

# ERT - Survey Comments

Rio Tinto - HR Data Science

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## 1. Some general info about the data

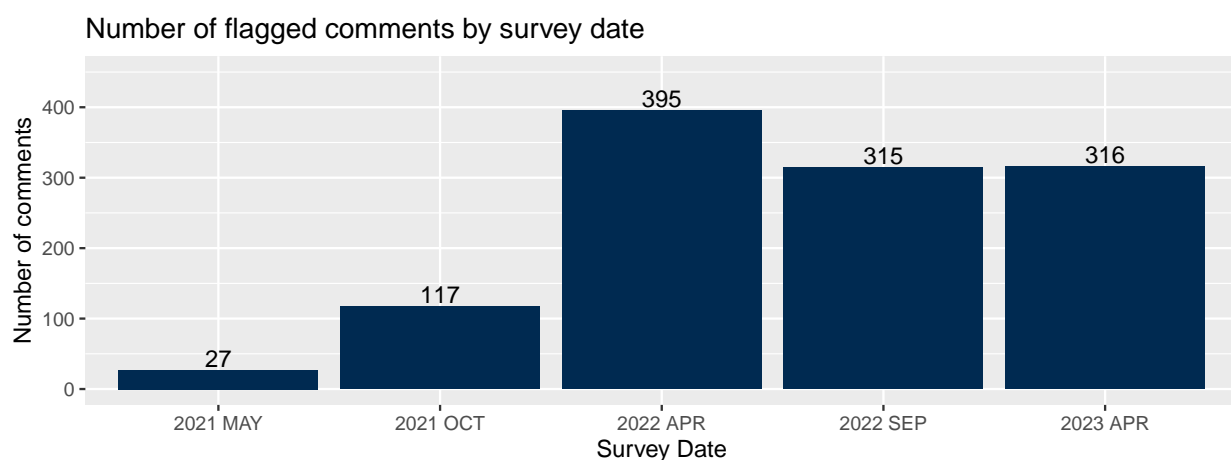
- The data was taken from the results of the past 3 years of GLINT Engagement Pulse surveys (aka the people survey) since the independent review on workplace culture commissioned in March 2021.<sup>1</sup>
- 5 surveys total
- Each row of the data is an answer to one of the 20 survey questions.
- The total number of comments is **320287**, and each of these comments may contain more than one sentence of various word counts.

## 2. Extracting comments relating to Every Day Respect

- The comments were flagged as relating to Every Day Respect by using a list of keywords and keyword pairs (both words present in a comment).
- Keywords used: *Every day respect, Everyday respect, Respect Taskforce, Respect Task Force, Broderick, ERT findings, ERT report, ERT outcomes*
- Keyword pairs used: *ERT & behaviour, ERT & Indigenous, ERT & Juukan*
- After manual inspection of these flagged comments, the keywords were updated to reflect false negatives, such as removing comments relating to emergency response, and the process was iterated on.
- Total number of comments flagged is **1170**, whilst the total number of comments searched is **320287**.

We can group the comments by *Product Group*, *Survey Question*, and *Survey Date*, and use a sentiment analysis (text classification) model to label each comments as **positive**, **neutral**, or **negative**.

### 2.1 How many comments relating to Every Day Respect?

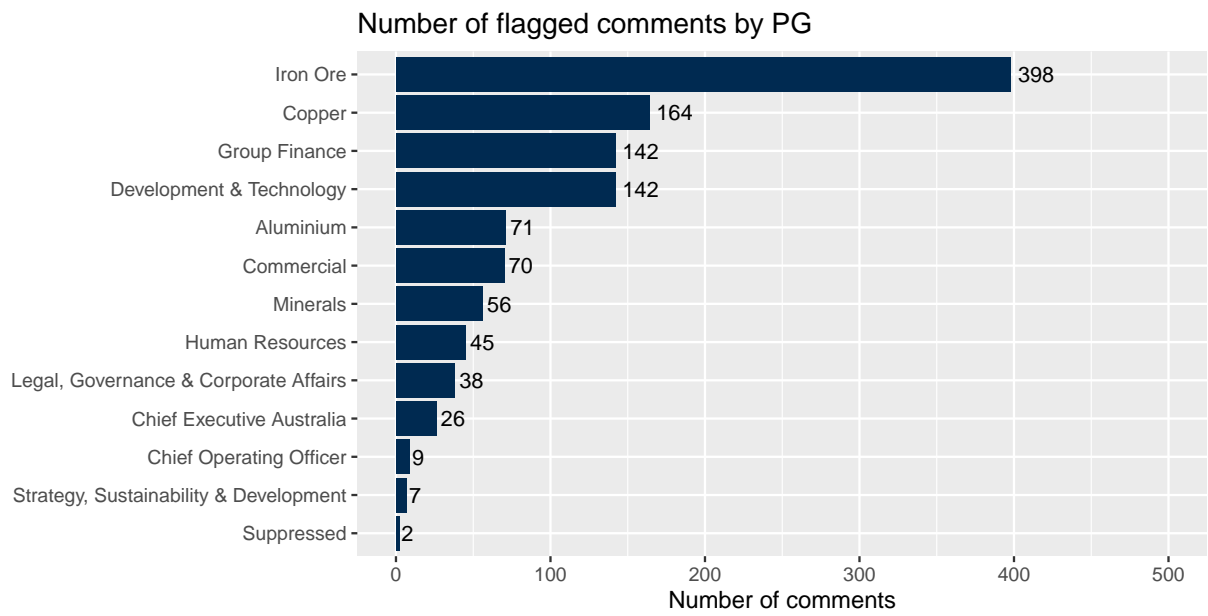


- Large spike in comments talking about ERT after the Broderick report's release.
- This has dropped only slightly in the surveys since, from just under 400 to a little over 300 comments per survey.

<sup>1</sup><https://www.riotinto.com/en/sustainability/talent-diversity-inclusion/everyday-respect>

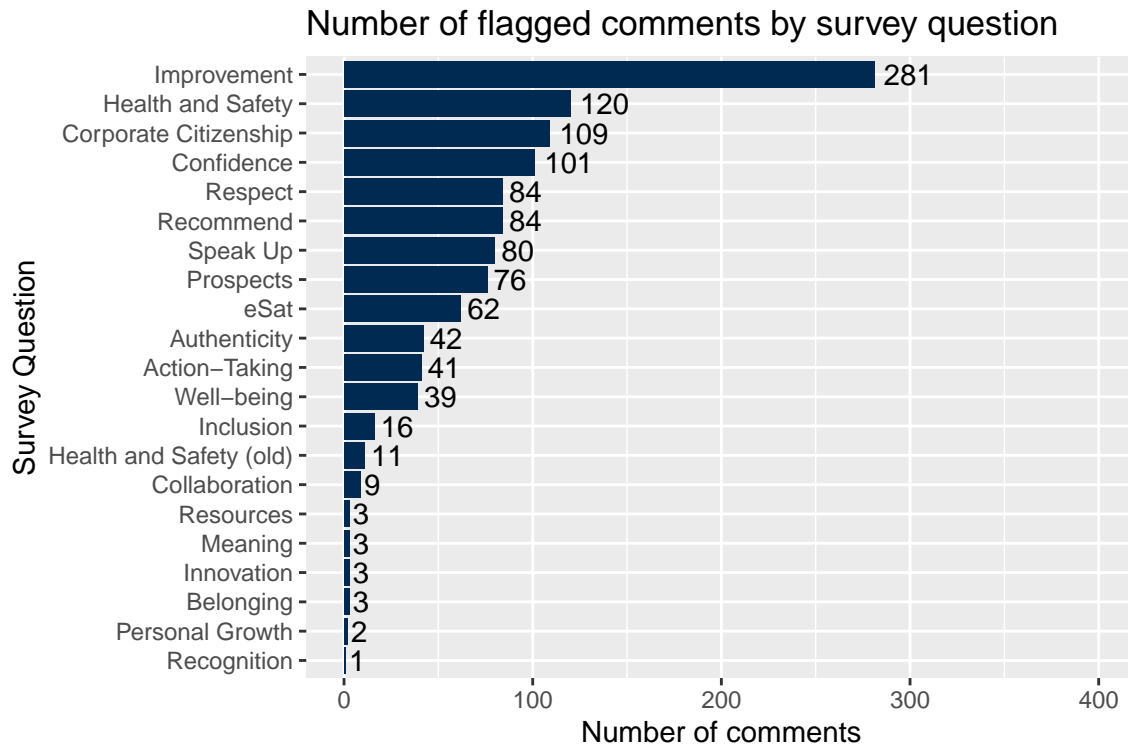
## 2.2 Where in the business are people talking about ERT?

First we look at the number of comments grouped by Product Group, which loosely corresponds to their number of employees.



- Iron ore holds the large majority of flagged comments.

## 2.2 Which survey questions?



- The large majority of comments flagged are found in the “*Improvement*” survey question.
- This question does not have a 1-5 scale answer and only provides a free-text option for response.

Table 1: Survey Question and Number of flagged comments

QuestionName	Question	n
Improvement	How would you improve things at work?	281
Health and Safety	I feel safe at work.	120
Corporate Citizenship	I am proud of the company’s contribution to society.	109
Confidence	I have confidence in Rio Tinto’s Executive Committee (RT ExCo).	101
Recommend	I would recommend Rio Tinto as a great place to work.	84
Respect	I am treated with respect at work.	84
Speak Up	I feel comfortable raising concerns about things that do not seem right.	80
Prospects	I am excited about the company’s future.	76
eSat	How happy are you working at Rio Tinto?	62
Authenticity	I feel comfortable being myself at work.	42
Action-Taking	I believe meaningful action will be taken as a result of this survey.	41
Well-being	The company takes a genuine interest in my wellbeing.	39
Inclusion	Where I work, different perspectives are valued.	16
Health and Safety (old)	I feel safe at work	11
Collaboration	People at Rio Tinto collaborate effectively to get things done.	9
Belonging	I feel a sense of belonging at work.	3
Innovation	I am encouraged to find new and better ways to get things done.	3
Meaning	The work that I do here is meaningful to me.	3
Resources	I have what I need to do my job well.	3

QuestionName	Question	n
Personal Growth	I have good opportunities to learn and grow at work.	2
Recognition	I feel satisfied with the recognition or praise I receive for my work.	1

### 3. Sentiment analysis

#### 3.1 About the model

- The model used, roBERTa<sup>2</sup>, is a cutting-edge transformer-based language model that has been extensively trained and fine-tuned for sentiment analysis tasks. It has been pre-trained on a massive data set comprising 128 million Twitter tweets, enabling it to grasp the nuances and intricacies of natural language expressions.
- The model's architecture allows it to understand the contextual relationships between words and phrases, making it well-suited for sentiment analysis. By leveraging its deep learning capabilities, roBERTa can capture subtle sentiment cues and accurately classify text into **positive**, **negative**, or **neutral** categories.
- For the specific task of labeling employee survey comments, roBERTa's training on Twitter data helps it adapt to informal language usage commonly found in such comments.
- Validation of this model's labeling of a subset of RT people survey comments showed that overall it performed reasonably well for the task, as many of the comments cover a range of views.

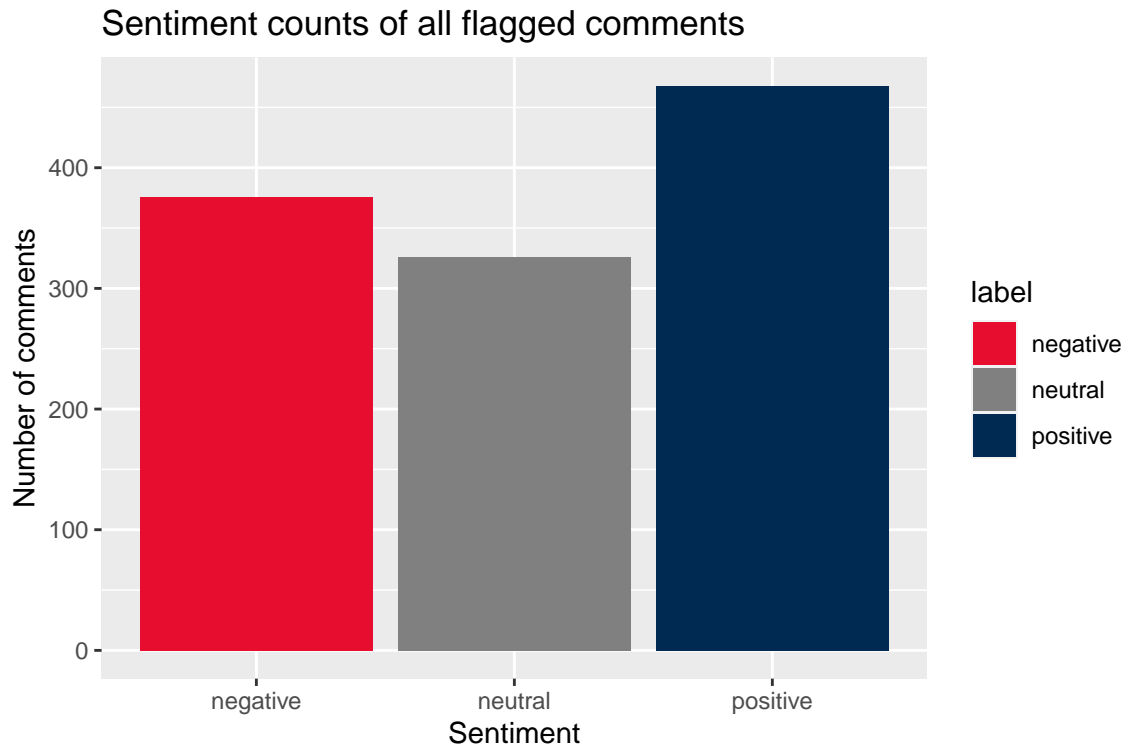
More information about these models can be found here.<sup>3 4</sup>

<sup>2</sup><https://huggingface.co/cardiffnlp/twitter-roberta-base-sentiment-latest>

<sup>3</sup><https://ai.facebook.com/blog/roberta-an-optimized-method-for-pretraining-self-supervised-nlp-systems/>

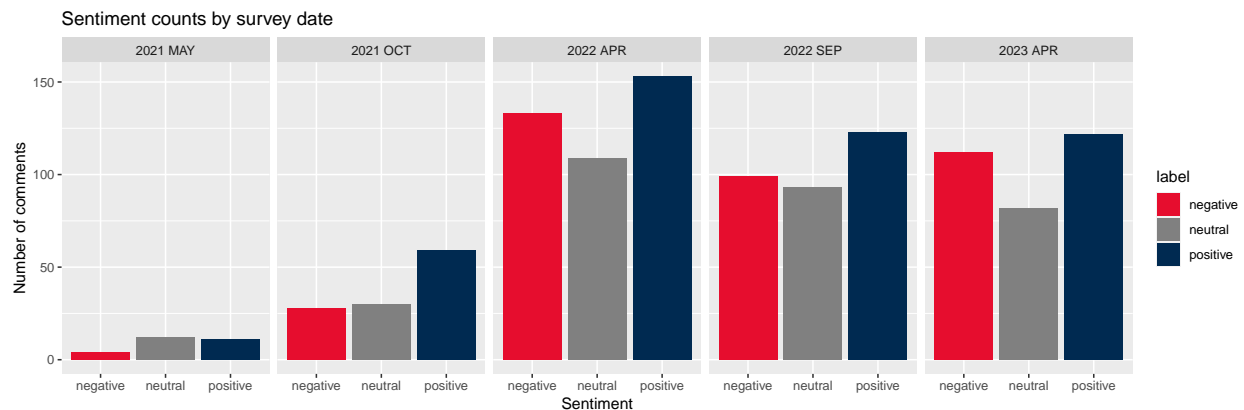
<sup>4</sup><https://www.cronj.com/blog/gpt-3-bert-and-roberta-ai-model-analysis-comparison/>

### 3.2 What is the overall sentiment on Every Day Respect?



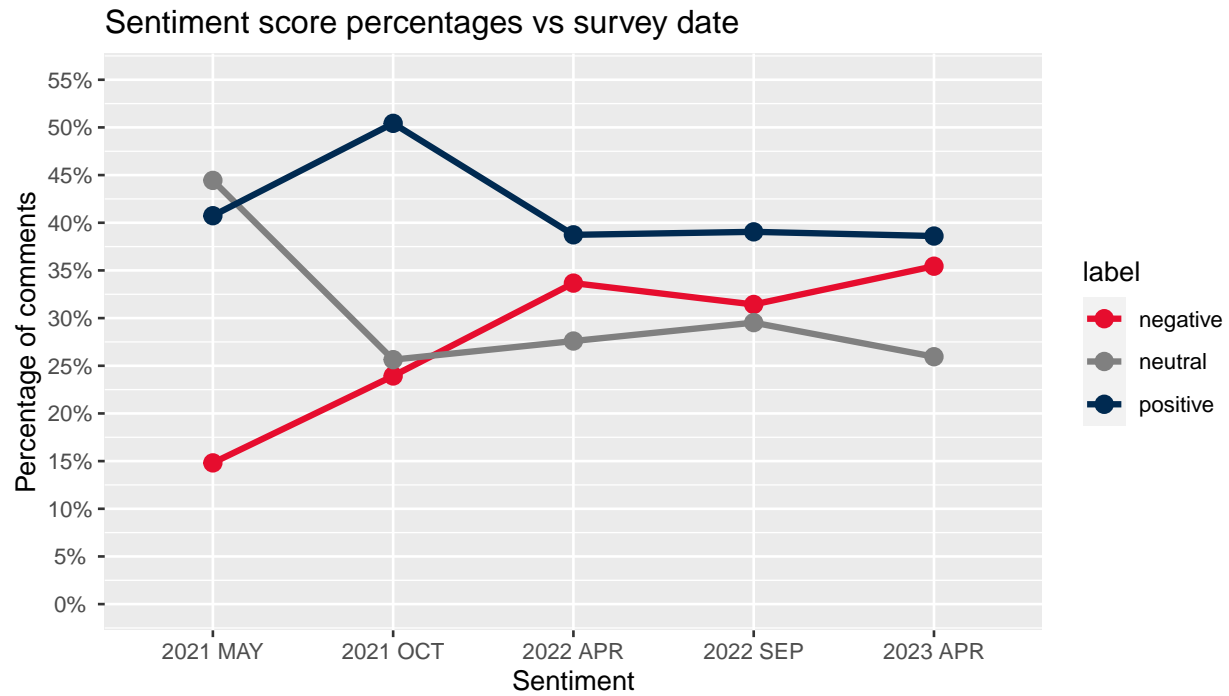
- Even distribution of sentiment overall.
- Leaning positive: with just under 100 more positive comments than negative.
- 376 Negative comments,
- 326 Neutral comments,
- 468 Positive comments

### 3.3 How has sentiment on ERT changed over time?



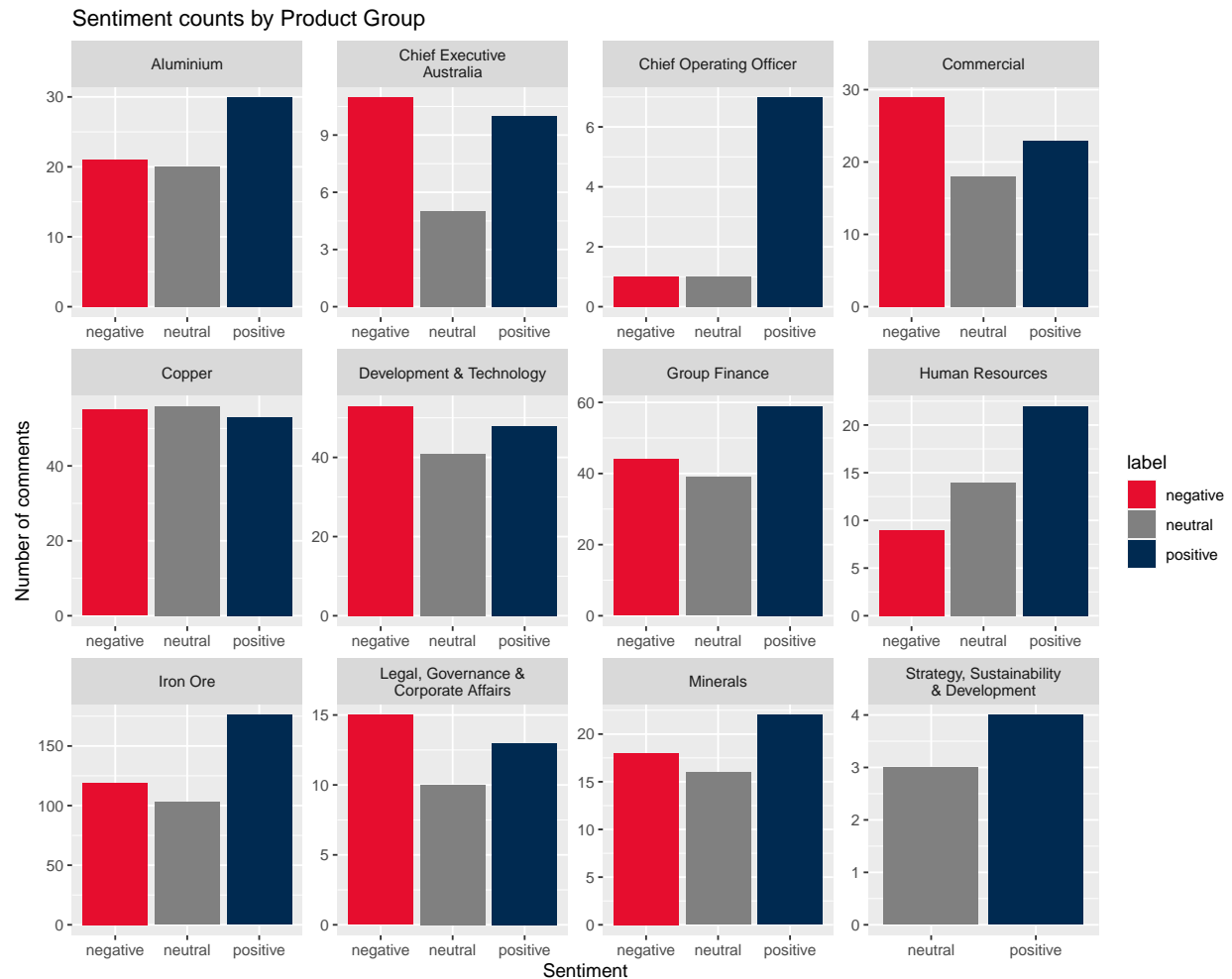
- Interest in ERT rose over 2021 to peak in 2022.
- Initially sentiment was leaning more positive, but is becoming more evenly split between positive and negative (with less neutral).

- The majority of comments still positive.



- Sentiment over time is mostly positive.
- The percentage of negative sentiment is rising.
- Drop in neutral sentiment indicates more polarized opinions.

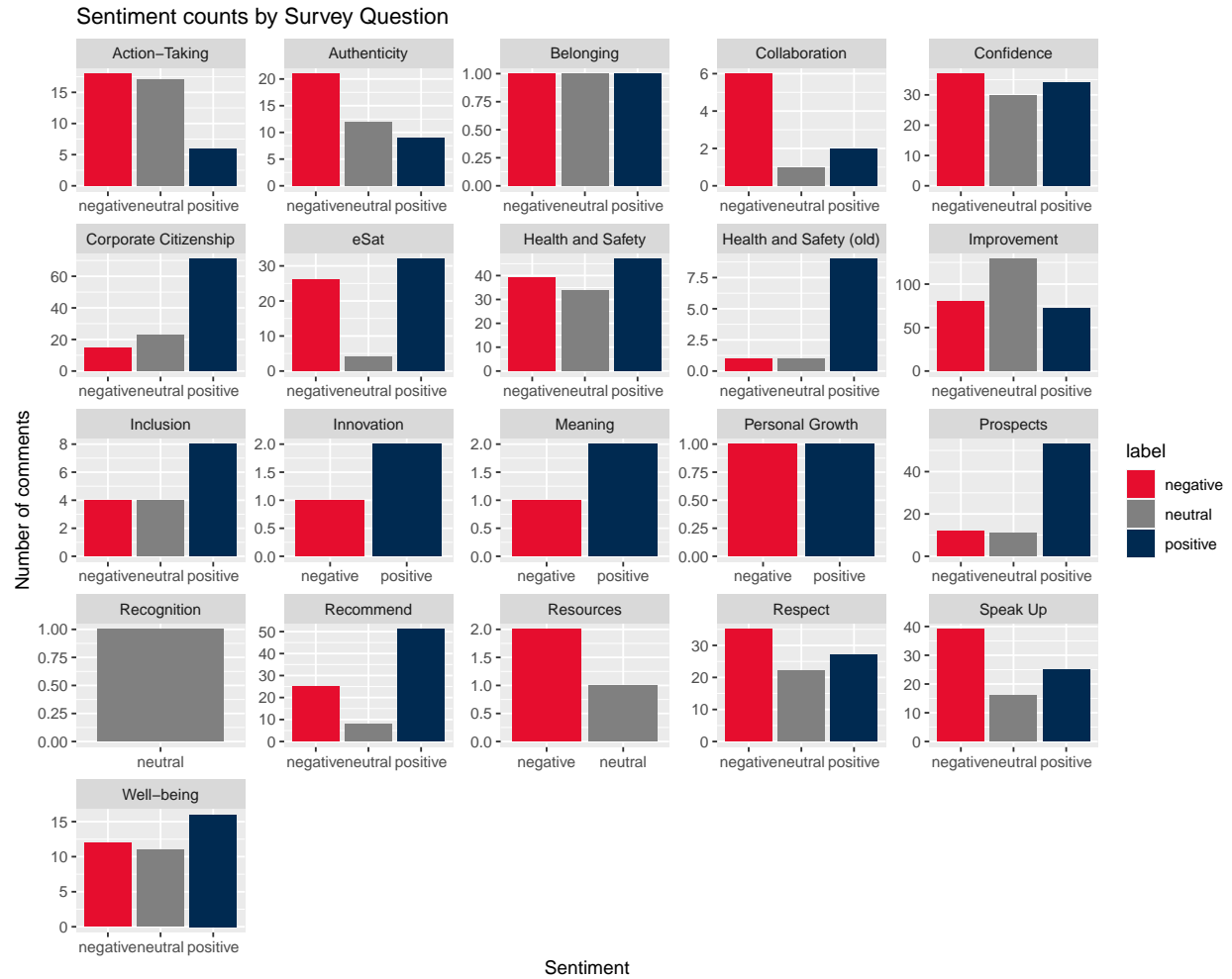
### 3.4 Where is the sentiment different?



- There is relative even balance across PGs considering the group sizes.
- PGs leaning negative: *Commercial*, *Development & Technology*, and *Legal, Governance & Corporate Affairs*.
- PGs leaning positive: *Aluminium*, *Chief Operating Officer*, *Group Finance*, *Human Resources*, *Iron Ore*, and *Minerals*.



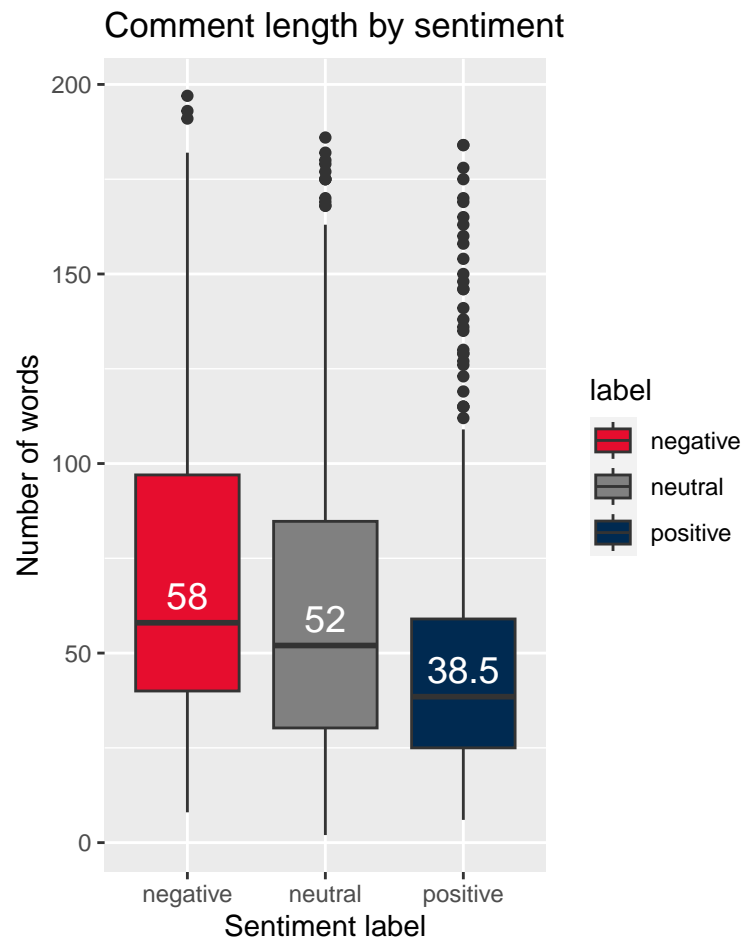
### 3.5 How does sentiment change for different survey questions?



- majority positive: *Corporate Citizenship*, *eSat*, *Health and Safety*, *Inclusion*, *Prospects*, *Recommend*, and *Well-being*.
- majority negative.: *Action-Taking*, *Authenticity*, *Collaboration*, *Respect*, and *Speak Up*.

See *Table 1* for full question phrasings.

### 3.6 How long are the survey comments?



- The box plots and median lengths indicate the negative comments are longer on average than the positive comments.
- Additionally, there are many comments with reasonable length, of over 100 words (nearly a quarter of negative comments).
- Out of **376** negative comments, **41** mention the word “**bullying**”.
- Out of **468** positive comments, **45** mention the word “**proud**”.

#### 4. Quotes and wordclouds:

### 4.1 Positive comments

*"I absolutely feel comfortable to be myself at work yet I fear some of my colleagues do not. I feel our efforts around Everyday Respect are moving us into a more diverse and inclusive environment. There is some great work being done by a number of passionate people who want to make a difference. Well done all."*

*Anonymous - Iron Ore*

*"Everyday respect has helped me call out things that I wouldn't have done in the past. I would have always raised concerns on the big things, but now feel better at raising the smaller things that we would have walked past a few years ago and accepted as something to be tolerated rather than addressed."*

## Anonymous - Development & Technology

*"I am impressed by the humility and the determination to address ERT. Safety has always been a priority, and psychological safety and mental wellbeing are increasingly safe topics to discuss."*

### *Anonymous - Group Finance*



Figure 1: Wordcloud for comments flagged as positive.

## 4.2 Negative comments

*“Even though everyday respect has brought about some positive changes, there is still a strong culture of distrust and bullying from some team members at Rio Tinto. Sometimes this discourages you from being genuinely excited about work. I think this needs to be addressed somehow, not entirely sure how.”*

*Anonymous - Copper*

*“Trust, Transparency and Treatment of employees at work need to be improved. Effectiveness of Inclusion & Diversity, Everyday respect as well as myVoice initiatives need to be assessed on the ground level amongst peers and also within the leadership positions. There is a long way to go.”*

*Anonymous - Iron Ore*

*“ExCo should be complimented on making the everyday respect results very public, but in reality if they hadn’t been made public they would have been leaked anyway. However, the consistent message of all Senior Management in discussing the everyday respect report was how shocked, saddened and dissappointed they are by the results. This shows how far removed they are from the actual goings on in the operations and even within corporate offices.”*

### *Anonymous - Group Finance*



Figure 2: Wordcloud for comments flagged as negative.

### 4.3 Neutral comments

*"There needs to be a continued focus on communication and Everyday Respect within Rio Tinto. There have been improvements there, but work is still needed."*

*Anonymous - Development & Technology*

*“There could be a lot more work here when it comes to mental health. Everyday respect is a good start - but I would like to see more around psychological safety at sites, as we tend to focus more on offices.”*

*Anonymous - Minerals*

*"I am less able to be myself since Everyday Respect has been rolled out. I feel I am constantly checking what I am about to say to ensure nobody will be offended. This is not a bad thing."*

*Anonymous - Iron Ore*



Figure 3: Wordcloud for comments flagged as neutral.

## 5. Limitations

A brief list of some of the limitations of this analysis. Comment flagging and sentiment tasks could be improved on, restrictions on the GLINT data are more difficult to work around.

- There may be some falsely flagged comments. Effort was taken to remove some of these, such as ~50 misflagged comments relating to emergency services training: the acronym *ERT* is also used to refer to emergency response.
- A small number of the flagged comments are not in English (some in Malagasy). These likely return a neutral score.
- Using a keyword search to flagging comments may miss comments that misspell keywords.
- In order to limit falsely flagged comments, the keywords were restricted to topics directly relating to Every Day Respect, and so comments discussing these issues without mentioning any of the keywords will be not be flagged. A future improvement could be to use a language model in the comments flagging process.
- Flagged comments were taken as a whole, and single sentence answers were not flagged separately. This will affect sentiment labels due to the nature of long comments with multiple topics being reduced into one sentiment.
- The restricted nature of extracting the data from the GLINT platform. The only columns included in the comments data are: the Survey Date, the Survey Question, the Product Group, and the comment. Ideally we would be able to group comments by other metrics such as gender, age range, ethnicity, role location, etc.
- The language model used was not fine tuned on Rio Tinto comment data, and therefore does not have understanding of any specific RT terminology.