Extracting Worldviews from the World Values Survey

Visual Communication & Data Storytelling

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How do we infer a person's worldview from survey responses?

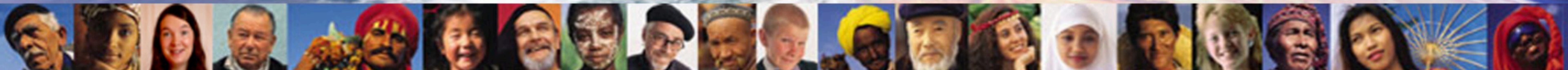**Goal: Transforming responses into a human-readable worldview**

> e.g., "Religion is essential", "Trust in police is low", "Immigrants threaten culture"

World Value Survey (WVS):
- 288 questions about norms, values, beliefs,
- 1692 respondents (2023 subset)
- Raw responses are numeric & not directly interpretable

What do survey questions look like?

World Values Survey examples

Example 1: Agreement scale

"Men make better political leaders than women."
- Strongly agree
- Agree
- Disagree
- Strongly disagree

Example 2: Importance scale

"How important is religion in your life?"

- Very important
- Rather important
- Not very important
- Not at all important

Example 3: Justifiability scale (1–10)

"Is homosexuality justifiable?"

- 1 — Never justifiable
- 2
- 3
- …
- 9
- 10 — Always justifiable

Worldviews are measured through hundreds of such questions, each using different scales, which makes raw survey responses difficult to interpret directly.

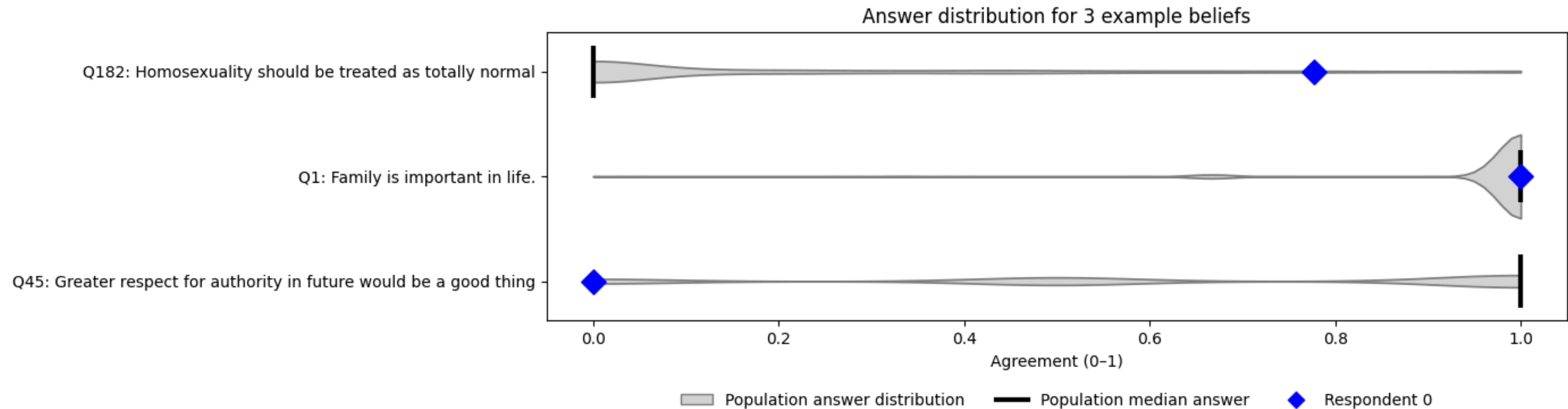# What do we call a "human-readable worldview"?

- Worldview = a person's structured set of strongly held beliefs about society, morality, politics, and human relations

- Statements that are:
  - interpretable in natural language
  - personally meaningful
  - socially distinctive

Example of person's worldview :
- Friends are important in life
- People who don't work turn lazy
- When a mother works for pay, children suffer
- Less importance should be placed on work in the future
- Immigrants lead to social conflict
- Immigrants help poor people establish new lives
- Immigrants strengthen cultural diversity
- Having a democratic political system is a good way of governing
- Experts should make decisions instead of governments
- I feel close to my district or region
- I am very worried about a terrorist attack
- Alcohol is frequently consumed in the streets

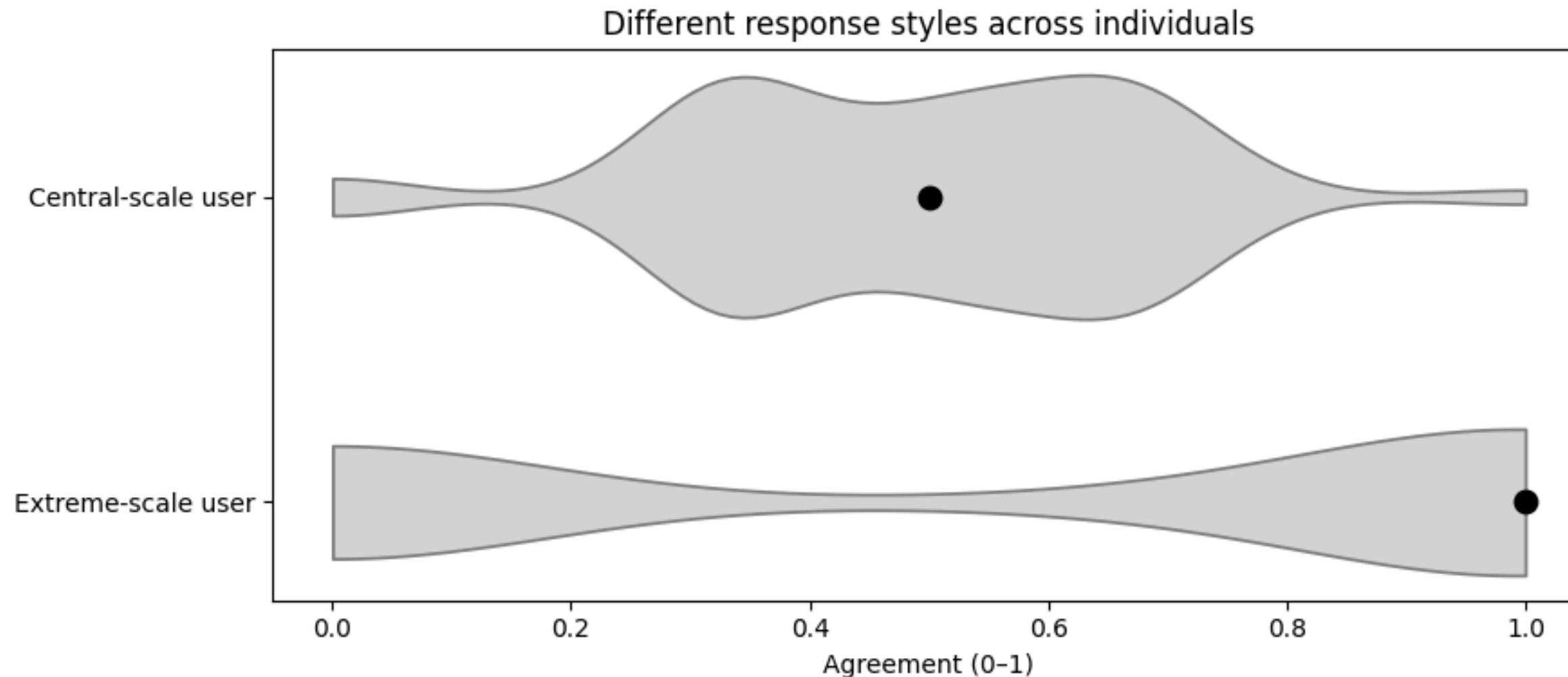**Main question: "What determines a person's worldview?"**

Worldviews emerge from norm-deviating beliefs

Answer distribution for 3 example beliefs

Q182: Homosexuality should be treated as totally normal

Q1: Family is important in life.

Q45: Greater respect for authority in future would be a good thing

Agreement (0–1)

☐ Population answer distribution ▬ Population median answer ◆ Respondent 0

- Each row shows one belief statement
- **Grey shape:** how society answers this question
- **Black line:** the societal midpoint
- **Blue diamond:** one individual's answer
- Horizontal position shows agreement vs disagreement **(0 - disagree, 1 - agree)**
- Distance between the blue point and the black line shows how unusual the belief is

When the individual's position is far from the societal midpoint, that belief becomes salient and **contributes to their worldview** (Q182, Q45), while widely shared beliefs carry little distinguishing information

Personal response habits shape survey data

Different response styles across individuals

- Each shape shows how one person uses the response scale
- **Grey area:** distribution of that person's answers
- **Black dot:** the person's average response
- Some individuals use the full scale, choosing extreme options
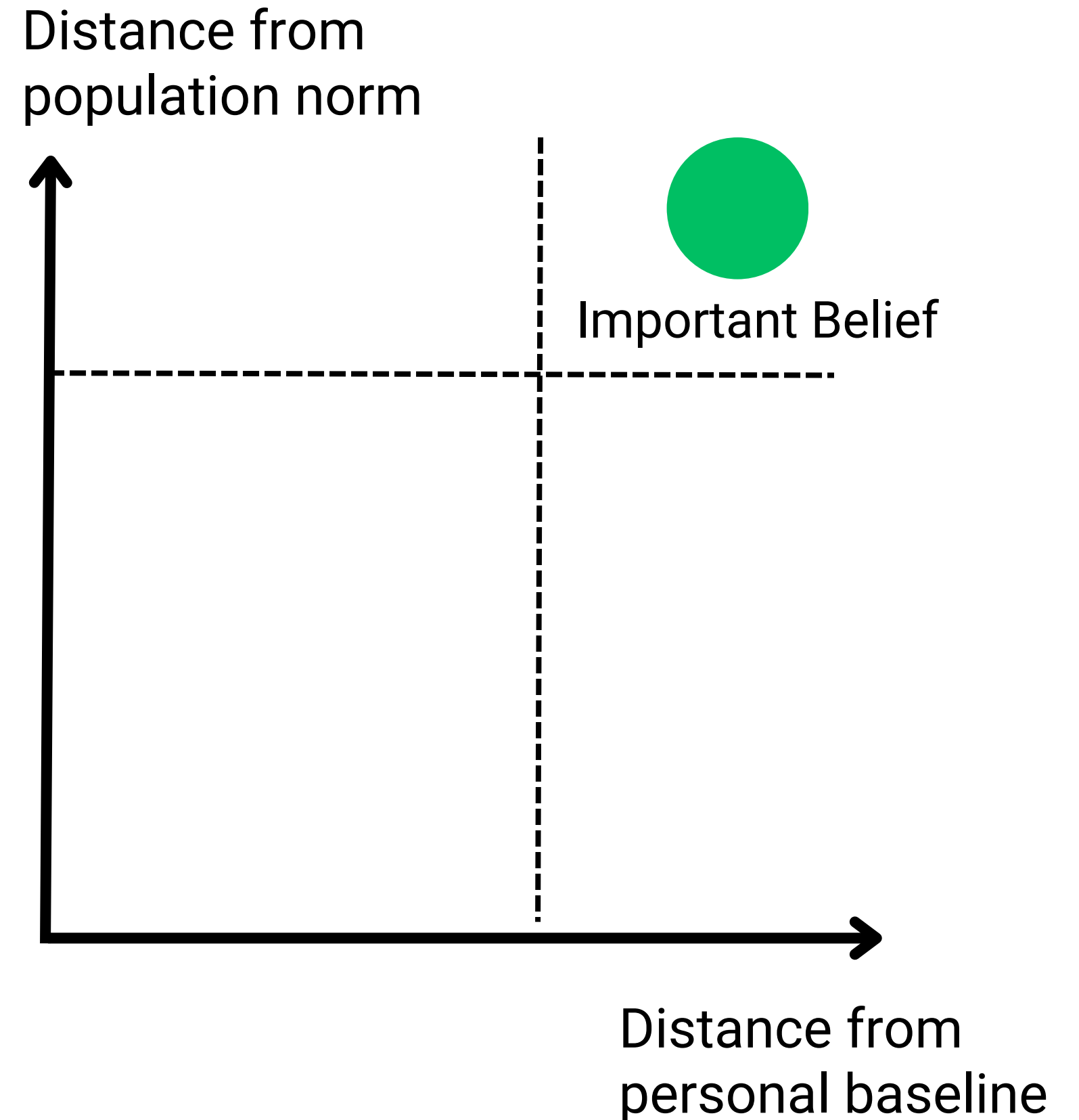- Others concentrate responses around the center

People differ in how they use survey scales, its important to separate personal habits from actual beliefs. Worldviews must be defined relative to each individual's baseline

Defining worldview-relevant beliefs

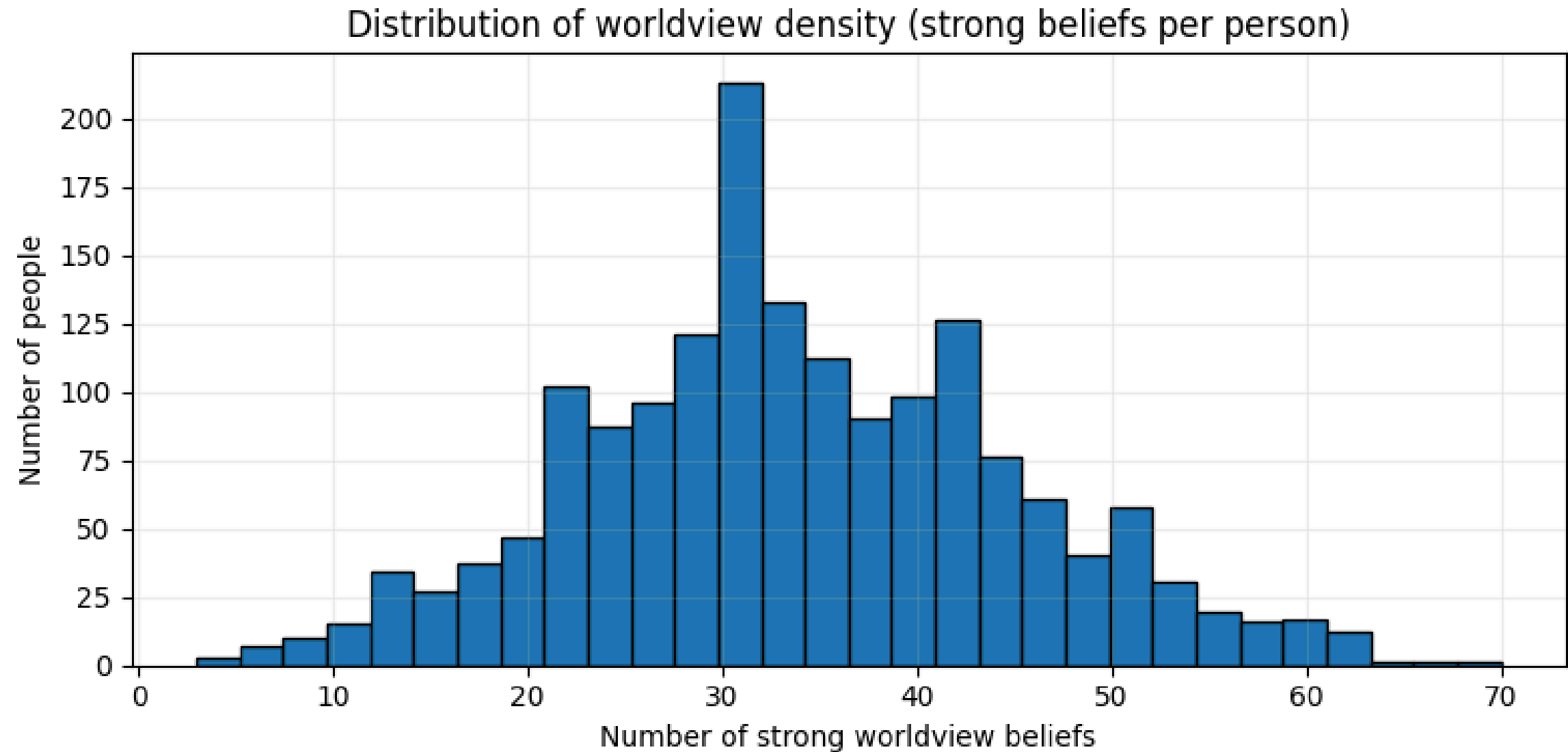We define a worldview-relevant belief as:

- a belief that deviates from societal norms **(further away than population average)**
- a belief that deviates from an individual's usual response pattern **(further away than personal average)**

This methodology identifies what a person really cares about, not just "answered yes".

Distance from population norm

Important Belief

Distance from personal baseline

Applying the worldview definition to individuals

- Individuals differ strongly in how many beliefs qualify as worldview-relevant
- Some individuals deviate consistently and strongly from societal norms
- Others remain close to societal and personal baselines
- Some hold strong but internally diverse belief sets

Distribution of worldview density (strong beliefs per person)
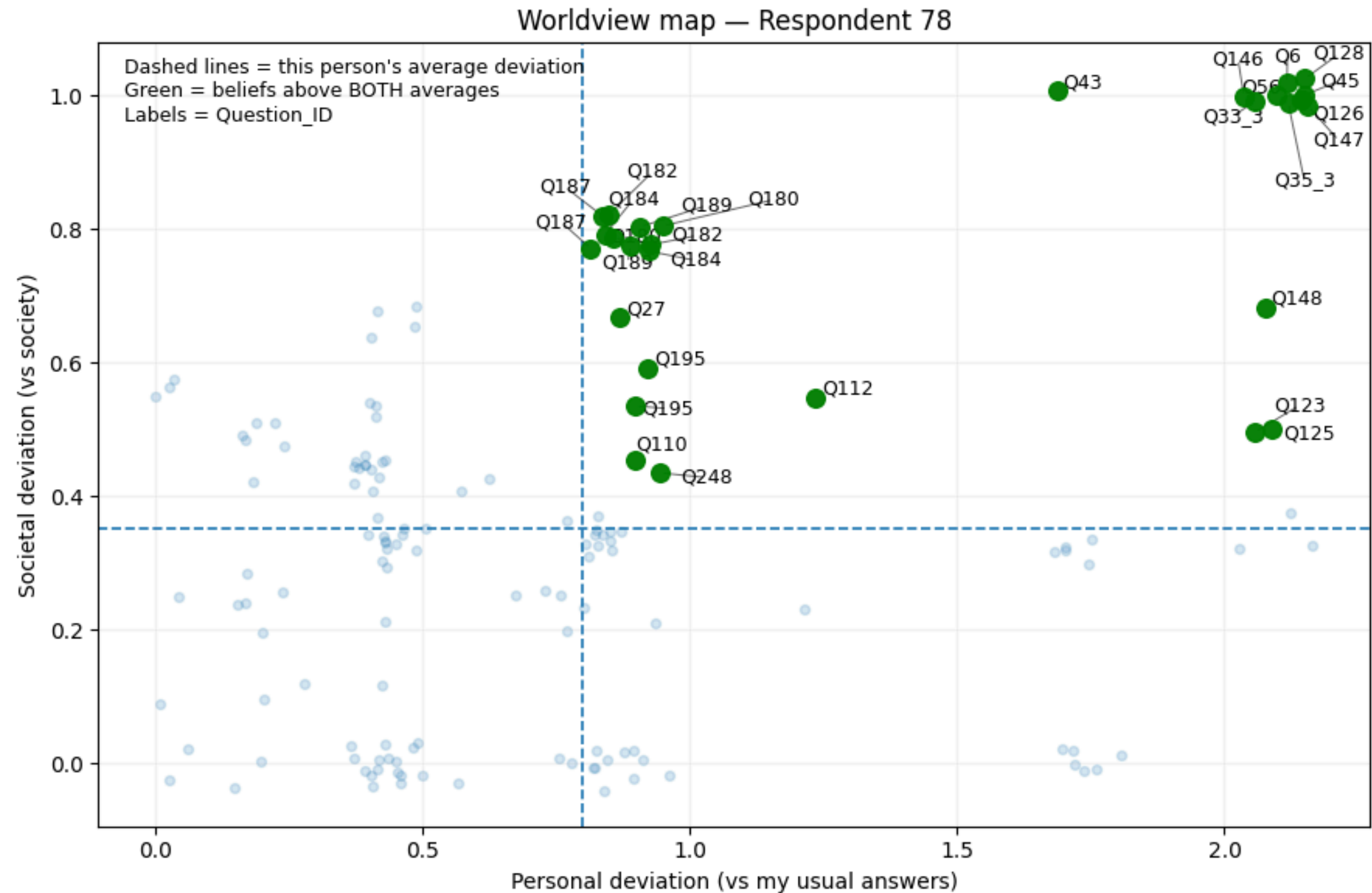
Worldviews are **not uniform** across individuals
The same methodology reveals distinct structural patterns
These patterns can be illustrated through **individual worldview maps**

Example of individual worldview map

- Each dot represents one belief statement
- **Horizontal position:** how unusual this belief is for this person
- **Vertical position:** how unusual this belief is relative to society
- Dashed lines show the person's average deviation thresholds
- Green dots are worldview-relevant beliefs (above both thresholds)

Multiple beliefs strongly deviate from both societal norms and their own typical responses.
These beliefs are not confined to a single topic, but span religion, migration, security, gender roles, and authority.

Worldview map — Respondent 78

Dashed lines = this person's average deviation
Green = beliefs above BOTH averages
Labels = Question_ID

Example of individual worldview beliefs

29 core beliefs detected for the respondent 78

Top 10 core beliefs for the respondent 78:
Social values & norms
- Religion is important in life
- Greater respect for authority would be good
- When jobs are scarce, men should have more rights
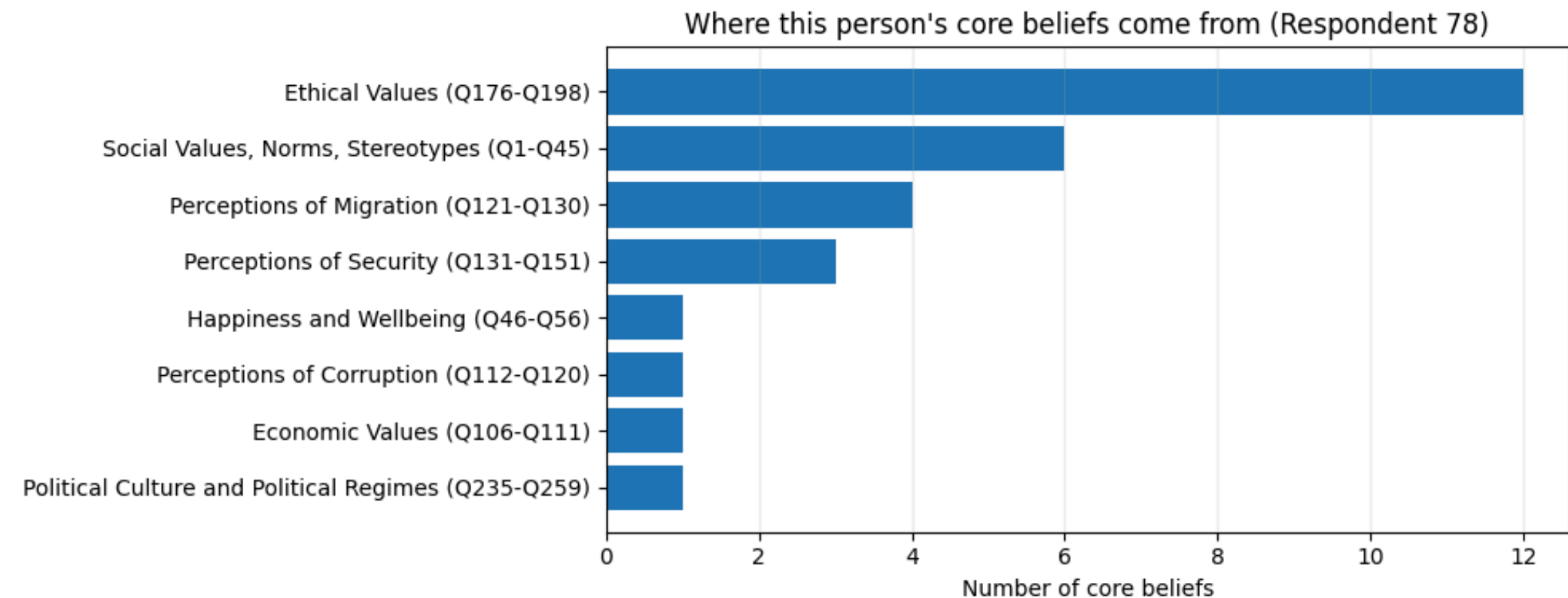- If a woman earns more than her husband, it causes problems

Migration
- Immigrants increase unemployment
- Immigrants increase the risk of terrorism

Security
- Worried about war involving my country
- Worried about a terrorist attack

Well-being
- My standard of living is better than my parents'

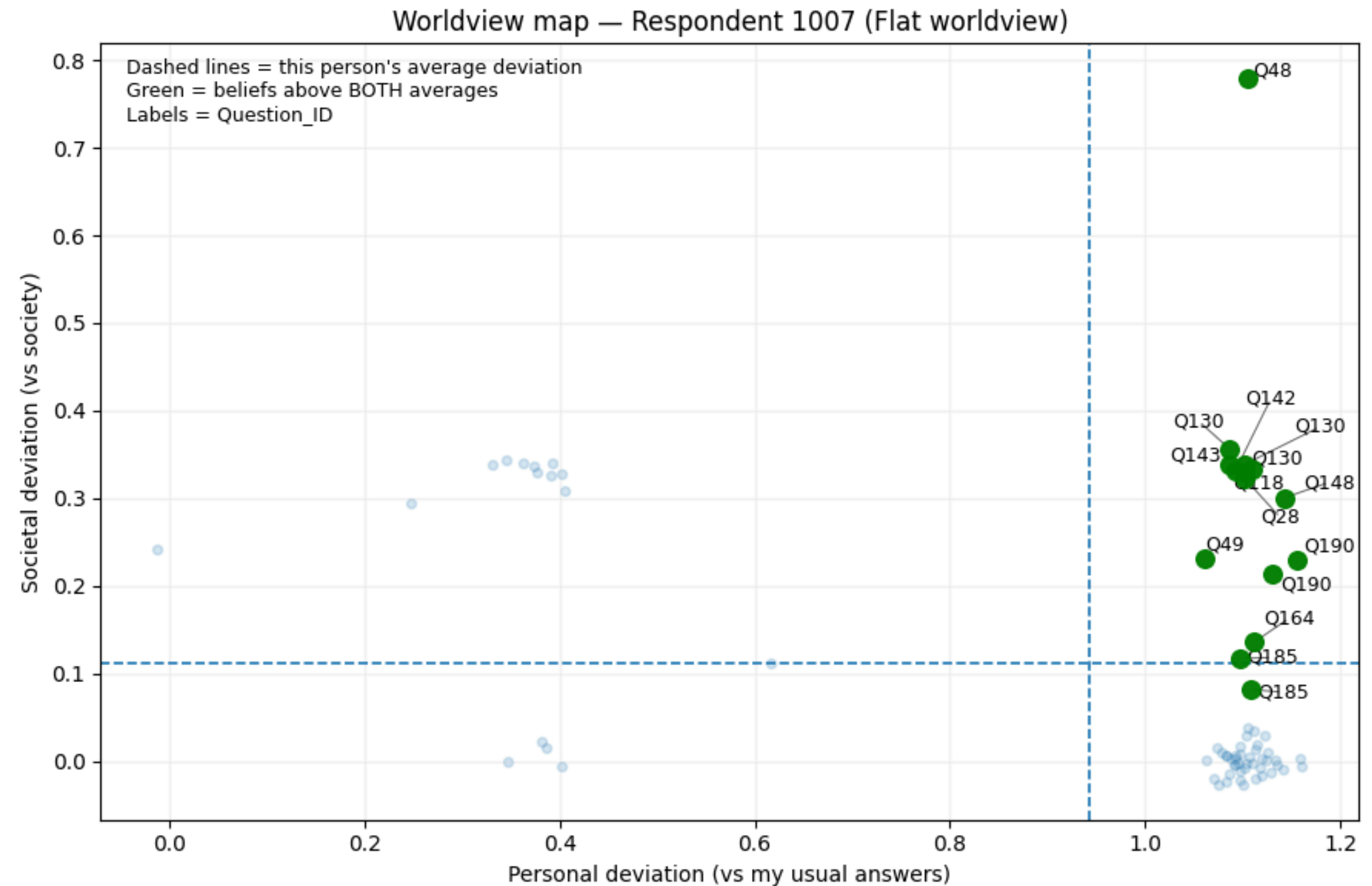Where this person's core beliefs come from (Respondent 78)

The respondent's worldview is not evenly distributed across topics
This worldview is value-driven, centered on moral judgments and social order, rather than economic or institutional issues.

Example 2 of individual worldview map

- Very few (15) beliefs exceed both deviation thresholds
- No strong clustering by thematic domain
- Most beliefs remain close to:
  - societal norms, and/or
  - the individual's own typical response style

This respondent does not express a strongly articulated worldview in survey data
Beliefs exist, but none are sufficiently distinctive to structure a worldview

Worldview map — Respondent 1007 (Flat worldview)

Dashed lines = this person's average deviation
Green = beliefs above BOTH averages
Labels = Question_ID

Example 2 of individual worldview beliefs

15 core beliefs detected for the respondent 1007

Top 10 core beliefs for the respondent 1007:
Social values & norms
- I feel close to my country
- When a mother works for pay, children suffer
- People are happier when they focus on family life

Migration
- Immigrants increase crime
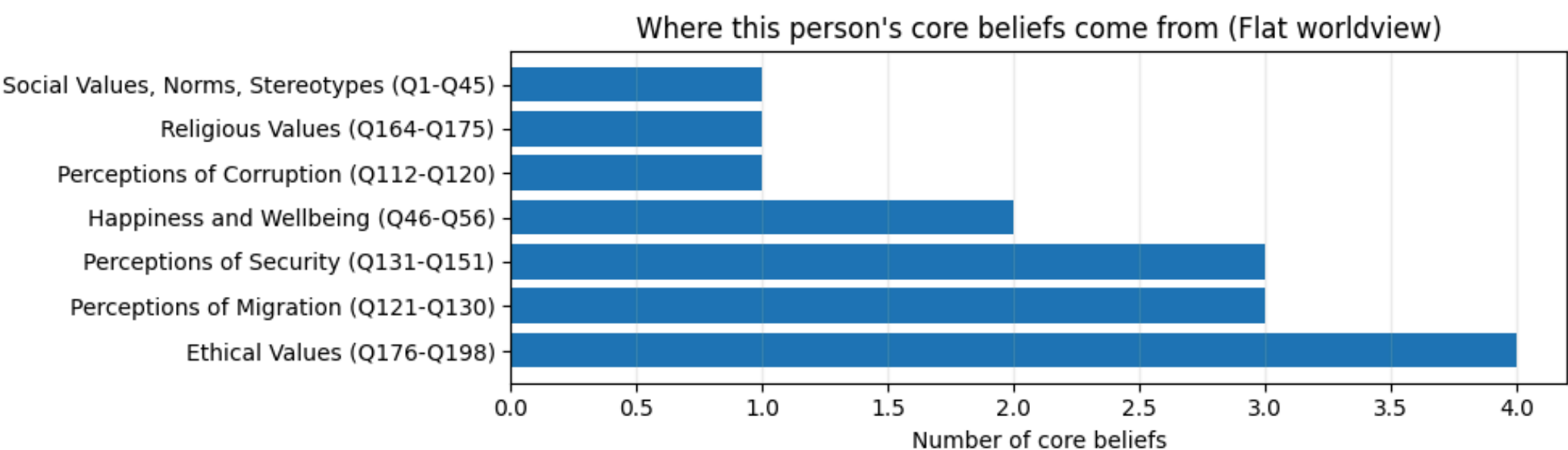- Immigrants increase unemployment

Security
- Worried about a war involving my country
- Worried about a terrorist attack
- Worried about a civil war

Ethics & institutions
- Cheating on taxes is never justifiable
- Most people in public office are corrupt

Well-being
- My standard of living is better than my parents'

Where this person's core beliefs come from (Flat worldview)

There is no clear thematic core, which means the survey responses do not reveal a strongly structured worldview for this person.

Key Takeaways:

This project:

Identified personally meaningful beliefs
We captured what each person cares about more than usual compared to themselves and society.

Built individualized worldview profiles
Each respondent ends up with a unique, interpretable set of core beliefs — a personal worldview map.

Thank you!

Some beliefs are shared, others are divisive

Mean:
- reflects the typical population response
- tells us where the consensus sits

Everyone answers similarly → LOW variance
Answers differ dramatically → HIGH variance

Middle zone → polarized beliefs
Every dot is one question

Most Polarizing Beliefs (Top 10 by weighted variance) — Filtered