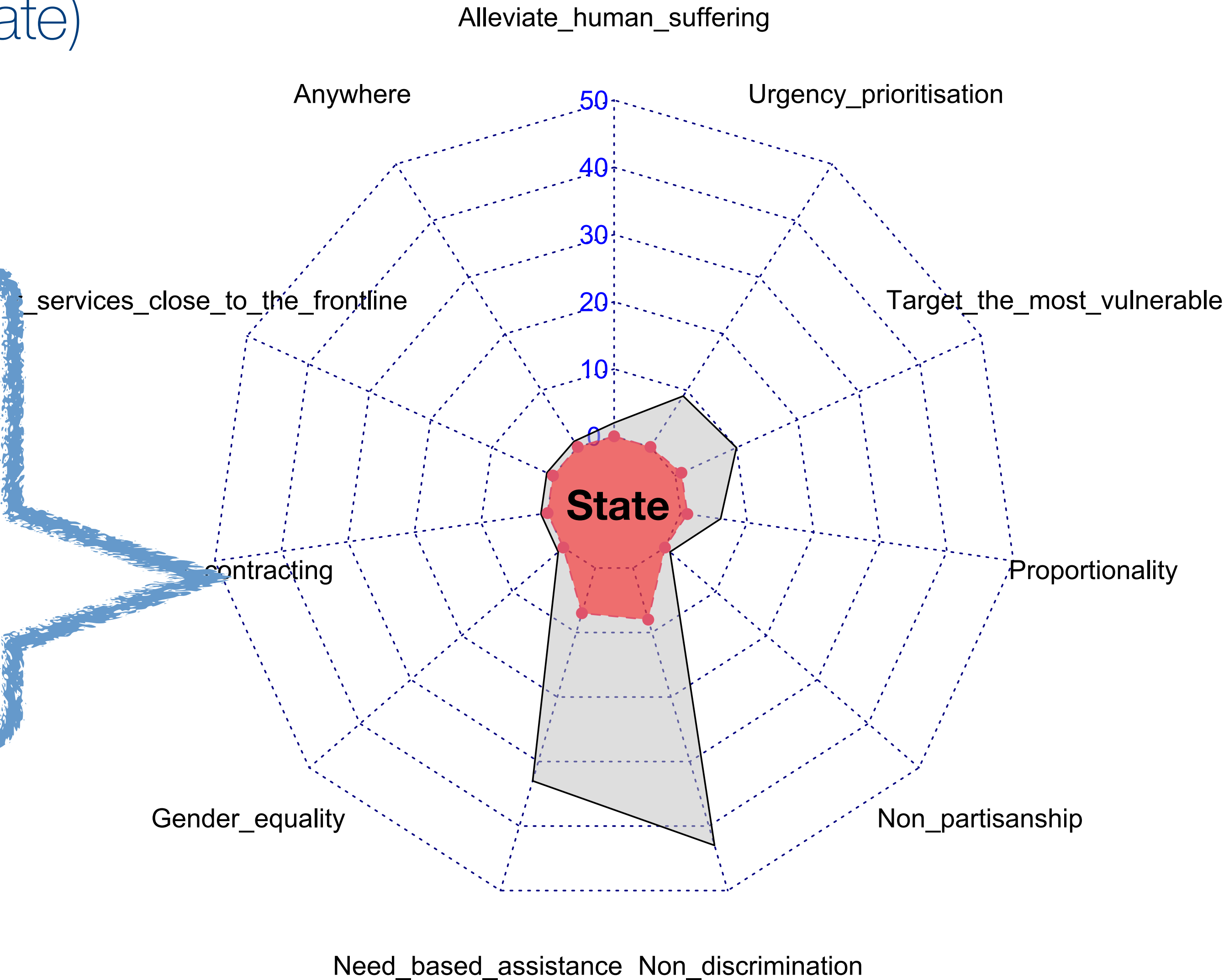


- Shared yet sole:
Non_discrimination

Distribution by organisation type

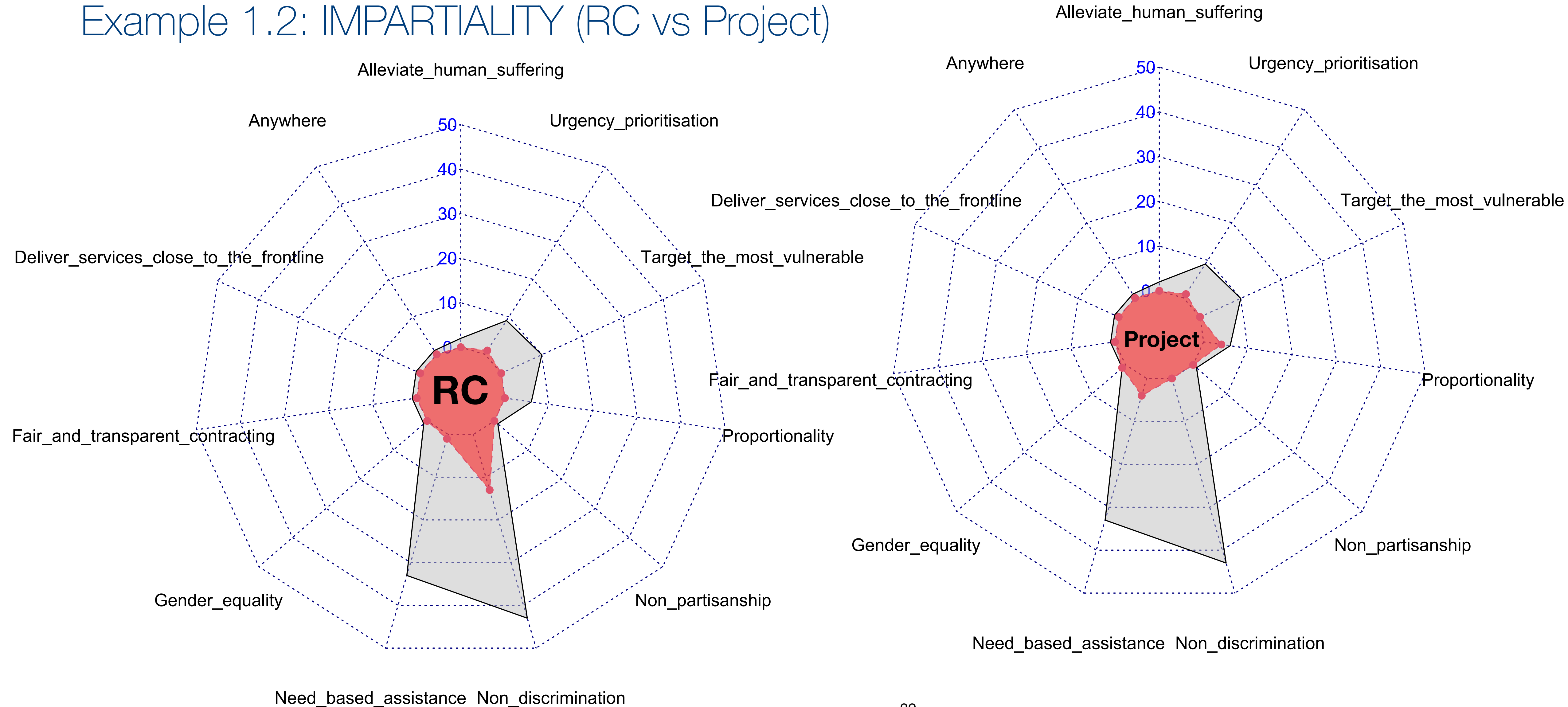
Example 1.1: IMPARTIALITY (RC vs State)

- Shared with RC:
Non_discrimination
- Shared with others:
Needs_based assistance



Distribution by organisation type

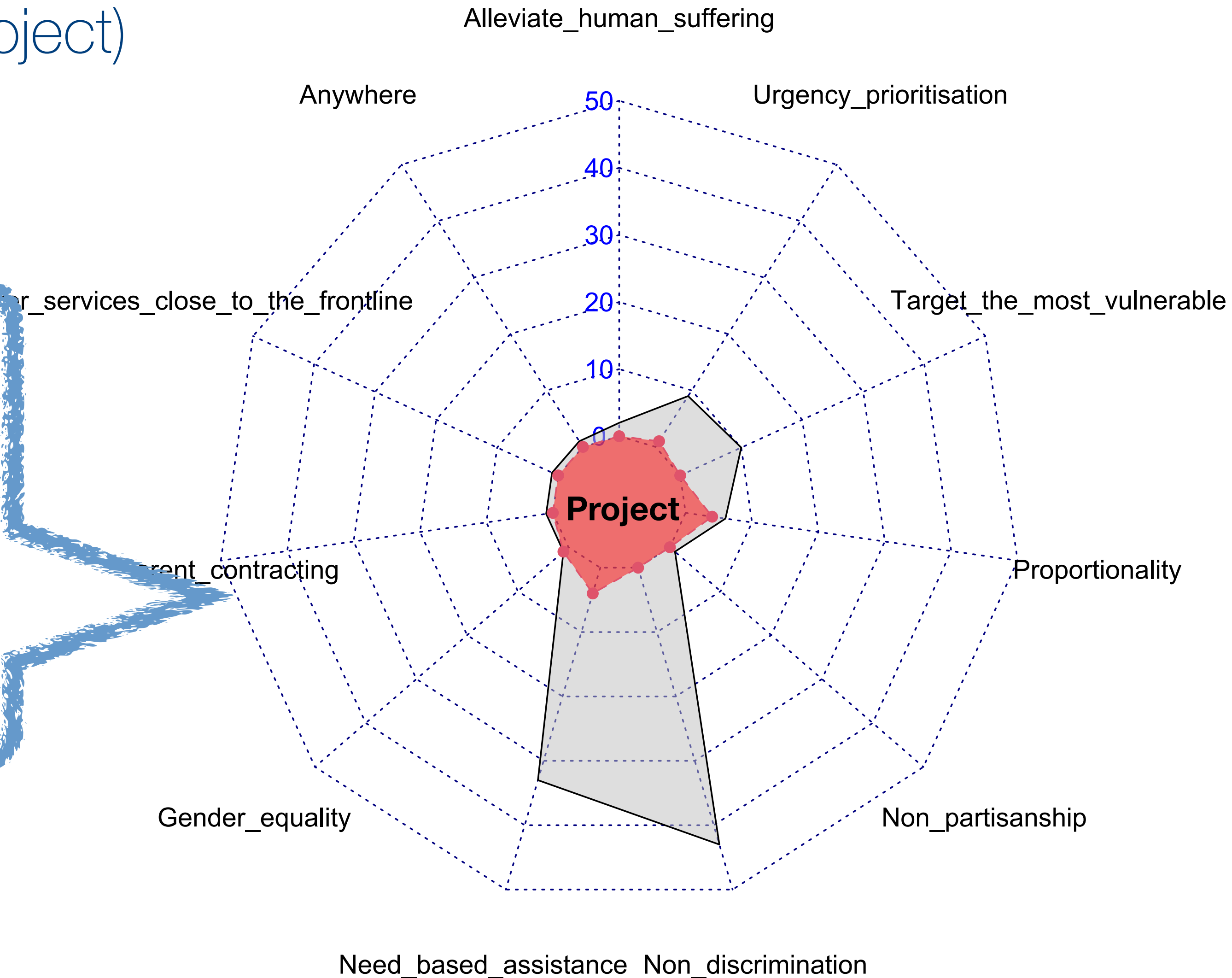
Example 1.2: IMPARTIALITY (RC vs Project)



Distribution by organisation type

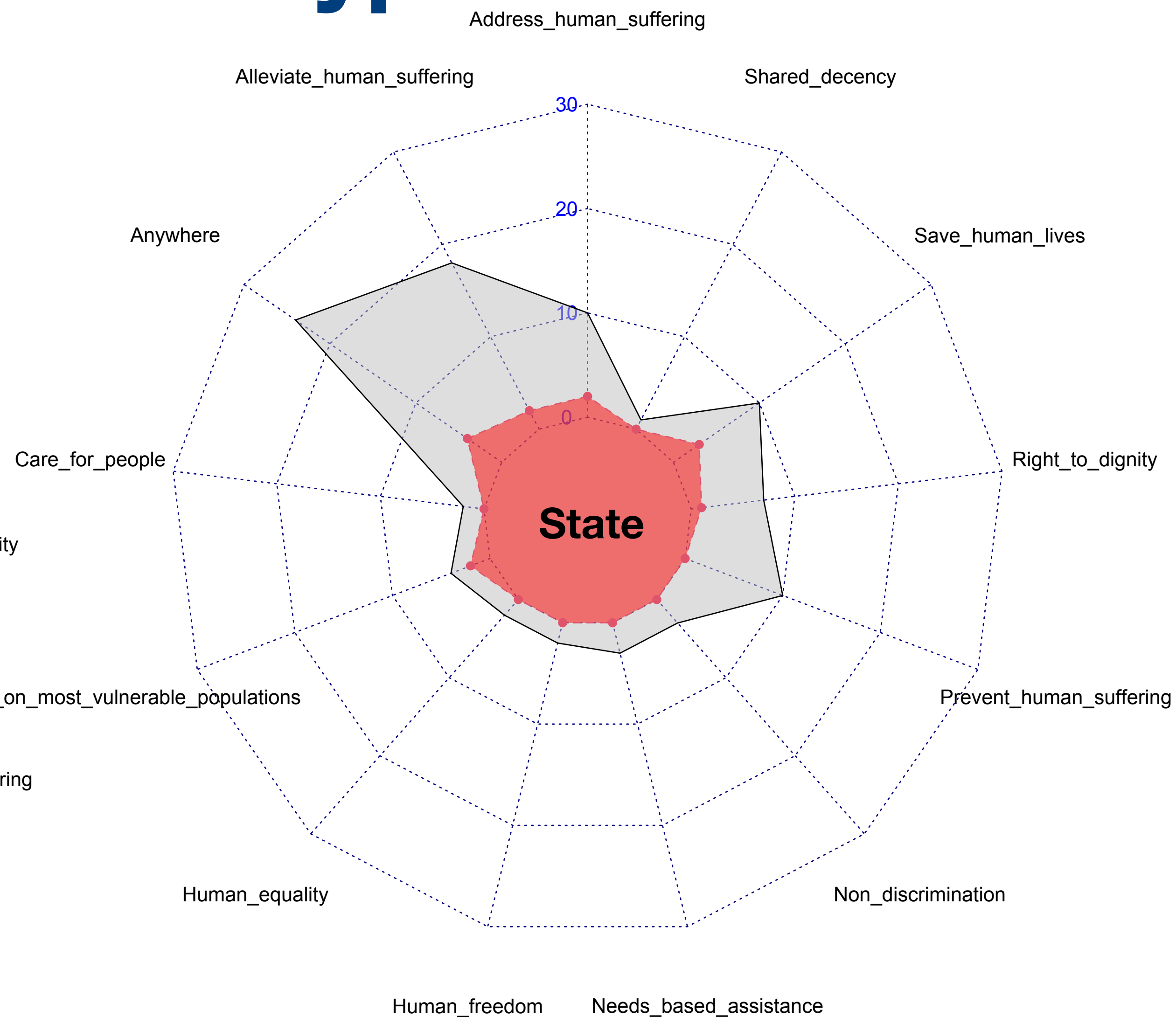
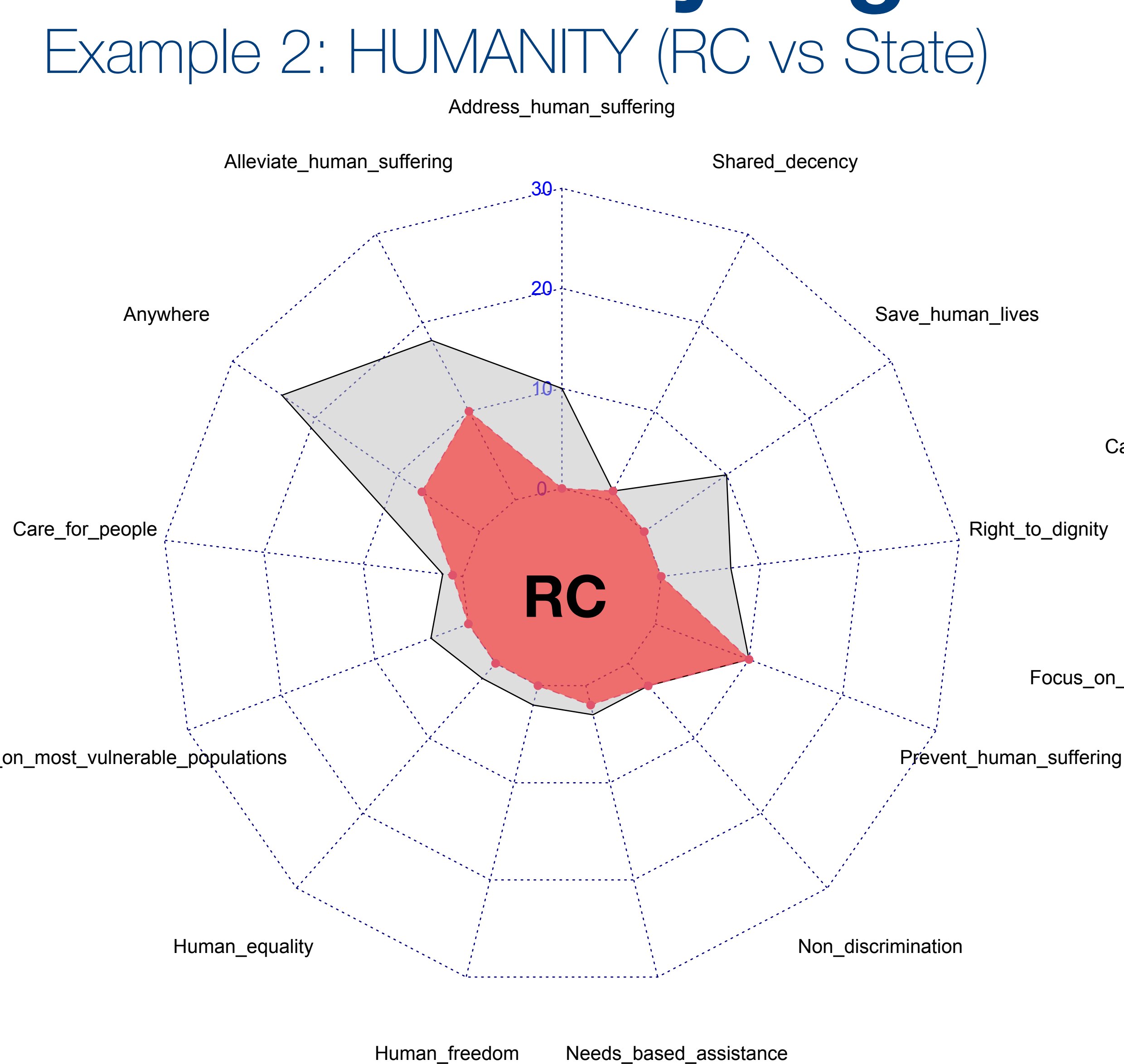
Example 1.2: IMPARTIALITY (RC vs Project)

- Shared with others: Non_discrimination
- Almost unique: Proportionality



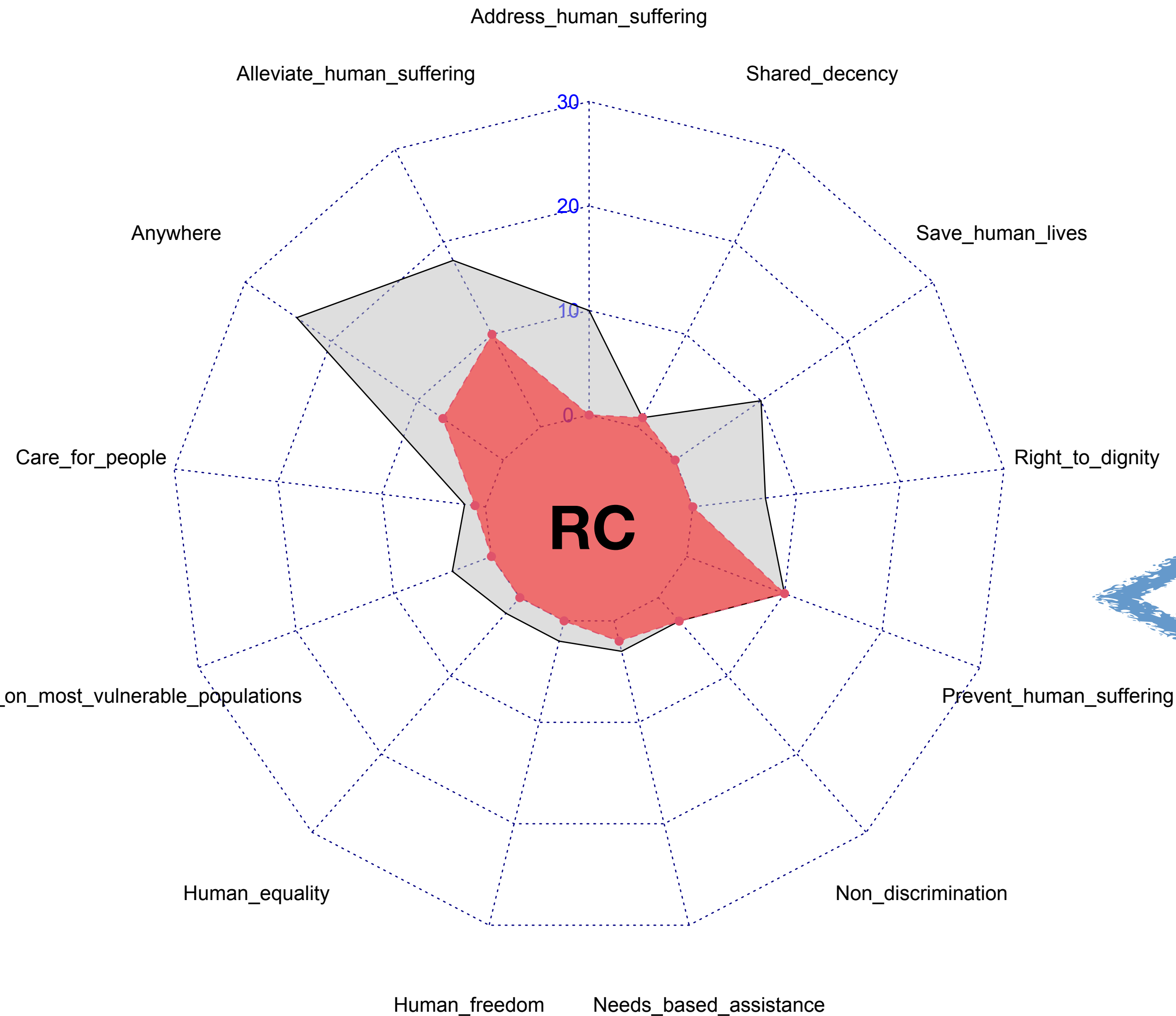
Distribution by organisation type

Example 2: HUMANITY (RC vs State)



Distribution by organisation type

Example 2: HUMANITY (RC vs State)

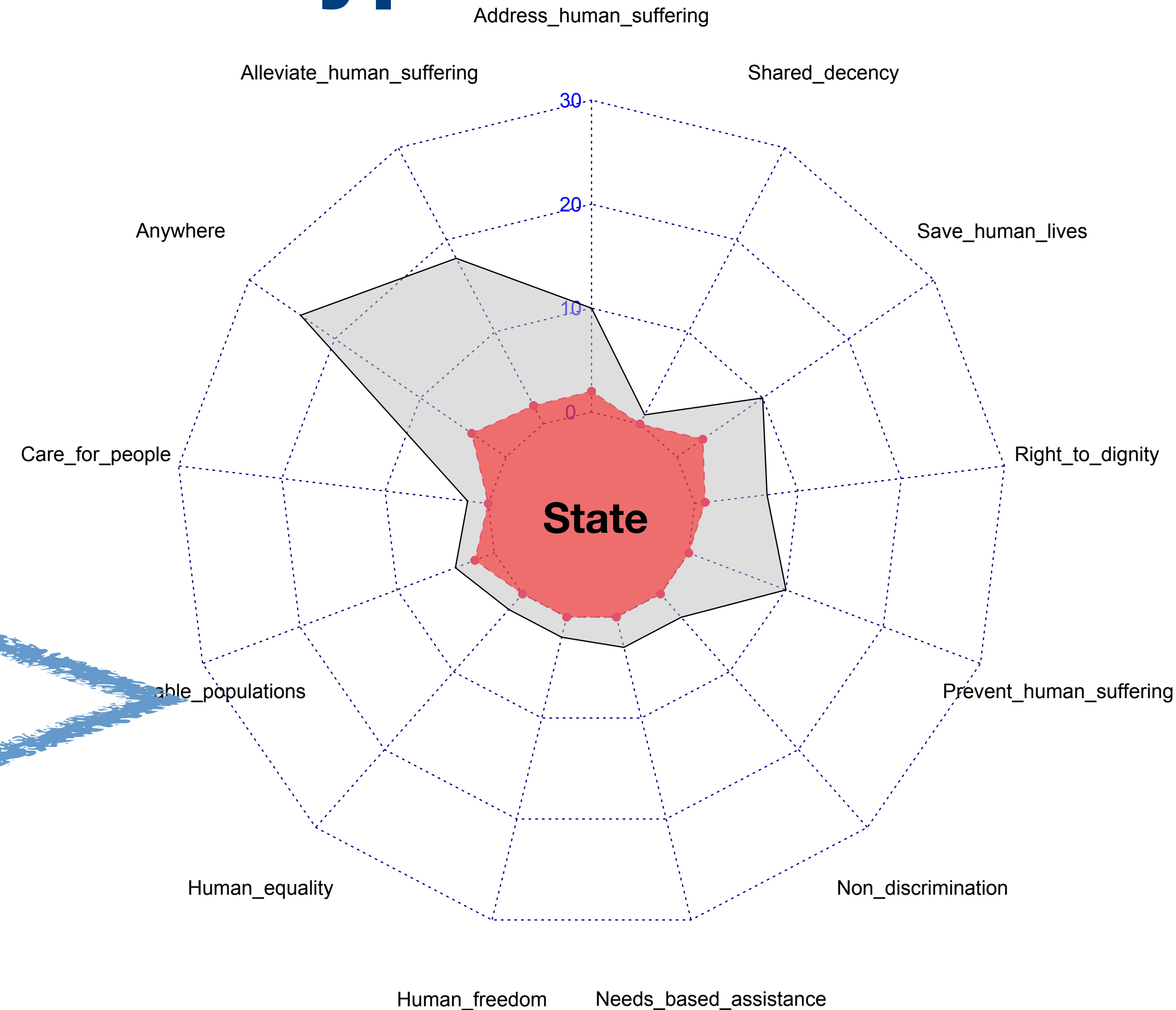


- Shared:
 - Anywhere
 - Alleviate_human_suffering
- Unique:
 - Prevent_human_suffering
 - Shared_decency

Distribution by organisation type

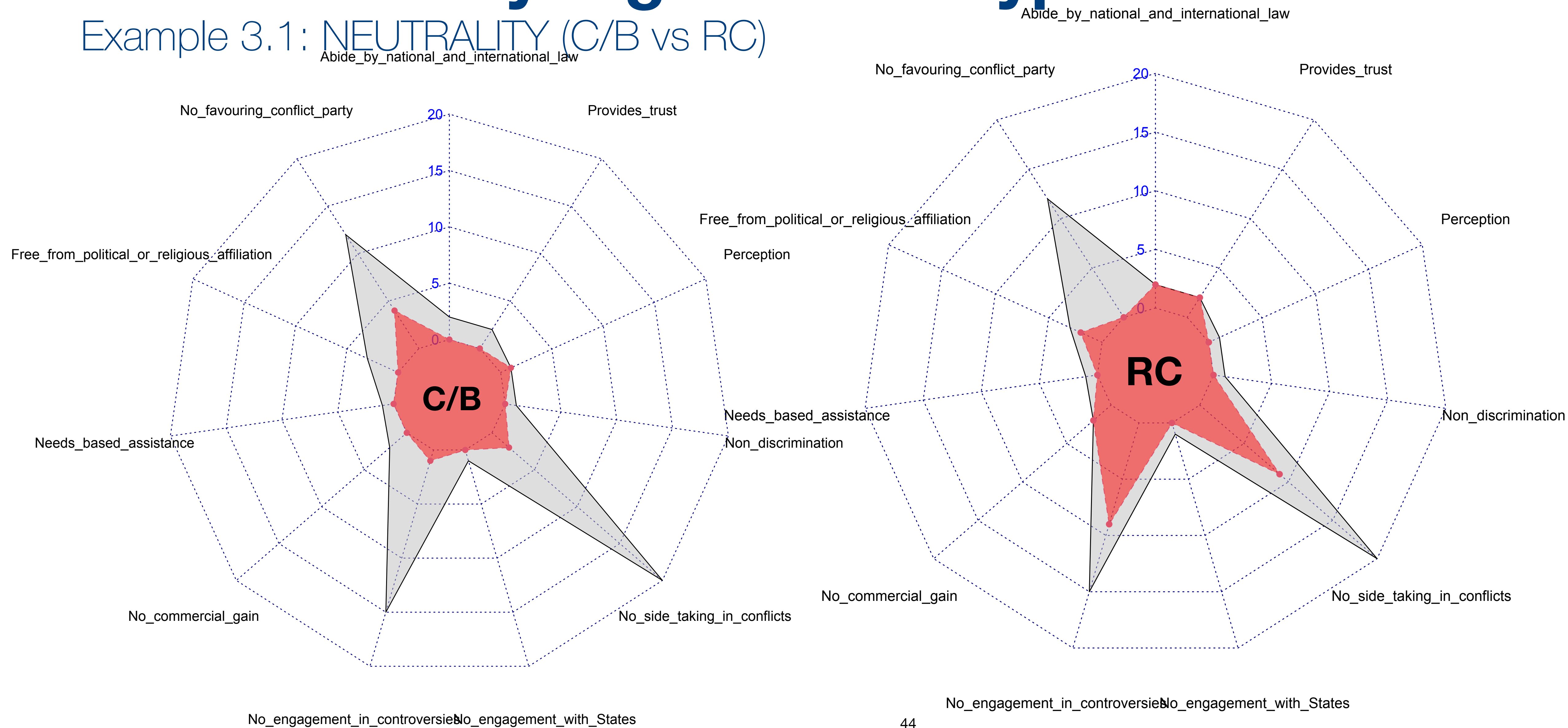
Example 2: HUMANITY (RC vs State)

- Shared with RC
 - Anywhere
 - Alleviate_human_suffering
- Shared with others:
 - Target_the_most_vulnerable
 - Save_human_lives



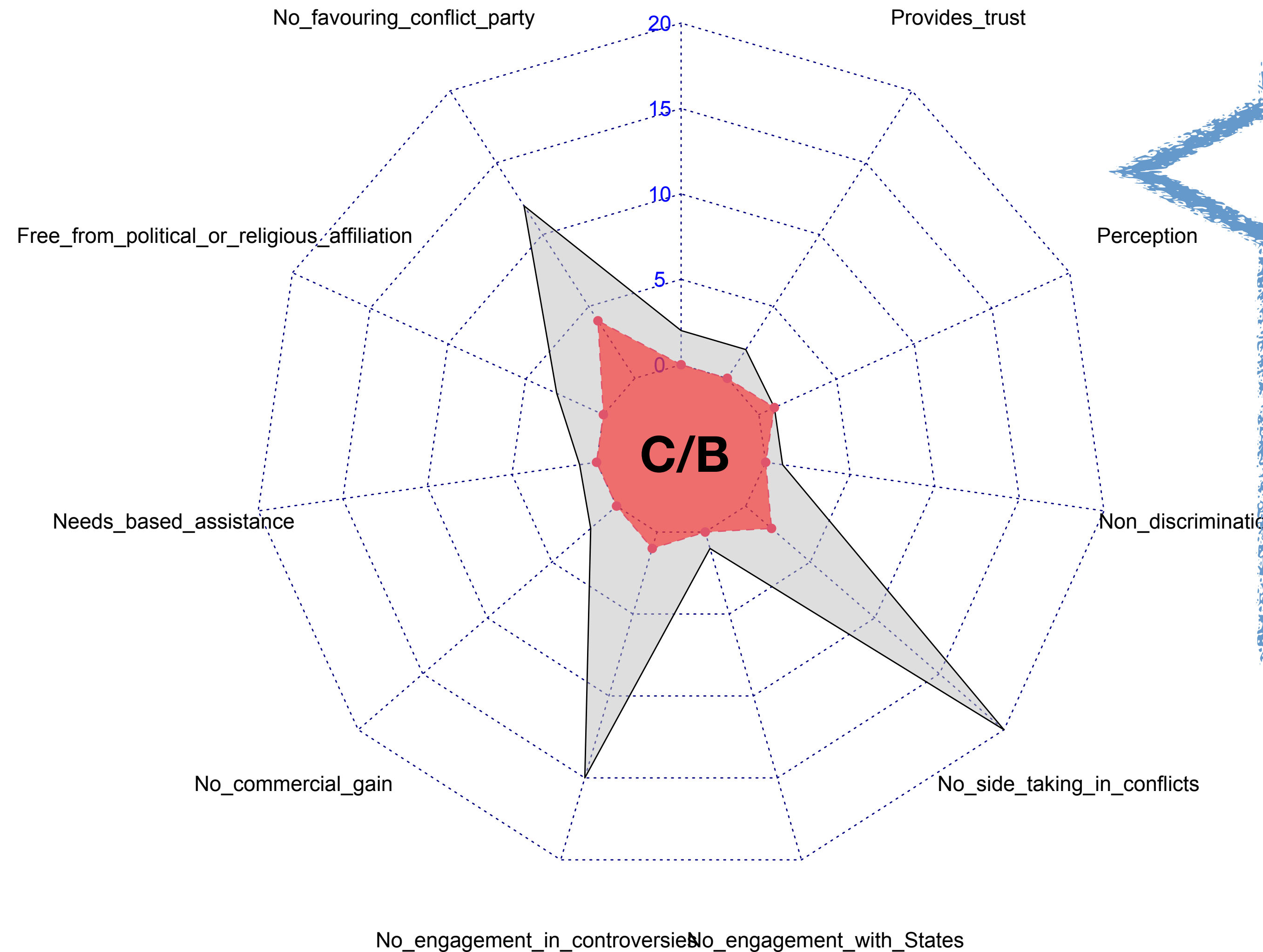
Distribution by organisation type

Example 3.1: NEUTRALITY (C/B vs RC)



Distribution by organisation type

Example 3.1: NEUTRALITY (C/B vs RC)
Abide_by_national_and_international_law

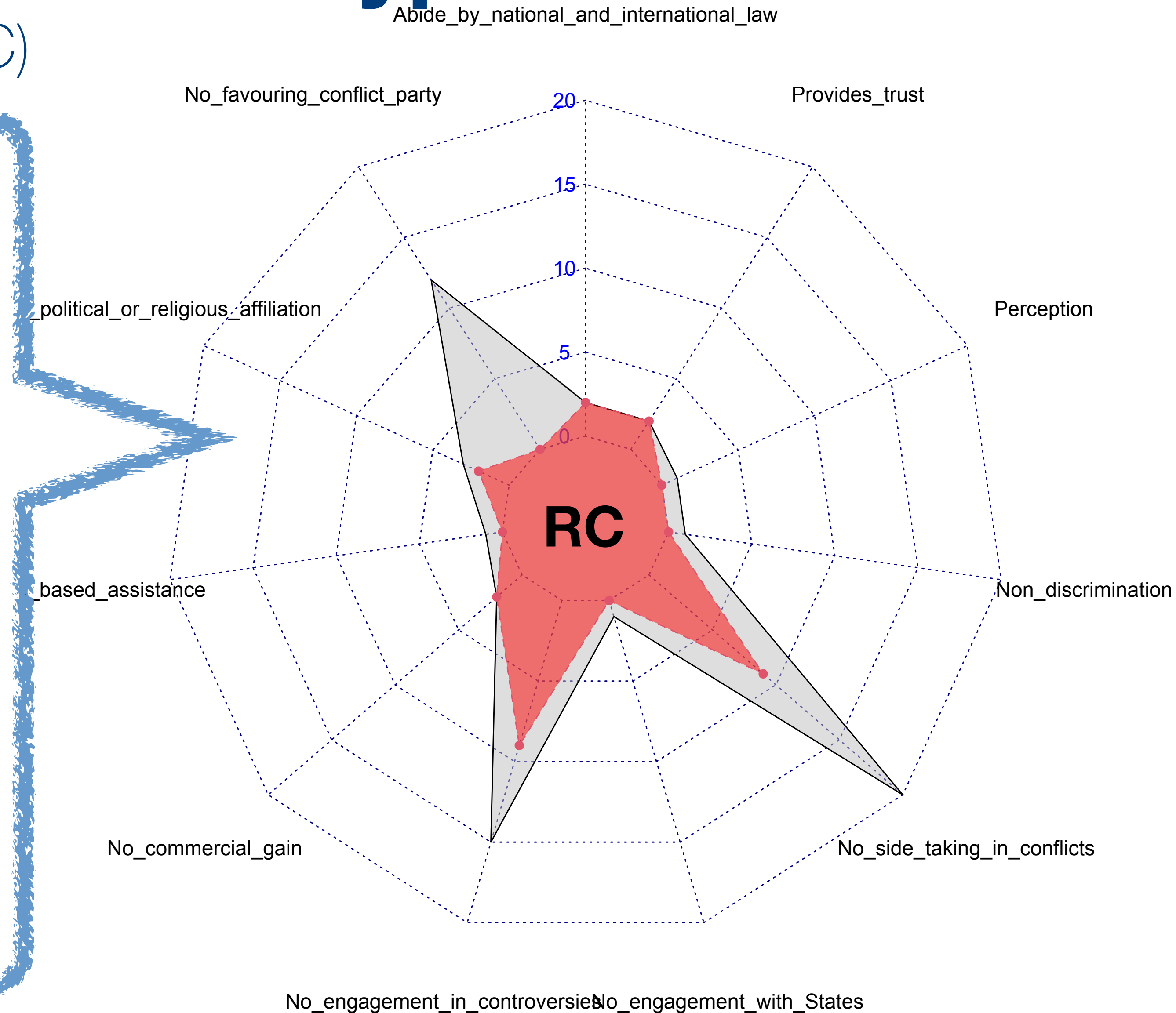


- Shared with RC:
 - No_side_taking_in_conflicts
 - No_engagement_in_controversies
- Unique: Perception

Distribution by organisation type

Example 3.1: NEUTRALITY (C/B vs RC)

- Shared with C/B:
 - No_side_taking_in_conflicts
 - No_engagement_in_controversies
- Shared with others:
 - Free_from_political_or_religious_affiliation
- Unique:
 - Abide_by_national_and_international_law,
 - Provides_trust

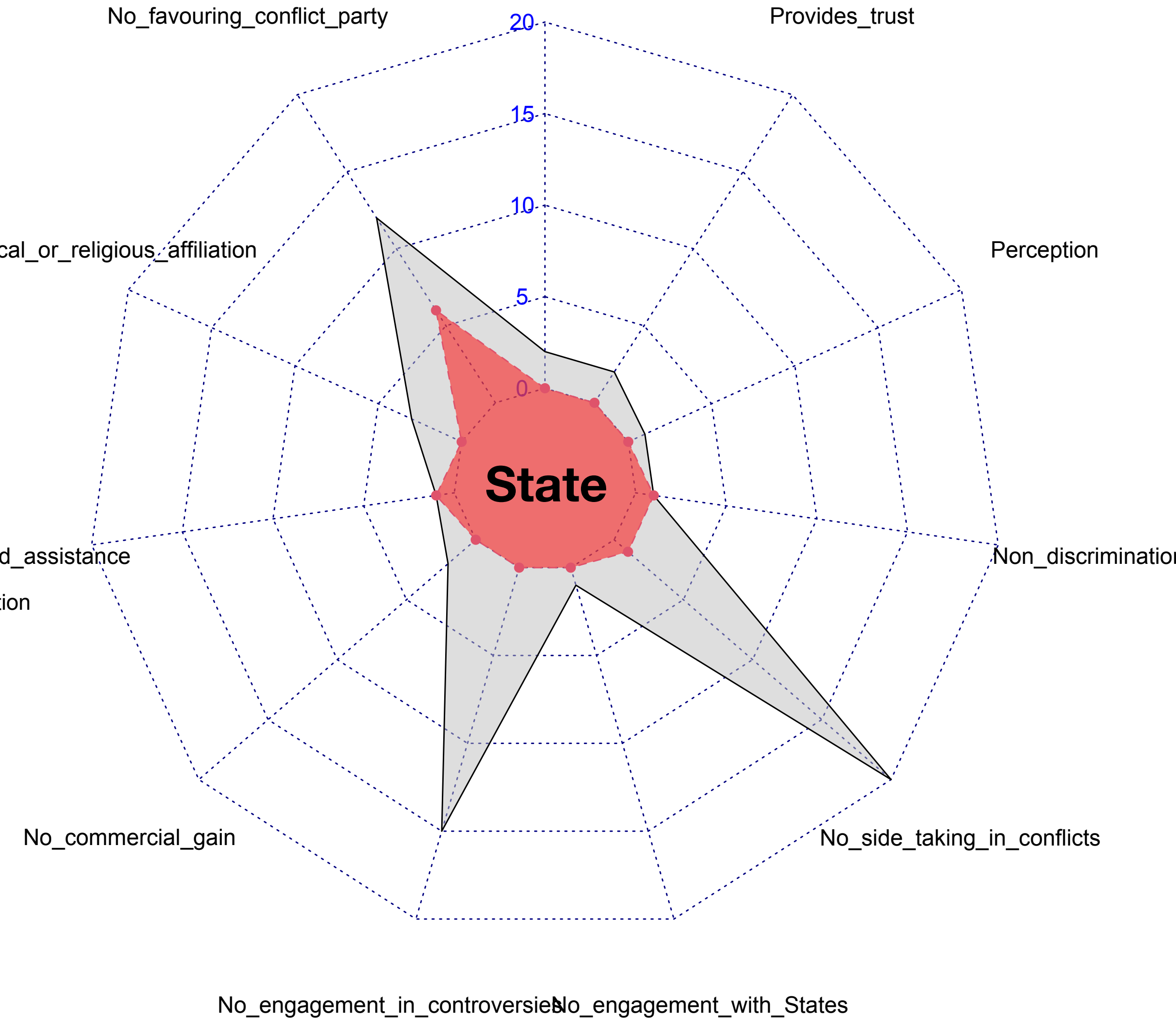
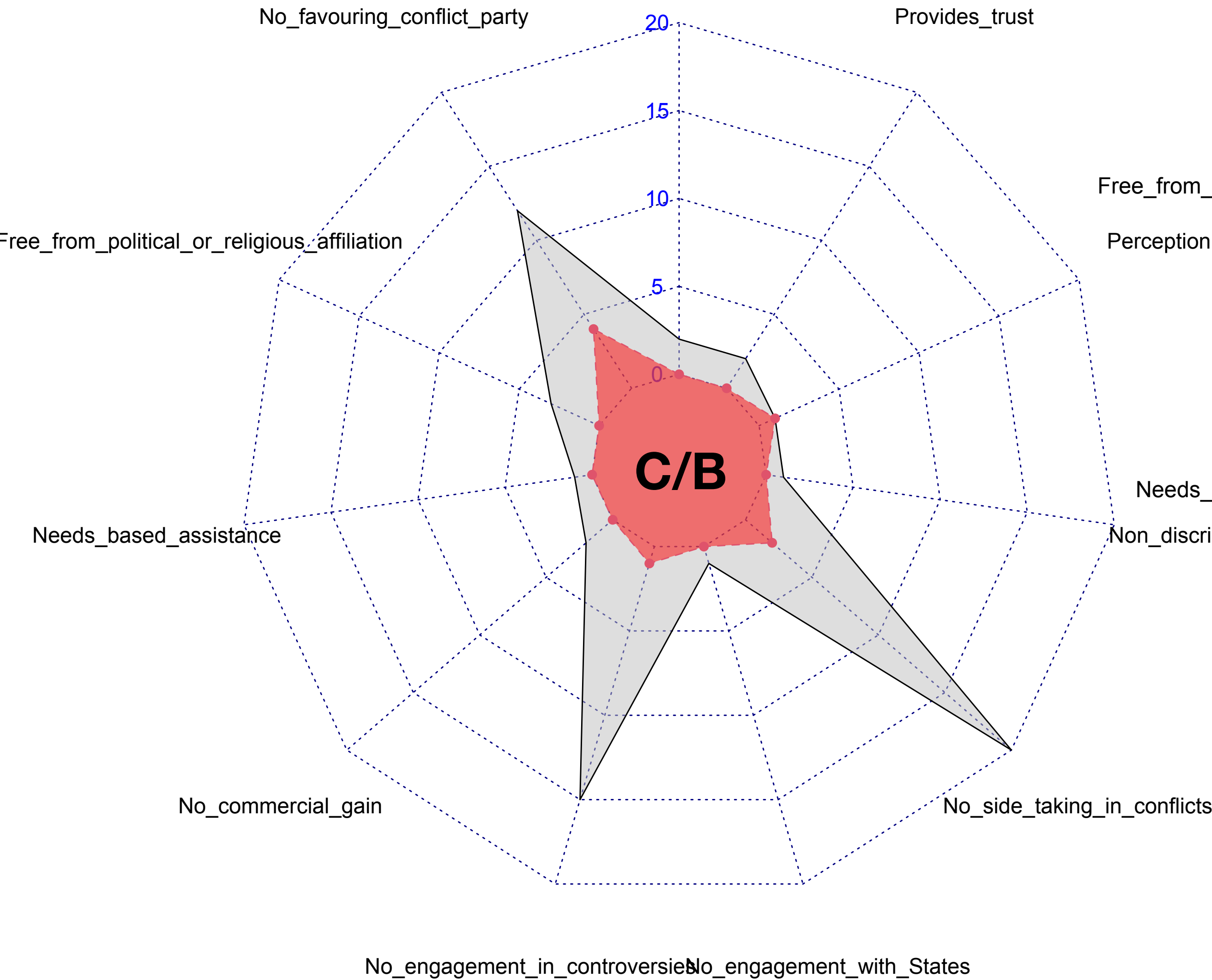


Distribution by organisation type

Example 3.2: NEUTRALITY (C/B vs State)

Abide_by_national_and_international_law

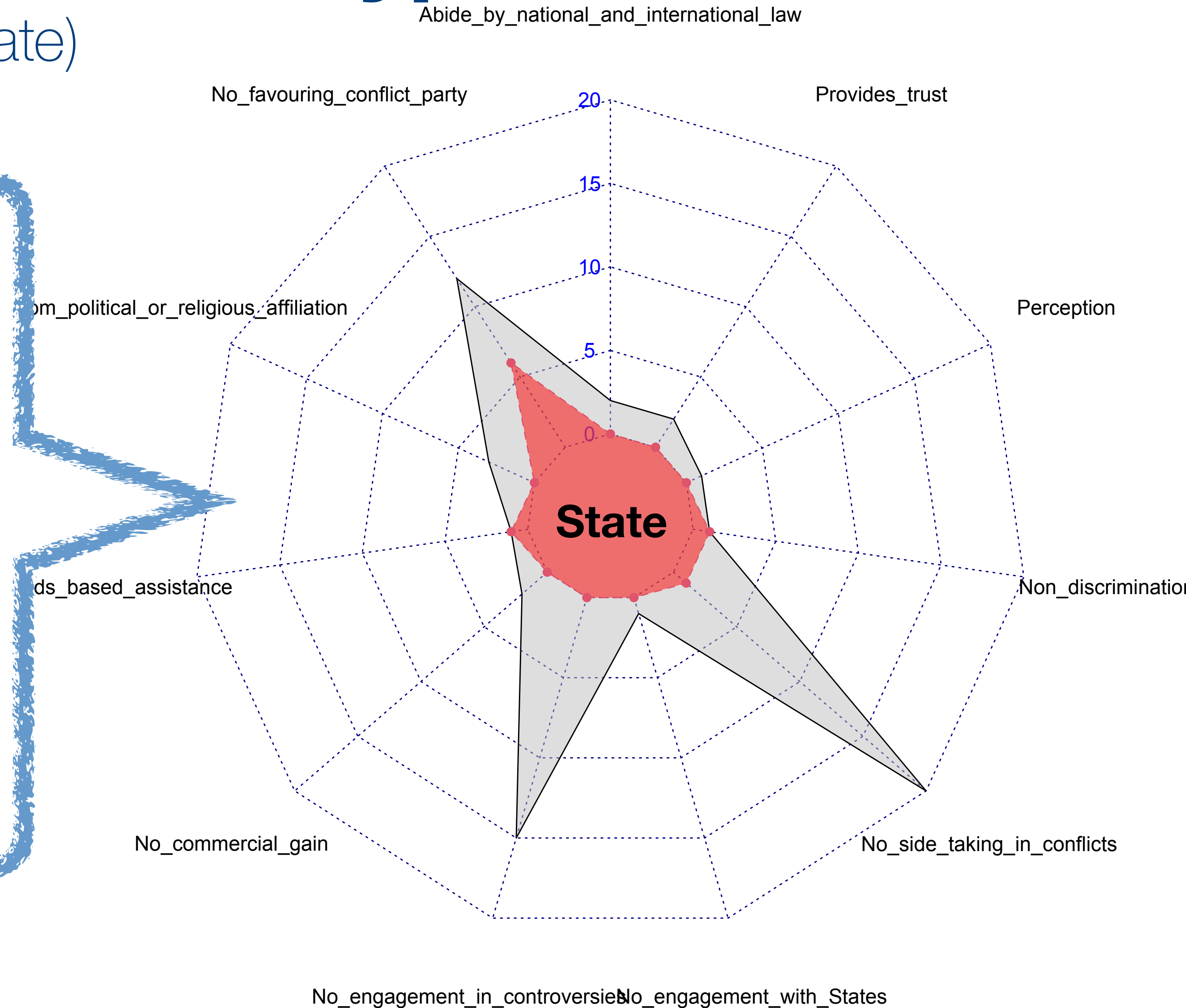
Abide_by_national_and_international_law



Distribution by organisation type

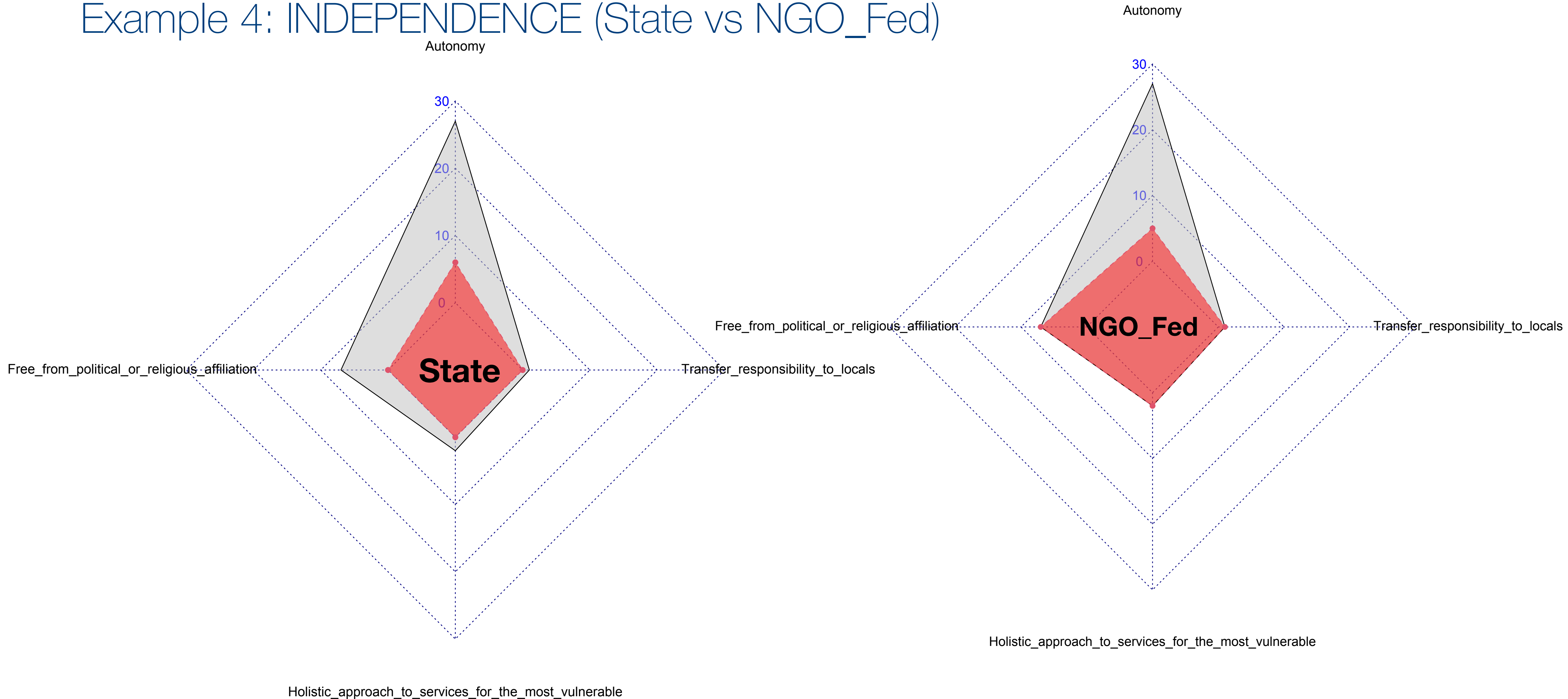
Example 3.2: NEUTRALITY (C/B vs State)

- Shared with C/B:
No_favouring_conflict_party
- Shared with others:
No_side_taking_in_conflicts
- Unique
 - Needs_based assistance,
 - Non_discrimination



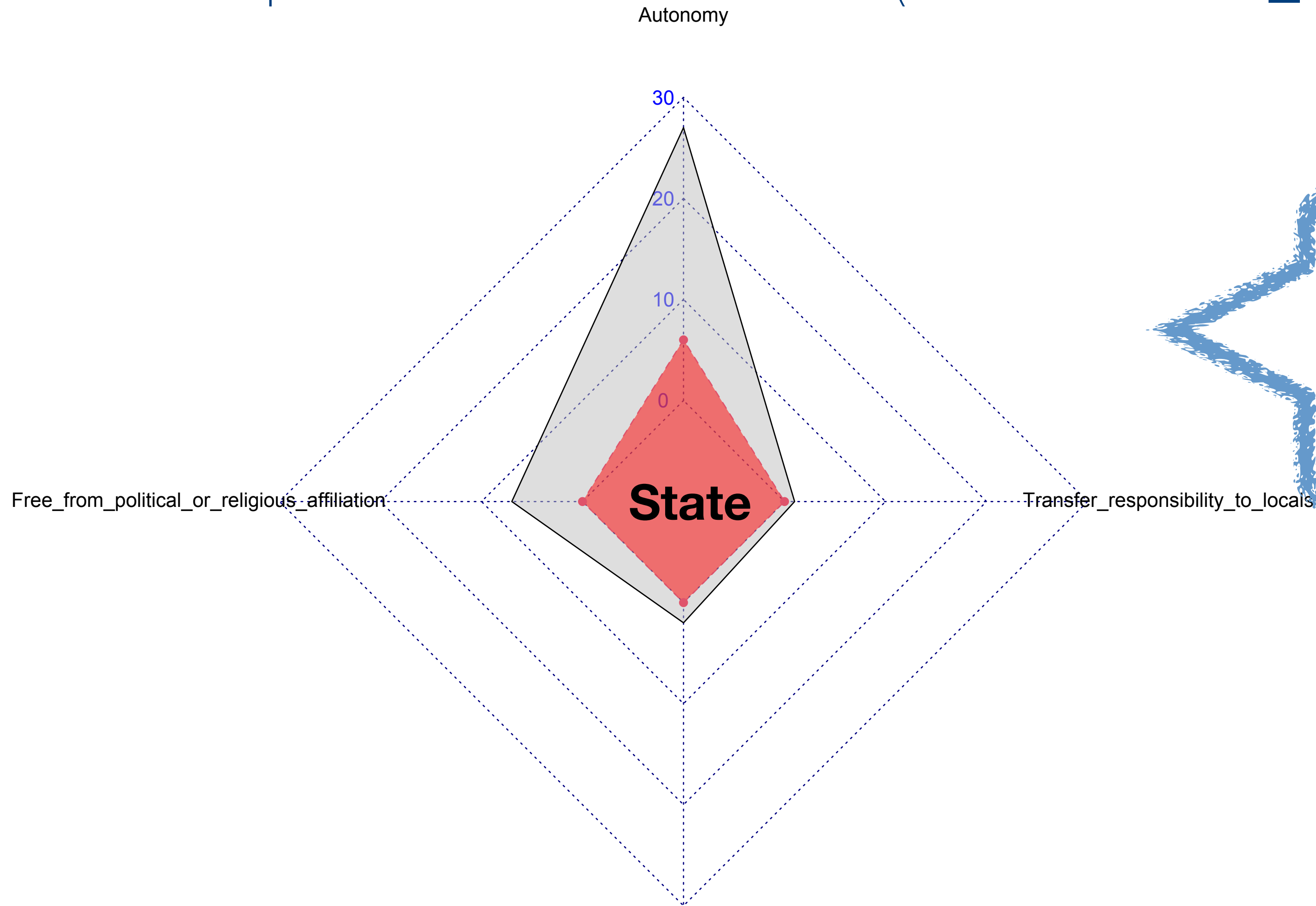
Distribution by organisation type

Example 4: INDEPENDENCE (State vs NGO_Fed)



Distribution by organisation type

Example 4: INDEPENDENCE (State vs NGO_Fed)

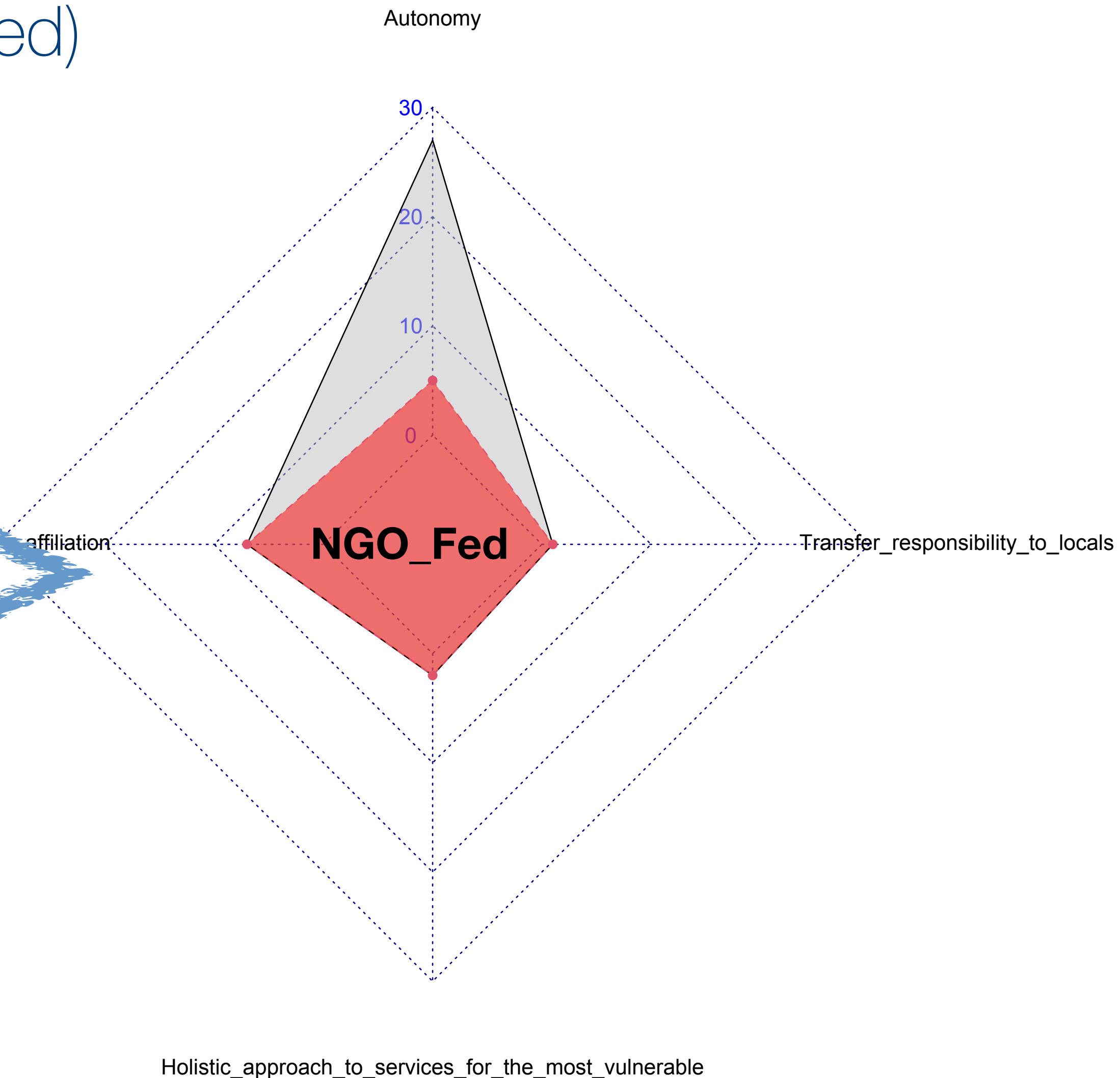


- Shared with NGO_Fed and others: Autonomy

Distribution by organisation type

Example 4: INDEPENDENCE (State vs NGO_Fed)

- Shared with State and others: Autonomy
- Unique:
 - Free_from_political_or_religious_affiliation
 - Transfer_responsibility_to_locals
 - Holistic_approach_to_services_for_the_most_vulnerable



Summary of Results

- Peripheral confusion
- Conceptual variation
 - Marginal characteristics mostly in one organisation type
 - RC definitions deviate from the rest of organisation types in HUMANITY, IMPARTIALITY and NEUTRALITY.
- Radar charts: partial suitability; too many characteristics too difficult to interpret.

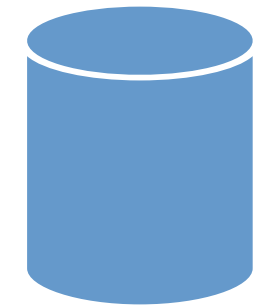
What We Did

To Approach Conceptual Variation

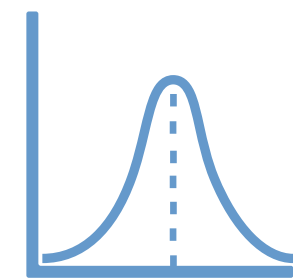
- Combined into one dataset:
 - definitions and organisation type metadata through corpus linguistics
 - elucidated conceptual characteristics from *differentiae* through qualitative analysis
- Compared distributions of characteristics across organisation types with radar charts

What We Will Do

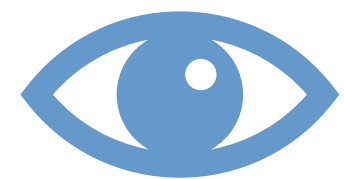
Future Studies



- include more data from knowledge rich contexts;



- explore metrics and statistical representations of concepts to study conceptual variation.



- produce interactive data visualisation to represent conceptual variation for hierarchical and non-hierarchical relations; and



- expand methods to study interlinguistic conceptual variation (ES vs EN).

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Operationalising and Representing Conceptual Variation for a Corpus-driven Encyclopaedia

A pilot study

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