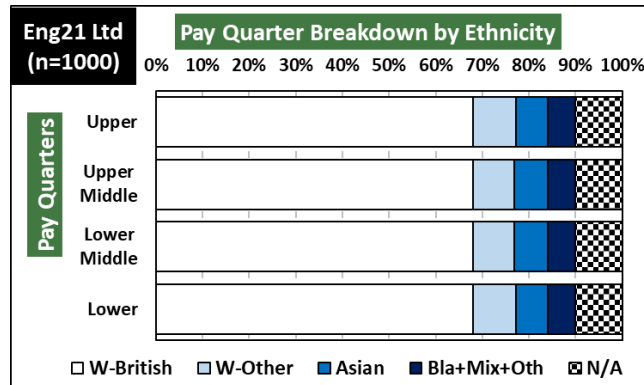


## Turn your ethnicity pay gap data into insights and actions

How to analyse your payroll data by the ethnicity of your employees so as to identify issues and drive improvement



Guidance for Employers

Written for Department of Business, Energy & Industrial Strategy

Draft Version 5.0 delivered on 2<sup>nd</sup> November 2022

Edited for Web Publication as Version 5.1 on 14<sup>th</sup> June 2023

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*AUTHOR'S COMMENT – 19<sup>th</sup> June 2023*

*Throughout this draft, I have added paragraphs in red italics to comment on what I have written. These were mainly for BEIS benefit to point out areas where additional information would need to be provided by someone else or if I was not clear if what I had written was correct.*

*In this edited version 5.1, I have replaced these comments with new comments where necessary, mostly to point out differences between this draft and [the final version published on 19<sup>th</sup> April 2023](#). To see further comments on the final version of the guidance, [please read this article on my blog](#).*

*Otherwise, apart from correcting typos, grammar, errors and adding some links, I have retained what I wrote in draft version 5.0 which I sent to BEIS in November 2022. That version marked the end of my involvement with the writing of the ethnicity pay gap guidance.*

*It should be noted that around that time, BEIS was renamed Department of Business & Trade but I have not changed the references to BEIS in this version.*

*On the next page, you will see the list of contents. The main reason why I was contracted to write the draft was to take advantage of my expertise as a professional statistician when it came to parts 1.3 (common questions), 2 (data collection) and 3 (analysis). However, since this was the first draft, I also wrote parts 0, 1.1, 1.2 & 4 to give a narrative flow and to add placeholders for further editing. Whilst I am able to contribute something to the topics covered by parts 0, 1.1, 1.2 & 4, it was always the intention to get others with greater expertise to write these sections. The reader of this draft should therefore not take what I have written in these parts as authoritative.*

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## PART 0 - INTRODUCTION TO THE GUIDANCE

This is a guidance document for any employer in the UK who wishes to improve their ethnic diversity & representation of their workforce through an analysis of their pay and benefits data by the ethnicity of their employees to identify issues and take action.

### 0.1 - Why was it written?

The government published its [Inclusive Britain](#) plan in March 2022 to tackle racial and ethnic disparities identified by the [Commission for Racial and Ethnic Disparities \(CRED\)](#) in March 2021.

Action 16 committed the Department of Business Energy and Industrial Strategy (**BEIS**) to producing this guidance for any employer who wants to undertake Ethnicity Pay Gap (**EPG**) Reporting. EPG reporting will be voluntary for any employer unlike Gender Pay Gap (**GPG**) Reporting which is mandatory for any employer with a headcount of 250 or more.

### 0.2 - Who should read this?

Anyone who wants to analyse pay and benefits data by ethnicity, identify issues and take action on behalf of their employer. No presumption is made that readers will be in an HR role.

It is assumed the reader is familiar with the principles of gender pay gap reporting (**GPG Reporting**). If not, we recommend you familiarise yourself with [the key terms and calculations here](#).

We hope you find this guidance helpful. Since EPG Reporting is voluntary, there is no requirement to follow the guidance precisely and employers are free to adapt and modify what is written here to take into account their own circumstances.

### 0.3 - What you will find in this guidance?

A 4 part process to get you started on engaging your employees, collecting your data, analysing your pay and benefits data by ethnicity, writing your narrative and identifying actions that lead to improvement.

**Part 1 (Engage your Employees)** explores why employee engagement is so important, how pay gap reporting can be thought of as continuous improvement and provides answers to some of the common questions that employees may ask.

**Part 2 (Collect your Data)** explores how to decide which ethnic categories to use and how to collect and record the ethnicities of your employees, their pay, benefits and other facts about your employees that could be of interest.

**Part 3 (Turn your Data into Insights)** looks at how to analyse your pay & benefits data by ethnicity and is split into two parts A & B.

- **Part 3A (Basic)** covers the basic calculations (similar to those used in GPG reporting) that will get you started and to enable you to turn your data from Part 2 into insights for Part 4.
- **Part 3B (Advanced)** covers more advanced calculations which enable you to undertake a more in depth analysis. Part 3B is entirely optional though and employers are free to ignore Part 3B and proceed directly to Part 4.

**Part 4 (Turn your Insights into Actions)** explains how to turn the insights you've obtained from step 3 into a set of priorities for improvement. We look at how to devise an action plan to implement your priorities and how you can measure and evaluate the success or failure of your plan.

Each part consists of a number of sections. The following section headings may be found in all 4 parts.

- **Worked Examples** – This will use data from **fictional** employers to illustrate the points being made in. These sections will appear in blue text to distinguish these from the main guidance.
- **Case Studies** - This will contain examples and links to employers who have already undertaken EPG Reporting.
- **Further Reading** – This will be a collection of links to other guidance that could be relevant to EPG Reporting. There is no requirement to read these in order to get started, the links are provided for those who are interested in exploring particular points in more detail.

*AUTHOR'S NOTES – 19<sup>th</sup> June 2023*

*My main reason for making this draft publicly available is that the final guidance contains no worked examples. I was aware .GOV style guides were very strict but it was a big disappointment when I saw the final version had no worked examples at all. I was hoping BEIS would be able to include the blue worked examples passages as popups in the final version that a user could hover over.*

*The original intention was to use real life employer ethnicity pay gap reports as case studies to illustrate some of the points in the guidance. However, I warned BEIS they would struggle to find good examples out there and in the event, the case study sections were not completed. In this edited version, I have added a couple of examples which I came across after writing this draft.*

*The further reading sections mostly points to my blog at the moment but again I was expecting BEIS to come up with some links of their own. You can see [a full list of my blogs on pay gap reporting here](#).*

*It is my intention to write and publish an updated version of this draft guidance at some point in the future. If you have any suggestions for case study and further reading links, please do send them to me at [nigel@marriott-stats.com](mailto:nigel@marriott-stats.com).*

## PART 1 – ENGAGING YOUR EMPLOYEES

Part 1 has 5 sections -

1. Why **Employee Engagement** is important and is not a one-off exercise.
2. Why pay gap reporting is simply the start of a **Continuous Improvement** approach to diversity in your workplace.
3. Answers to **Common Questions** asked by employees
4. **Case Studies** from real life employers
5. Links to **Further Reading** on how to engage your employees

### 1.1 – The importance of employee engagement

Your goal is to reach a position where your employees feel comfortable disclosing their ethnicity to you and will be able to understand and interpret the outputs of your pay gap analysis.

You should use your normal channel of employee consultation to do the following –

- Announce your intention to identify, analyse & improve your ethnicity pay gaps.
- Say why you want to do an ethnicity pay gap analysis.
- Give an overview of how you will apply the 4 part process described in this guidance.
- Describe your proposed approach to collecting employee ethnicity data.
- Describe the outputs you expect to get from your analysis.
- Receive employee feedback on your proposed approach and revise accordingly.
- Find out what issues and problems employees would like your pay gap analysis to focus on and to answer any questions employees may have.

This guidance consists of 4 parts but the parts do not exist in isolation, they are connected with each other. Each part contains many options available to you and not all will be appropriate to your organisation. By allowing your employees to give feedback on how you intend to proceed through the 4 parts, you increase the likelihood of your employees disclosing their ethnicity in part 2.

Employee engagement is not a one-off event. Even if employees do give their consent today, they are free to withdraw their consent at any time. Employees leave and join your employer all the time so engagement is something that needs to be repeated and reinforced at regular intervals so as to maintain the consent of your employees to use their ethnicity data.

### 1.2 - Why Pay Gap Reporting is Continuous Improvement

The experience of GPG Reporting so far has shown that some employers appear to regard the calculation and publication their pay gap statistics as the end of the process, not the start. There is little point in employers doing pay gap reporting if this is the outcome.

Pay gap reporting is intended to be a tool whereby employers lay out a vision of what they want to achieve in terms of employee diversity and the pay gap calculations tells the employer where they are today. The gap between today and the envisioned tomorrow should then drive actions to improve diversity and inclusion.

Another way of saying this is that pay gap reporting is a means by which you deliver **Continuous Improvement** i.e. are you continually moving in the direction you want to go when it comes to the

diversity of your employees? Continuous improvement is not easy and requires a constant focus on what is working and just as important on what is not working.

What can distract employers from continuous improvement is excessive use of comparisons with other employers or national statistics provided by the Office of National Statistics (**ONS**). It is fine to look at what other relevant employers are doing to address their pay gaps and to see if what they are doing can also work for you but you should avoid the temptation to place yourself in a “league table” of employers. After all, there is no guarantee that the employer at the top of the league table is anywhere close to what your long term goal is and the approach that works for them may not be appropriate for your employer.

### **1.3 – Answers to common questions asked by employees**

Here are some questions often asked by employees in relation to pay gap reporting. You may find it useful to cover these points when you begin your consultation of employees. The answers to these questions give you an idea of what the 4 part process looks like in this guidance and contains some worked examples you can use to illustrate the answers to your employees.

*AUTHORS COMMENT – My biggest concern with the final version has been the inclusion of the mean and median pay gap statistics which I had strongly advised against doing. The following sub sections are where I explain why those statistics have no value. The amount of detail here is probably too much but I asked BEIS to consider laying this out in such a way that people only see the answer if they actually click on the question. That way the answers would not clutter up a screen on the relevant .GOV page.*

#### **1.3.1 What is a pay gap?**

The Equality Act 2010 (2017 regulations) defines a **Pay Gap** to be the difference between the median (or mean) hourly pay of employees in category A and the median (or mean) hourly pay of employees in category B. When reporting a gender pay gap, categories A and B are **Men** and **Women**.

[The official calculation of a median pay gap](#) is the difference between the hourly pay of the median category A employee and the hourly pay of the median category B employee expressed as a percentage of the median category A employee’s hourly pay. [The GEO’s recommended formulation](#) is to state for every £1 paid to the median category A employee, £x.yz is paid to the median category B employee.

*AUTHORS COMMENT – Here is the first worked example in blue text. What I did was to use the section number along with the phrase “Worked Example” as below so you know which sub section it relates to. I have tried my best to ensure the text preceding the worked examples stands on its own without needing to read the worked examples but in many cases I am sure the readers will benefit from reading through these examples. As much as possible I use the same fictional employers throughout this draft so you can see how the 4 part process builds up for a single employer.*

#### **[1.3.1 Worked Example](#)**

XYZ Ltd has 10 category A employees (shown in green, light shade) and 10 category B employees (shown in red, dark shade). There are 4 job roles, each with 5 employees, and the hourly pay of each employee is shown. The median hourly pay across all 20 employees is £27 per hour since if these 20 employees were to stand in a line in order of their hourly pay, the two employees standing in the middle of the line (the 10<sup>th</sup> & 11<sup>th</sup> employee), who are paid £24 and £30 per hour, become the median employees and the average of these two is £27 per hour.

Job Role	Hourly Pay by Employee					Summary Statistics			
Managers	£40	£40	£40	£40	£48		ALL	Green	Red
Sales Staff	£30	£30	£30	£36	£36	#Staff	20	10	10
Technical Staff	£20	£20	£24	£24	£24	Median	£27	£30	£24
Admin Staff	£10	£12	£12	£12	£12				

When we look at green and red employees separately, we find the median green employee is paid £30 per hour and the median red employee is paid £24 per hour. This means for every £1 paid to the median green employee, the median red employee is paid 80p or 20p (or 20%) less than the median green employee.

### 1.3.2 Why pay gaps tell you nothing about equal pay issues

The most common misconception people have about pay gaps is thinking they measure **Unequal Pay**. The confusion between pay gaps and unequal pay is widespread as evidenced in [this survey conducted by YouGov in 2018](#). Two thirds of people responding incorrectly thought pay gaps were measuring equal pay issues.

**Equal Pay** looks at whether two people who are doing the same job are being paid the same or being paid differently. It is illegal to pay such people differently on the grounds of their personal characteristics and if an employer cannot justify paying two people differently who are doing the same job, then an unequal pay situation has occurred.

If you look back at the worked example in section 1.3.1, the median red employee at the fictional employer XYZ Ltd was paid 20% **less** than the median green employee. However, within each of the 4 job roles at XYZ Ltd, each red employee was paid 20% **more** than the green employee. In other words XYZ Ltd is probably breaking equal pay laws by discriminating against green employees, but the pay gap showing the median green employee is paid more than the median red employees gives no sign of this issue. That is because the standard pay gap statistics does not and cannot measure equal pay issues.

The contradiction shown in worked example 1.3.1 above is one of many examples of a statistical phenomenon known as [Simpson's Paradox](#). You might think this is a far fetched example but [variants of this have already happened in GPG Reporting](#) and they will happen more frequently with EPG Reporting. This is explained in more detail in part 3A and employers will need to check they have not become a victim of Simpson's Paradox when analysing their own data.

### 1.3.3 Why this guidance does not tell you how to analyse equal pay issues

How can you identify and measure equal pay issues for your employer? The answer is you cannot use this guidance since it is about the analysis of pay gaps. Instead you will need to carry out an **Equal Pay Audit** which requires more time and resources to undertake.

For more information on how to undertake an equal pay audit, please visit [this link provided by the Equalities & Human Rights Commission \(EHRC\)](#).

*AUTHOR'S COMMENT –If we want employers to take equal pay audits more seriously, then I consider the Icelandic IST85 auditable management standard to be a prototype that should receive greater consideration. More details can be found here [Government of Iceland | Equal Pay Certification](#).*



### 1.3.4 Why pay gaps are also representation gaps

How does a pay gap occur?

If the median pay of category A employees is different from the median pay of category B employees, then by the laws of mathematics, one category of employees is more likely to be found in jobs that pay **more** than the overall median hourly pay and the other category of employees will be more likely to be found in jobs that pay **less** than the overall median hourly pay. See worked example 1.3.4 for a demonstration.

Another way of expressing this is to say in higher paid jobs, one category of employees is **over-represented** and the other category of employees is **under-represented** and this situation is reversed for lower paid jobs. This means we can say there is a **gap** in the **representation** of the employee categories across the employer's pay scale. Alternatively we can say an employer with a **Pay Gap** is also an employer with a **Representation Gap**.

The advantage of thinking in terms of representation gaps is that when you start to look at how to close a representation gap, you can immediately see the gap can only be closed if within each category of employees, the number of employees paid more than the overall median hourly pay (upper pay half) is the **same** as the number of employees being paid less than the overall median hourly pay (lower pay half). The difference between the number of employees in each pay half for each category is therefore a direct measure of how much work you need to do close your pay gaps. This concept is explored further in Part 3B.

#### 1.3.4 Worked Example

The median hourly pay across all employees is £27 per hour at XYZ Ltd from worked example 1.3.1. This is the dividing line between the 10 employees in the **upper pay half** (where employees are paid more than £27 per hour) and the 10 employees in the **lower pay half** (where employees are paid less than £27 per hour).

When we look at green & red employees separately, we see there are more green employees (7 in all) who are in the upper pay half than there are green employees (3 in all) in the lower pay half. For red employees, it is the other way around with 7 employees in the upper pay half and 3 employees in the lower pay half.

Job Role	Hourly Pay by Employee					Summary Statistics			
Managers	£40	£40	£40	£40	£48		ALL	Green	Red
Sales Staff	£30	£30	£30	£36	£36	#Staff	20	10	10
Technical Staff	£20	£20	£24	£24	£24	Median	£27	£30	£24
Admin Staff	£10	£12	£12	£12	£12				

### 1.3.5 - How EPG reporting differ from GPG reporting?

There are two key differences between gender and ethnicity.

1. In the UK, ethnicity has a dominant majority category plus many minority categories whereas gender pay gap reporting focuses only on two dominant categories (men and women) which are of equal size nationally.
2. The gender ratio between men and women is more or less 50:50 across all parts of the UK whereas ethnicity representations vary considerably by area across the UK.

The main statistic of GPG Reporting is the pay gap measuring the difference between men and women. This has some meaning for gender since men and women are well defined categories, they are of similar size nationally and there is only one pay gap to calculate.

An employer trying to replicate GPG reporting for 10 ethnic categories could in theory calculate 45 pay gap statistics with some ethnic categories perhaps 100 times smaller than others and where the definition of the ethnic categories will not be well defined. For these reasons, EPG reporting has to diverge from GPG reporting.

### 1.3.6 - What features of GPG Reporting can be replicated in EPG Reporting?

GPG Reporting requires employers [to report Pay Quarter Breakdowns by Gender](#). Employees are split into 4 equal sized quarters based on their hourly pay and within each pay quarter, the percentages of men and women are reported. See worked example 1.3.6 for a demonstration.

**Pay Quarter Breakdowns (PQB)** offer genuine insight into why an employer has a pay/representation gap as will be explained in Part 3A. It is easy to replace gender categories with ethnic categories since the process of creating the 4 pay quarters is identical to GPG Reporting. The only difference is that employers will now report the breakdown by ethnic category in each pay quarter. As will be shown in part 3A, a single Ethnicity PQB table or chart can often be the basis of the entire narrative for an employer’s ethnicity pay gap report.

#### 1.3.6 Worked Example

Using the same fictional employer XYZ Ltd from worked example 1.3.1, the 4 job roles turn out to represent the 4 pay quarters required in a pay quarter breakdown. Each pay quarter has with 5 employees broken down as follows.

- In the Upper Pay Quarter (**UQ**), red (dark shade) employees make up 20% of the 5 employees in the upper pay quarter and green (light shade) employees make up 80% of those 5 employees.
- In the Upper Middle Pay Quarter (**UMQ**), 40% of employees are red and 60% are green.
- In the Lower Middle Pay Quarter (**LMQ**), 60% of employees are red and 40% are green.
- In the Lower Pay Quarter (**LQ**), 80% of employees are red and 20% are green.

Job Role	Hourly Pay by Employee					Summary Statistics			Pay Quarter Breakdown (#Staff)				
Managers	£40	£40	£40	£40	£48		ALL	Green	Red	UQ	5	4	1
Sales Staff	£30	£30	£30	£36	£36	#Staff	20	10	10	UMQ	5	3	2
Technical Staff	£20	£20	£24	£24	£24	Median	£27	£30	£24	LMQ	5	2	3
Admin Staff	£10	£12	£12	£12	£12					LQ	5	1	4

### 1.4 – Case Studies

*AUTHORS COMMENT – This is a placeholder for any worthwhile case studies. In my experience, good case studies that are useful for other employers to learn from are very hard to find.*

### 1.5 – Further Reading

Here are some useful links that provide more detail on the points covered in this section.

- The Race Disparity Unit provides comprehensive guidance on [how to collect and analyse ethnicity data here](#). The entire guidance is relevant to any employer who wants to do

ethnicity pay gap analysis. Part 1 and 2.1 provides guidance that is relevant to what has been covered here in part 1.

*AUTHORS COMMENT – The link given here to the RDU site takes you to a draft version from July 2022. [The final version was published in April 2023](#) but unfortunately I find the layout not as user friendly as the draft version.*

## PART 2 – COLLECT YOUR DATA

Employers are encouraged to devote time and resources to this part and to seek expert advice as needed. The more consideration given at this stage ahead of your first ethnicity pay gap report, the more likely it is you will be able to deliver continuous improvement.

The following questions need to be answered –

- Can you reuse the data files you used for GPG Reporting and add a field for ethnicity? **Section 2.1** looks into why the answer is usually yes but sometimes the answer may be no.
- Which ethnicities should be in the list your employees will choose from? **Section 2.2** looks into this in some depth as this is one of the most important decisions you will make.
- How will you record and make secure the ethnicity data provided by your employees? **Section 2.3** gives guidance on how to comply with GDPR requirements and how to handle employees who do not want to disclose their ethnicity.
- How will you aggregate ethnicities with too few employees? **Section 2.4** explains the data protection and statistical reasons why you should specify a **Minimum Category Size**. This means you need a process for aggregating **Ethnicities** with too few employees into larger **Ethnic Categories** that will be used in your analysis in Part 3.
- What answers did other employers come up with? **Section 2.5** provides some case studies.
- **Section 2.6** provides links to further reading of which the Race Disparity Unit's guide to collecting ethnicity data could be of particular interest.

### 2.1 – Can you reuse your GPG reporting data file?

For GPG reporting, you are required to create two data files as follows –

- A list of your [relevant employees](#) along with their gender and how much they were paid in **bonuses** for the 12 months to your [snapshot date](#). This is used to calculate the percentage of men and women receiving bonuses and the mean and median bonus pay gap.
- A list of your [full pay relevant employees](#) along with their gender and their [hourly pay](#) in the pay period that includes your snapshot date. This is used to calculate the pay quarter breakdown by gender and the mean & median hourly pay gap.

EPG reporting is voluntary so whilst the most convenient option for many employers is to reuse these data files and add an extra field for employee ethnicity, you are not required to do so. In some circumstances, it may be more meaningful to create a new data file for your ethnicity pay gap analysis. Two scenarios when you might want to do this are –

- **Too many relevant employees excluded from the full pay relevant list** - Full pay relevant employees are a subset of relevant employees and excludes employees on reduced pay as a result of taking certain types of leave. As will be covered later in part 2.4, it is likely many employers will find they have too few employees in certain ethnic categories to comply with your designated **Minimum Category Size**. Such an outcome can be exacerbated if your full pay relevant list is excluding many employees in those ethnic categories due to them taking reduced pay leave. In which case, it may make more sense to use the list of all employees or relevant employees instead.
- **Relevant pay period is unrepresentative of your employees pay** – The [relevant pay period](#) is your pay period which includes the designated snapshot date of 31<sup>st</sup> March or 5<sup>th</sup> April. For some employers, this pay period may not give a fair picture of employees pay for a variety of reasons. When certain ethnic categories have only a few employees, any statistic

calculated using the relevant pay period could end up being further distorted due to the low sample size. In such a situation, you could change your snapshot date to a more meaningful date or use a longer pay period such as pay over the whole financial year e.g. data as calculated for an employee's P60 and P11D statements.

This list is not exhaustive and you may be able to think of other scenarios when it would be appropriate to create a new data file.

If you do decide to use a different data file from the one you use for GPG reporting, it is important to make this clear in any report you publish and to give details on how you have diverged from the requirements of GPG Reporting. You should also ensure that you use the same criteria for creating your data file each year going forward. Otherwise you could end up in a situation where any change in your pay gap is the result of changes in how you collected your data rather than being a genuine change.

Lastly, you should also at this point try to anticipate the factors you expect to analyse your pay gap in Part 3A. For example, you may want to split your employees by which location they work in or which division they work in or whether they are permanent or temporary employees, etc. The exact options available to you will vary by employer but now is the time to make sure such information is included in your data file.

## 2.2 – Choosing a list of ethnicities for your employees to select from

Ethnicity means different things to different people. It could be race, colour, religion, nationality, heritage, language, etc. It is worth finding out from your employees during the engagement phase in Part 1 how they define ethnicity. One way you could initiate this debate is to ask your employees if they consider those identifying as White-Other ([6.2% of the population of England & Wales in the 2021 census](#) and the 2<sup>nd</sup> largest ethnicity by some margin after the White-British majority) to be an ethnic minority or a part of the white ethnic majority?

We begin this section by looking at the most likely option employers (especially in the public sector) will choose for their list of ethnicities which are **Census Ethnicities** as explained in **section 2.2.1**. However, you are free to consider other options and **section 2.2.2** explores some of these. There are also some options that are not appropriate and these are listed and explained in **section 2.2.3**. Finally **section 2.2.4** considers points to be aware of if you are interested in **Intersectional Analysis**.

Please bear in mind what was said in section 2.1 that whatever option you choose, you will need to provide details on what you chose and why chose that option in your ethnicity pay gap report.

*AUTHORS COMMENTS – [The final version has chosen to be more specific in recommending the Government Statistical Services Harmonised Definitions of Ethnicity](#). I have found the public sector to be very fixated on comparisons across the public sector which makes some sense since the public sector is not profit oriented. However, the public sector which includes BEIS, RDU, Equality Hub, etc, find it hard to realise the private sector doesn't feel the need to compare in the same way. That is why I said in paragraph above that employers are free to consider other options for ethnicities.*

### 2.2.1 – What are Census Ethnicities?

In 2021, residents of England, Wales, Northern Ireland and Scotland (delayed to 2022) completed the decadal census. One question asked people to select the ethnicity closest to their identity so employees should have recent experience of answering this question which is a good reason for using census ethnicities.

Another reason for using census ethnicities is it will allow you to compare your results with census or other external data for a particular location. Many data sets using census ethnicities [are provided by the Race Disparity Unit](#) and these may be useful for your pay gap analysis. How to do this is covered in part 3.

However, each of the 4 nations in the UK used different lists of ethnicities in the most recent census. This means you need to consider which list is most appropriate for your employees. Below are links to the ethnicities used in the 4 nations.

- [England](#) – list provided by Office of National Statistics
- [Wales](#) – same as England
- [Scotland](#) – list provided by National Records Office. Note the last Scottish census took place in 2022 after being delayed due to the Coronavirus pandemic.
- [Northern Ireland](#) – list provided by Northern Ireland Statistics & Research Agency.

Ethnicities Used by ONS for 2021 Census in England & Wales	
1	White: English/Welsh/Scottish/Northern Irish/British
2	White: Irish
3	White: Gypsy or Irish Traveller
4	White: Roma
5	White: Other White
6	Mixed/multiple ethnic group: White and Black Caribbean
7	Mixed/multiple ethnic group: White and Black African
8	Mixed/multiple ethnic group: White and Asian
9	Mixed/multiple ethnic group: Other Mixed
10	Asian/Asian British: Indian
11	Asian/Asian British: Pakistani
12	Asian/Asian British: Bangladeshi
13	Asian/Asian British: Chinese
14	Asian/Asian British: Other Asian
15	Black/African/Caribbean/Black British: African
16	Black/African/Caribbean/Black British: Caribbean
17	Black/African/Caribbean/Black British: Other Black
18	Other ethnic group: Arab
19	Other ethnic group: Any other ethnic group
20	Prefer Not To Say

For the purpose of this guidance, we will use the 19 ethnicities along with a **Prefer Not to Say** option used in the **England and Wales 2021 census**. The full list is shown in the table here.

*AUTHORS COMMENT – Recently I came across a fascinating article written by the Office of National Statistics (ONS) [which explains the history of how arrived at the census ethnicities used in 2021](#). I've added a link to this article in the Further Reading section as well as it reinforces a point I make in the next section that we should not assume ethnicity is cast in stone.*

*BTW, the [final version does not yet have a link to the Northern Ireland ethnicities](#). This looks like an oversight.*

### 2.2.2 – What other options are there?

Depending on the circumstances of your employer and feedback from your employees, one or more of these options may be more appropriate for you. Please note, this list is not complete and you are free to consider other options -

- **Self-identification** – This involves giving employees a free text box and allowing them to describe their ethnicity as they wish. Given the wide range of possible answers you may receive, this option will be difficult to manage for a large employer unless they have the technical expertise to process and categorise a large volume of text data. For a smaller employer with less than 1,000 employees, it should not be difficult to list 1,000 answers in a spreadsheet and to create categories based on the similarities or differences among those answers.
- **Nationality** – If your employer is multi-national with many employees of different nationalities, you should not assume that someone from Turkey (say) will be familiar with the census ethnicities used in the UK. How ethnicity is defined in other countries varies considerably. In such circumstances, including nationality in your definition of ethnicity can make sense. It is

worth noting the [Equality Act 2010](#) says someone who is discriminated against based on their nationality can bring a claim of racial discrimination.

- **Religion** – Similarly, if your employer has many employees from a variety of religions, this could be a more relevant definition of ethnicity for your employees. Note discrimination on the grounds of religion is not regarded as racial discrimination in the [Equality Act 2010](#). Instead it is treated as religious discrimination.

*AUTHORS COMMENT – The final version makes no mention of these alternatives.*

### 2.2.3 – What options should not be used?

Options like these are explicitly discouraged.

- White or BAME (Black and Minority Ethnic) – sometimes known as a **Binary** option
- White, Asian, Black, Mixed, Other – sometimes these 5 categories are referred to by the name **Big 5**.

The reason why is that these are **Ethnic Categories** not **Ethnicities**. Ethnic categories are created in section 2.4 through the process of aggregating lower level ethnicities into higher level categories. It is entirely possible that after going through section 2.4 an employer will end up with binary ethnic categories. However, such ethnic categories should not be the starting point for collecting data from your employees. At this point in the process, the focus is on collecting data on employees ethnicity is as much detail as is appropriate.

More information about what not to do can be found in section 2.6 Further Reading.

### 2.2.4 - Other personal characteristics for intersectional analysis

Intersectional analysis looks at the effect of two or more personal characteristics at the same time. From a data collection perspective, intersectional analysis creates more categories of employees.

For example, the intersection of 2 gender and 5 ethnic categories might lead to the categories white, black, mixed, Asian & other men and white, black, mixed, Asian & other women. This results in a total of 10 categories instead of 5 but the rules on Minimum Category Size which will be derived in part 2.4 still apply to each of these 10 intersectional categories separately.

This means large employers are most likely to have enough employees to ensure each intersectional category complies with the Minimum Category Size. For smaller employers, whilst one might have enough employees to fill the various ethnic categories, splitting by gender will render them too small. This issue is explored further in part 3B.

## 2.3 - How to collect & record the ethnicities of your employees

Whatever process you normally use to collect data from your employees, you need to make sure your employees are aware of the following points before you ask them to disclose their ethnicity.

- A description of how you will use the data they provide you.
- A description of how you will keep their disclosed data safe and secure including how you will ensure no individual can be identified from any data or analysis you choose to publish.

This is required under GDPR since ethnicity is deemed to [Special Category Data](#) by the Information Commissioner's Office (ICO). **Section 2.3.1** provides more details.



Once employees have acknowledged these two points, you can ask your employees to disclose their ethnicity as described in **section 2.3.2**.

Finally **section 2.3.3** explains what to do if employees do not disclose their ethnicity

### **2.3.1 What you need to do to comply with GDPR**

Most employers already hold a record of their employees gender for a variety of reasons such as eligibility for maternity leave, etc. It is rare for employers to hold a record of their employees ethnicity as there is currently no statutory requirement to do this. This means most employers will have to ask employees to disclose their ethnicity and to record such data securely.

An employee's ethnicity is regarded as [Special Category Data under GDPR according to the Information Commissioner Office](#). If you follow the link to the ICO website, it lists the following points to be aware of which are explained in more depth on the ICO website –

1. Special category data is personal data that needs more protection because it is sensitive.
2. In order to lawfully process special category data, you must identify both a lawful basis under Article 6 of the UK GDPR and a separate condition for processing under Article 9. These do not have to be linked.
3. There are 10 conditions for processing special category data in Article 9 of the UK GDPR.
4. Five of these require you to meet additional conditions and safeguards set out in UK law, in Schedule 1 of the DPA 2018.
5. You must determine your condition for processing special category data before you begin this processing under the UK GDPR, and you should document it.
6. In many cases you also need an 'appropriate policy document' in place in order to meet a UK Schedule 1 condition for processing in the DPA 2018.
7. You need to complete a data protection impact assessment (DPIA) for any type of processing which is likely to be high risk. You must therefore be aware of the risks of processing the special category data.

*AUTHORS COMMENT – The list above is a copy and paste from the ICO website via the link given.*

Whilst the ICO website sounds intimidating, what it is telling you is that before you ask your employees to disclose their ethnicity, you should tell your employees the following –

- Their ethnicity data will only be used for ethnicity pay gap analysis and for no other purpose.
- How you will ensure their ethnicity data is kept secure including information about under what circumstances their data will be deleted.
- No individual will be named in any report you publish internally or externally.
- The list of ethnicities given to employees to choose from also includes the option **Prefer Not to Say** and employees are free to select that option if they wish.
- If employees fail to disclose their ethnicity, they will be allocated to a category **Data Not Given**.
- In order to prevent any individual from being identified inadvertently, any ethnic category included in any report will have a minimum number of employees known as the **Minimum Category Size**.
- In order to comply with your specified **Minimum Category Size**, different **Ethnicities** may need to be merged into a larger **Ethnic Category**.



*AUTHOR'S COMMENT – I have not had verification that what I wrote here was a valid interpretation of the ICO website. However, I note the final version does not include the above bullet points and is happy to just link to the ICO special category data page for more information.*

### **2.3.2 How to ask your employees for their ethnicity**

Once employees have been made aware of how you will handle their data, you can now ask them to disclose their ethnicity. To do this, you need to have chosen your list of ethnicities to be presented to your employees as described in **section 2.2**.

The simplest question to ask is this one -

1. *“Here is a list of ethnicities. Please select the one that is closest to your identity. If you prefer not to disclose your ethnicity, please select **Prefer Not To Say**.”*

If employees fail to answer this question they should be allocated to the category **Data Not Given**.

If you want to, you could ask a 2<sup>nd</sup> question –

2. *“How do you normally describe your ethnicity?”* – this is a free text question that allows employees to **self identify** as explained in section 2.2.2

The advantage of asking this second question is it allows you to cross check what employees say with the option they chose in question 1. The list of ethnicities will always have some gaps and ambiguities that make it difficult for some employees to see themselves in the list. By comparing with the self-ID question, you can estimate how many employees are having such difficulties.

### **2.3.3 What to do if employees do not disclose their ethnicity**

All employees are free to not disclose their ethnicity. It is up to the employer to engage employees (as described in Part 1) so they will disclose their ethnicity when asked and will give their consent to their data being used in your ethnicity pay gap analysis.

Under no circumstances whatsoever should you attempt to guess or impute the ethnicity of such employees who do not disclose their ethnicity.

Once employees have answered the questions as laid out in section 2.3.2, you will be able to count how many **Prefer Not to Say** and **Data Not Given** you have. If you have too many employees in these categories, then your analysis and conclusions could be misleading.

However, it is not possible to say at this point in the process if your data is misleading if you have a large number of employees in these categories. You will need to begin your analysis in part 3A and use the pay quarter breakdown table and chart to decide if non-disclosure is a significant issue.

Anecdotal evidence from employers today indicate non-disclosure rates can vary between 5% and 50% of employees. See the case study section for examples of how employers minimised their non-disclosure rate.

## **2.4 – How to aggregate Ethnicities into Ethnic Categories**

The first step is to specify your **Minimum Category Size**.

There are two reasons why you need to do this. Each reason results in a different value for the Minimum Category Size and the value settle on depends on whether your report is to be published internally or put in the public domain.

1. To ensure individual employees **cannot be identified**. Section 2.4.1 gives more details but this minimum applies to both internal and public reports.
2. To ensure **statistical robustness** for any data put in the public domain. Section 2.4.2 explains why this is important but this does not apply to internal reports.

Once you have specified your Minimum Category Size, you can count the number of employees within each ethnicity from the list you decided on in section 2.2 and check to see if any ethnicity has fewer employees than the Minimum Category Size. If so, you will need to merge some or all ethnicities into larger **Ethnic Categories** using the process laid out in section 2.4.3.

#### **2.4.1 Minimum Category Size to avoid identifying individuals**

This requirement arises out of existing GDPR rules which state it must not be possible to identify an individual from information put into any report. A common way of doing this is to never publish any statistic for a category with less than a certain number of employees.

There is no official policy on what this number should be as it depends on the kind of data being analysed and the extent of any statistics published. Current good practice from publishers of statistics (such as the ONS) suggests the minimum category size for the purposes of anonymity should be between 5 & 20 employees.

**For the purpose of illustration in this guidance, a minimum of 20 will be used.** This should not be taken as an official recommendation in any way at all. Please take expert advice if you are unsure what value is best for you.

An important exception to this requirement are the two non-disclosure categories of **Prefer Not to Say** and **Data Not Given**. Since the employees have not disclosed their ethnicity, it should be much harder to identify such individuals from any statistic published. Therefore these categories do not have to comply with the minimum category size you decide upon and if the number of employees in these categories is really small, they can be excluded from your analysis.

#### **2.4.2 Minimum Category Size for statistical robustness**

If you do not intend to publish statistics in the public domain then this section can be ignored.

If you intend to put data in the public domain where it will be critiqued by people without any knowledge of probability and statistics, you need to be confident that the following scenarios will not occur.

- An employer that appears to have pay gaps and disparities today which are simply the result of timing and random chance and give the impression of a problem when in reality the employer has no underlying problem.
- An employer that appears to have no pay gaps and disparities today but in reality there are issues which have been temporarily masked as a result of timing and random chance.

In other words, public critique should be reasonable and fair to the employers and employees i.e. employers who appear to have gaps really do have gaps and employers who appear to not have gaps really don't have them.

Building upon a recommendation from the Royal Statistical Society in 2019 (see section 2.6 Further Reading for links), professional statisticians are recommending that a **Minimum Category Size of between 50 and 100 employees** should be specified to ensure statistical robustness.

It is important to note the value of 50 is not a hard cut off. It does not mean a category with 49 employees is useless and a category with 50 employees is perfect. It is a sliding scale whereby the lower the minimum category size, the greater the risk of misleading results and incorrect public critiques.

A point to bear in mind is if you intend to publish data for specific groups of your employees e.g. separate analyses for your London and Cardiff sites, the minimum category size applies to each analysis published not just an analysis with all employees combined. Therefore to ensure you have sufficient numbers of employees per category for each group of employees, you may need to specify a larger minimum category size for all employees combined.

If you are unsure what value to specify, we recommend you take expert advice from a professional statistician. Section 2.6 Further Reading gives details of where to look for such advice.

### **2.4.3 How to aggregate ethnicities into larger ethnic categories**

There is no right way of merging ethnicities into larger ethnic categories. That is why it is important to discuss this issue with your employees in the engagement phase to find out how they perceive ethnicity. Blindly making assumptions as to which differing ethnicities should be combined into a larger category could lead to problems. Whatever process you decide on, you should include a description of your aggregation process in your pay gap report.

The Race Disparity Unit (**RDU**) has noted the following 4 methods of aggregations are often used. Whilst that does not make them the “right” methods, you may find these a useful starting point especially if your employees were given census ethnicities from which to declare their ethnicity. All 4 aggregation methods are demonstrated in [Worked Example 2.4.3](#).

**Aggregation 1A** - When using the England and Wales census with 19 ethnicities plus the two extra categories of **Prefer Not to Say** and **Data Not Given**, these can be merged into 7 larger ethnic categories as follows –

1. **White British** = White-British only
2. **White Other** = White-Irish + White-Traveller + White-Roma + White-Other
3. **Mixed** = Mixed-White/Black African + Mixed-White/Black Caribbean + Mixed-White/Asian + Mixed-Other
4. **Asian** = Asian-Indian + Asian-Pakistani + Asian-Bangladeshi + Asian-Chinese + Asian-Other
5. **Black** = Black-African + Black-Caribbean + Black-Other
6. **Other** = Other-Arab + Other-Other
7. **N/A** = Prefer Not To Say + Data Not Given

**Aggregation 1B** – This is the same as method 1A except White-British and White-Other as above are combined into a single White category so that you end up with 6 ethnic categories instead of 7.

**Aggregation 2A** – If having used aggregation 1A (not 1B) and you still find one or more of the ethnic categories (excluding the N/A category) has fewer employees than your Minimum Category Size, then the 7 ethnic categories can be merged further into 3 super categories as follows -

- A. **White British** = White British
- B. **Not White British** = White Other + Asian + Black + Mixed + Other
- C. **N/A** = Prefer Not To Say + Data Not Given

**Aggregation 2B** – If having used either aggregations 1A or 1B and you still find that one or more of the ethnic categories (excluding the N/A category) has fewer employees than your Minimum

Category Size, then the 6 or 7 ethnic categories can be merged further into 3 super categories as follows -

- A. **White** = White British + White Other
- B. **Ethnic Minority** = Asian + Black + Mixed + Other
- C. **N/A** = Prefer Not To Say + Data Not Given

***AUTHOR'S NOTE – In the final version, the recommendation for all aggregations is to keep the two N/A categories of PREFER NOT TO SAY and DATA NOT GIVEN separate. I have no problem with that approach as an alternative.***

It should be noted that aggregations 2A & 2B are regarded as inferior methods by CRED and the RDU. This is because they lack insight since they merge all ethnic minorities with very different experiences and backgrounds into a single category. As much as possible they should be avoided but for many employers these will be the only option.

The 4 aggregations described here are not the only possible methods. You are free to choose a different aggregation method based on your employee feedback and the particular circumstances of your employer.

Under no circumstances should the two categories of non-disclosure (**Prefer Not to Say** and **Data Not Given**) ever be merged with an explicit ethnicity. You do not have your employees consent to do this and they must remain separate at all times. As noted in section 2.4.1, these two categories do not have to be subject to the minimum category size for anonymisation purposes. After all, since the employee has not disclosed their ethnicity, it should be considerably harder to identify who they are even if the category size is very small.

### 2.4.3 Worked Example

Two fictional employers are used here, PQR plc with 1250 employees and ABC Ltd with 500 employees. Employees selected their ethnicity from the 19 ethnicities used in the 2021 census in England and Wales and each ethnicity has been given a shorthand code as shown in the table.

Ethnicities Used by ONS for 2021 Census in England & Wales		ONS19	PQR plc	ABC Ltd
1	White: English/Welsh/Scottish/Northern Irish/British	W-B	800	397
2	White: Irish	W-I	10	2
3	White: Gypsy or Irish Traveller	W-T	2	0
4	White: Roma	W-R	1	0
5	White: Other White	W-O	71	19
6	Mixed/multiple ethnic group: White and Black Caribbean	M-WBC	13	3
7	Mixed/multiple ethnic group: White and Black African	M-WBA	13	1
8	Mixed/multiple ethnic group: White and Asian	M-WA	20	5
9	Mixed/multiple ethnic group: Other Mixed	M-O	7	0
10	Asian/Asian British: Indian	A-I	33	8
11	Asian/Asian British: Pakistani	A-P	27	6
12	Asian/Asian British: Bangladeshi	A-B	21	3
13	Asian/Asian British: Chinese	A-C	15	0
14	Asian/Asian British: Other Asian	A-O	7	1
15	Black/African/Caribbean/Black British: African	B-A	19	1
16	Black/African/Caribbean/Black British: Caribbean	B-C	17	3
17	Black/African/Caribbean/Black British: Other Black	B-O	14	0
18	Other ethnic group: Arab	O-A	20	0
19	Other ethnic group: Any other ethnic group	O-O	33	0
20	Prefer Not To Say	PNTS	97	47
21	Data Not Given	DNG	10	4
<b>TOTAL Number of Employees</b>			<b>1250</b>	<b>500</b>

Both employers would like to put their pay gap report in the public domain. Both have specified a minimum category size of 20 employees for anonymisation and internal reporting and 50 employees for statistical robustness and public reporting.

For PQR plc, some ethnicities do meet one or both minima but others do not. For ABC Ltd, only W-B & PNTS meet at least one minima. Both employers now proceed to aggregate these ethnicities into 7 ethnic categories using Aggregation Method 1A to get this table.

Using Aggregation 1A	PQR plc	ABC Ltd
White British	800	397
White Other	84	21
Mixed	53	9
Asian	103	18
Black	50	4
Other	53	0
N/A	107	51
TOTAL	1250	500

This shows PQR plc can satisfy their public reporting minimum category size of at least 50 employees in all 7 ethnic categories. They can now proceed to analyse their pay data by these 7 ethnic categories and publish their results in the public domain. However, they are unlikely to be able to publish results for specific parts of their organisation unless they either aggregate further for those parts or only publish those results internally.

ABC Ltd do not meet either specification of minimum category size (20 for internal reporting, 50 for public reporting) for all 7 ethnic categories so they need to aggregate again into super categories. They are unsure whether to use Aggregation Method 2A or 2B and at first try both to get this table.

ABC Ltd	Aggregation 2A	ABC Ltd	Aggregation 2B
White British	397	White	418
Not White British	52	Ethnic Minorities	31
N/A	51	N/A	51

By using Aggregation 2A, there are at least 50 employees in all categories and so they could publish a pay gap analysis in the public domain using these aggregations. Aggregation 2B though only has 31 employees for Ethnic Minorities so they could not put data in the public domain but could publish an internal report. ABC Ltd would now have to decide which of these very high level aggregations is more insightful but in general, such high level aggregations are not considered to be insightful.

## 2.5 – Case Studies from employers

*AUTHORS COMMENT – Good case studies are hard to find.*

## 2.6 – Further Reading

For information, the term BAME is now discouraged as explained in [this Race Disparity Unit link “Writing about ethnicity”](#).

The Race Disparity Unit provides comprehensive guidance on [how to collect and analyse ethnicity data here](#). The entire guidance is relevant to any employer who wants to do ethnicity pay gap analysis. Section 2.1 provides specific guidance on data collection.

*AUTHORS COMMENT – The link given above to the RDU site currently takes you to draft version. The final version was published in April 2023 and can be found here.*

In 2019, the Royal Statistical Society recommended that [statistics derived from a category with less than 100 employees should be flagged as potentially unreliable](#).

## PART 3 – TURN YOUR DATA INTO INSIGHTS

Ethnicity pay gap analysis compares multiple categories of employees where for most employers, one category will account for the majority of employees whilst many categories account for a minority of employees. This differs from gender pay gap analysis which compares two categories of equal size, on average.

There are many methods available that can be used to analyse your pay and benefits data by ethnic categories. In this guidance, these have been split into two groups **Part 3A (Basic)** and **Part 3B (Advanced)**.

**Part 3A** describes the following basic methods. You should find these simple to do whilst being insightful. For many employers they should be sufficient to turn your data into insights for your narrative and action plans.

1. **Calculate your Pay Quarter Breakdown (PQB) by Ethnic Category** – You analyse hourly pay by pay quarter using the same method as used in GPG Reporting but breaking down each pay quarter by your ethnic categories instead of gender.
2. **Compare your Overall Breakdown by Ethnic Category with your Recruitment Population** – how does the breakdown of all employees by ethnic category compare with the population from which your employees are recruited?
3. **Which representation gap is more important?** – Is it the differences in representation of each ethnic category by pay quarter or is it the difference in representation of each ethnic category between your overall population of employees and your recruitment population?
4. **Do you see the same picture in different parts of your employer?** – Does the narrative you see when you look at all employees together change when you start looking at different parts of your employer? Is **Simpson's Paradox** responsible for these differences?

**Part 3B** is entirely optional and can be skipped over if you are new to ethnicity pay gap analysis. As you start to analyse your data in more depth, you may wish to consider these methods. They can give you more insight but they require more advanced skills in statistical analysis and modelling. What is described in this guidance is intended to be an overview and in most cases, further reading will be required to make use of them.

1. **Box Plots** – are a good way of presenting a variety of summary statistics of hourly pay such as the mean and median in a single plot whilst giving you information about the underlying distribution.
2. **How long will it take you to close your gaps?** – By looking at the difference between the upper pay half and lower pay half within each ethnic category, and making a number of assumptions, a formula can be used to estimate on average how long it will take you to close your gaps and thus how much work will be required.
3. **Logistic Regression** – Many employers will only have a few employees in some of their ethnicities and ethnic categories. This is especially the case when trying to do intersectional analysis. Ultimately, the best way to determine if disparities between the different ethnicities and intersectional categories are significant is to use logistic regression.

## PART 3A – TURN YOUR DATA INTO INSIGHTS (Basic calculations)

### 3A.1 – Calculate and interpret your Pay Quarter Breakdown (PQB) by Ethnic Category

We recommend you put your **Pay Quarter Breakdown (PQB) by Ethnic Category** data at the heart of your ethnicity pay gap report. It is possible you will find that no other statistic is necessary since the PQB chart or table may be all you need for your narrative.

To produce your PQB by ethnic category data, you will need to –

1. Define your pay quarters and assign each employee to a pay quarter.
2. For each pay quarter, count the number of employees within each ethnic category.
3. Plot these counts as a PQB in table and/or chart format.
4. Write down the narrative your PQB chart is telling you.

These steps [are the same as those used for GPG Reporting except you replace the gender categories with your ethnic categories](#). The calculation of hourly pay of your employees is the [same calculation used in GPG Reporting](#) though as explained in section 2.1, you are free to diverge on the definition of what constitutes pay. If you have decided to reuse your data file of full pay relevant employees from GPG Reporting, then your employees will have already been allocated to a pay quarter and there is no need to repeat this step.

You have a choice of presenting your PQB using either –

1. **Number of employees** in each combination of ethnic category and pay quarter
2. **Percentage of employees** from each pay quarter that fall in each ethnic category

From the point of view of analysing your data, the number of employees presentation is easier to work with and should be more insightful. However, when it comes to publishing something in your report, GPG reporting currently requires you to use the percentage of employees presentation and you can repeat this for ethnicity if you wish or use the number of employees presentation instead.

For the rest of Part 3, we will usually use the number of employees layout unless it makes more sense to use percentage of employees.

Your PQB should be presented in either tabular format (see [worked example 3A.1](#)) or chart format as explained in [section 3A.1.1](#) (see [worked example 3A.1.1](#)). By observing what you see in these charts, you can start to write your narrative and identify priorities for your action plans as explained in [section 3A.1.3](#).

#### [3A.1 Worked Example](#)

We revisit the two fictional employers PQR plc and ABC Ltd used in worked example 2.4. PQR plc has 7 ethnic categories derived using Aggregation 1A from section 2.4 and ABC Ltd has 3 ethnic categories derived using Aggregation 2A from section 2.4. PQR plc has 1250 employees in total which means each pay quarter has either 312 or 313 employees. ABC Ltd has 500 employees which means each pay quarter has 125 employees.

The pay quarter breakdown by the 7 ethnic categories for PQR plc is shown below on the left. The top table shows the number of employees in each pay quarter and ethnic category. The bottom table shows the percentage of the employees in each pay quarter that are in each ethnic category. For example there are 40 Asian employees in the upper middle pay quarter which equates to 13% of the 312 employees making up the upper middle pay quarter.

Pay Quarter Breakdown by Ethnic Category - PQR Plc									Pay Quarter Breakdown by Ethnic Category - ABC Ltd						
Number of Employees		White-B	White-O	Mixed	Asian	Black	Other	N/A	TOTAL	Number of Employees		White-B	Not White-B	N/A	TOTAL
Pay Quarter	Upper	219	26	7	16	5	5	35	313	Pay Quarter	Upper	105	14	6	125
	Upper Middle	206	16	15	40	10	8	17	312		Upper Middle	103	12	10	125
	Lower Middle	207	18	15	27	10	10	25	312		Lower Middle	96	14	15	125
	Lower	168	24	16	20	25	30	30	313		Lower	93	12	20	125
ALL EMPLOYEES		800	84	53	103	50	53	107	1250	ALL EMPLOYEES		397	52	51	500

%Employees per Pay Qtr		White-B	White-O	Mixed	Asian	Black	Other	N/A	TOTAL	%Employees per Pay Qtr		White-B	Not White-B	N/A	TOTAL
Pay Quarter	Upper	64%	7%	4%	8%	4%	4%	9%	100%	Pay Quarter	Upper	84%	11%	5%	100%
	Upper Middle	66%	5%	5%	13%	3%	3%	5%	100%		Upper Middle	82%	10%	8%	100%
	Lower Middle	66%	6%	5%	9%	3%	3%	8%	100%		Lower Middle	77%	11%	12%	100%
	Lower	54%	8%	5%	6%	8%	10%	10%	100%		Lower	74%	10%	16%	100%
ALL EMPLOYEES		64%	7%	4%	8%	4%	4%	9%	100%	ALL EMPLOYEES		79%	10%	10%	100%

The bottom row of each table marked All Employees shows the **Overall Breakdown** of your employees by ethnic category. This calculation will be discussed further in [section 3A.2](#).

The equivalent tables for the 3 ethnic categories used by ABC Ltd is shown on the right.

### 3A.1.1 Plot a Pay Quarter Breakdown by Ethnic Category chart

What is of interest is how your breakdown by ethnic category compares across your 4 pay quarters. This can be done by reading the number of employees by ethnic category for each pay quarter as displayed in your table. Alternatively you may prefer to display this as a chart.

The recommended chart format is a **stacked bar chart** (as it is known in Microsoft Excel) since this permits a side by side comparison of the 4 pay quarters. You will normally have the option to choose between a horizontal scale that shows the number of employees or a scale that shows the percentage of employees within each pay quarter. The following features are considered good practice when plotting pay quarter breakdowns as stacked bar charts -

- Plotting the bars horizontally with the upper pay quarter as the top bar and the lower pay quarter as the bottom bar gives strong visual clues since top bar/upper quarter implies higher paid employees and bottom bar/lower quarter implies lower paid employees.
- The colours chosen for each ethnic category should use a colour spectrum that would be distinguishable if the chart was printed in black and white. This is good practice when choosing colours to enable those with impaired colour vision to tell the categories apart.
- The N/A category is plotted as a check pattern or some other distinct pattern to indicate it is not a specific ethnic category.
- Since your PQB chart is recommended as your centrepiece of your narrative, it is worth spending time to make it look good and easy to interpret.

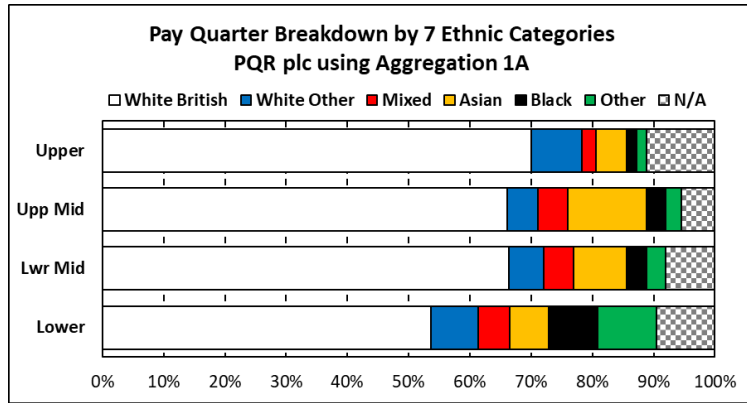
**Do not use Pie Charts!** These are common in gender pay gap reports published so far but they are a bad choice when you are seeking to compare pay quarters. Having 4 pie charts (one for each pay quarter) makes it difficult for the eye to see how your ethnicity representation changes across your pay quarters.

### 3A.1.1 Worked Example

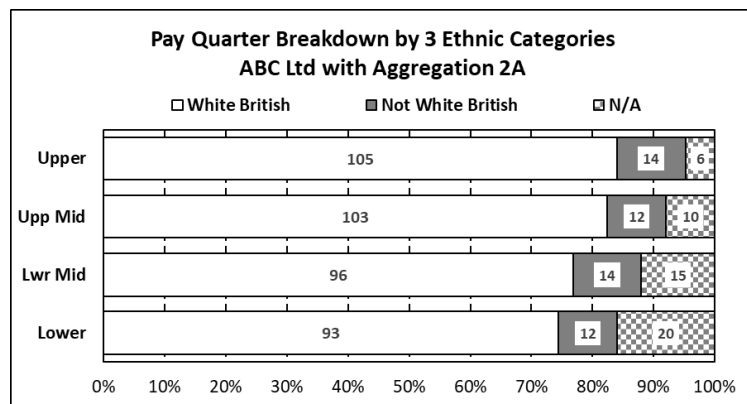
We continue to use the fictional employers PQR plc and ABC Ltd we used in worked example 3A.1.

The stacked bar chart of the tables presented there for PQR plc looks like this. This uses a percentage scale for the horizontal axis but you can use a number scale if you prefer.





For ABC Ltd, the stacked bar chart looks like this. To illustrate some options, this version includes data labels on the bars showing number of employees in each combination of pay quarter and ethnic category. It is for the reader to decide if this format is helpful or not.



### 3A.1.2 – Use Pay Halves instead if you have too few employees

One of the reasons why you had to specify a Minimum Category Size in section 2.4 was to ensure no individual employee could be identified. Current best practice suggests this minimum should be set to between 5 and 20.

It could be the case that although an ethnic category has enough employees to comply with your specified Minimum Category Size, when you split this category by pay quarter, you end up with some combinations of pay quarter and ethnic category with only 1 or 2 employees. If this were to happen, it might be possible to identify those people e.g. the 2 Asian employees in the upper pay quarter will presumably be senior people known to many employees.

There are two options to mitigate this outcome. The first is to perform a further aggregation of your ethnic categories as described in section 2.4 but this may not be possible or desirable. The second is to combine your pay quarters into pay halves instead as follows.

- **Upper Pay Half** = Upper Pay Quarter + Upper Middle Pay Quarter
- **Lower Pay Half** = Lower Middle Pay Quarter + Lower Pay Quarter

You can then present and interpret a **Pay Half Breakdown (PHB)** by Ethnic Category in either chart or table form as shown in [worked example 3A.1.2](#).

#### [3A.1.2 Worked Example](#)

Suppose ABC Ltd wishes to separate their employees into Front Office and Back Office employees.

**PQB by Ethnic Category - ABC Ltd Front Office**

Number of Employees		White-B	Not White-B	N/A	TOTAL
Pay Quarter	Upper	57	1	2	60
	Upper Middle	50	9	1	60
	Lower Middle	45	9	6	60
	Lower	40	12	8	60
ALL FRONT OFFICE		192	31	17	240

When they produce their PQB table for their 240 front office employees they find they have only 1 Non White British employee in the upper pay quarter making that employee potentially identifiable.

**PHB by Ethnic Category - ABC Ltd Front Office**

Number of Employees		White-B	Not White-B	N/A	TOTAL
Pay Half	Upper	107	10	3	120
	Lower	85	21	14	120
ALL FRONT OFFICE		192	31	17	240

By using pay halves instead of pay quarters, this individual is now combined with the upper middle pay quarter and the PHB table should be much harder to identify individuals.

The N/A category in the upper pay half still only has 3 employees but since we do not know what the ethnicities of these employees are, it should not be possible to identify these employees.

### 3A.1.3 – What is the narrative from your pay quarter breakdowns?

The purpose of PQBs (or PHBs) is to identify the questions that need answering. By exploring and answering those questions you will be able to identify the key themes for your narrative and key priorities for your action plan in Part 4.

In Part 1.3, it was noted that if the number of employees of an ethnic category in the upper pay half is the same as the number of employees of that ethnic category in the lower pay half, then there is no representation gap. If you take this concept further, if the number of employees in an ethnic category is identical in all 4 pay quarters, then there is no representation gap for that ethnic category.

If this is replicated for all ethnic categories, then by implication there are no pay gaps. This represents the ideal outcome since by definition it must mean your employee's ethnic category plays no part in determining where they end up on your employer's pay scale since that ethnic category is equally likely to be found in any pay quarter.

In real life, employees are coming and going all the time. This means even an employer that has no representation gaps anywhere on average will experience random fluctuations in the number of employees in each combination of pay quarter and ethnic category. Another way of expressing this is to ask if some employees left and are replaced, would they be replaced with a new employee with the same ethnicity as the former employee? The magnitude of any differences between pay quarters for an ethnic category is dependent on the number of employees in each ethnic category and the smaller the number, the larger the fluctuations.

This is of course the key reason why a minimum category size had to be specified in section 2.4. This was to give employers and employees more confidence in concluding that a difference in representation by pay quarter constitutes a meaningful gap. Categories with less than 50 employees will experience proportionally larger differences than larger categories. If you want to be more rigorous in deciding when these differences are significant, please see section 3B.3 on logistic regression.

PQBs (& PHBs) also answer the question of whether your data is inconclusive due to too many employees not disclosing their ethnicity. Your data can be described as inconclusive if either or both of the following circumstances apply –

- The N/A category is the largest of your ethnic categories overall.
- The N/A category is the largest of your ethnic categories in one or more pay quarter.

- The N/A percentage in each pay quarter varies considerably.

The last circumstance is why it is not possible to put down a criteria such as “At least 80% of employees must disclose their ethnicity to produce a meaningful report”.

Suppose an employer had 20% N/A in all 4 pay quarters, that does not prevent the data from being analysed and conclusions drawn as it would be reasonable to assume that non-disclosure occurs at random across all ethnic categories. Suppose now an employer had 20% N/A in the lower pay quarter and 0% N/A in the upper pay quarter with 10% N/A overall. That would mean that non-disclosure is correlated with pay levels with low paid employees less likely to declare their ethnicity. This distorts the data by pay quarter making it much more difficult to interpret and in this instance, it suggests a trust issue among lower paid employees. That trust issue would then be a priority for the action plan.

All of these points are demonstrated in the [worked example 3A.1.3](#).

### [3A.1.3 Worked Example](#)

The PQB chart from worked example 3A.1.1 for PQR plc shows –

- White British employees are more likely to be found in the 3 upper pay quarter roles and less likely to be found in lower pay quarter roles. The table shows around 210 White-B employees in each of the top 3 pay quarters but only around 170 in the lower pay quarter.

Pay Quarter Breakdown by Ethnic Category - PQR Plc									
Number of Employees		White-B	White-O	Mixed	Asian	Black	Other	N/A	TOTAL
Pay Quarter	Upper	219	26	7	16	5	5	35	313
	Upper Middle	206	16	15	40	10	8	17	312
	Lower Middle	207	18	15	27	10	10	25	312
	Lower	168	24	16	20	25	30	30	313
ALL EMPLOYEES		800	84	53	103	50	53	107	1250

- White Other, Asian & N/A employees are just as likely to be found in upper & upper middle pay quarter roles as they are in lower & lower middle pay quarter roles. This is because the numbers shown are broadly similar within each ethnic category. The laws of chance mean the numbers need not be identical but the variations observed here are not significant.
- In the case of Asian employees, it might look like the difference between the upper and upper middle pay quarters is significant. This might be true but it is worth noting that together they make up 56 employees in the upper pay half which is virtually the same as the 57 employees in the lower pay half.
- Mixed employees in the upper pay quarter are only half the number seen in the other 3 pay quarters.
- Black and Other employees are roughly 3 times more prevalent in lower pay quarter roles than they are in the other 3 pay quarters. This is evident from the fact that there are 25 to 30 employees in the lower pay quarter in these categories but only around 10 employees in the other 3 pay quarters.

Overall, the narrative here is a gap in the representation of White British, Black and Other ethnic categories in the lower pay quarter and the other 3 pay quarters. Either there are too few Black and Other employees in the top 3 pay quarters or there are too few White British employees in the lower pay quarter. There may be many reasons for what is seen here and your narrative should try to explain why this is the case.

For ABC Ltd, the PQB chart from worked example 3A.1.1 shows –

- White British employees are slightly more likely to be found in the upper pay half (around 105) than the lower pay half (around 95).
- Not White British employees are equally likely to be found in all 4 pay quarters, averaging 13 employees.
- N/A employees are 3 times more likely to be found in lower pay quarter roles than upper pay quarter roles.

Number of Employees		White-B	Not White-B	N/A	TOTAL
Pay Quarter	Upper	105	14	6	125
	Upper Middle	103	12	10	125
	Lower Middle	96	14	15	125
	Lower	93	12	20	125
ALL EMPLOYEES		397	52	51	500

On the face of it, it looks like ABC Ltd has no obvious gap in terms of representation of Not White British employees across their pay scale. However, the higher representation of N/A employees in lower paid roles shows lower paid employees are less likely to declare their ethnicity. This may point to a possible trust issue that the employer should investigate and explain in their narrative how they intend to tackle it.

Remember you must not speculate in your report as to the possible ethnicities of the N/A category since you have already clearly stated to your employees in Part 2 that employees are free not to disclose their ethnicity. Obviously if the N/As turn out to be disproportionately Not White British then ABC Ltd would have a representation gap across its pay quarters. Conversely if they are disproportionately White British then there would not be a gap. But until these employees choose to declare their ethnicity, you will not know which is the true state of affairs.

### 3A.1.4 – What about the mean and median pay gap and bonus gap?

GPG Reporting require employers to report the mean and median gender pay gap and bonus gap. Unfortunately these statistics come with the following issues when they are applied to ethnic categories –

- They are designed for data sets with only 2 categories. When analysing ethnicity you are likely to end up with 3 or more ethnic categories which means you will end up with potentially  $N(N-1)/2$  pay gaps to calculate where N is number of ethnic categories. Interpretation of this many pay gap figures quickly becomes messy and insight is practically impossible.
- As explained in section 3A.1.3, the N/A category is likely to be a much larger category than is seen for gender. The N/As must be kept as a separate category and it can only be analysed properly using a PQB. The mean and median pay gap statistics do not offer any insight in respect of N/As.
- GPG reporting data show male dominated employers are more likely than gender balanced employers to have no pay gaps or to have pay gaps favouring women. In other words, the fewer women there are, the more likely it is an employer has no gender pay gap (see section 3.6 Further Reading for a link). As discussed in section 3A.3, deciding which is the more important gap is a key question of ethnicity pay gap analysis and the standard pay gap statistics cannot answer this question.

For these reasons, we recommend against publishing pay gaps. If you do want to present the mean and median hourly pay and/or bonus pay by ethnic category in your report, we recommend these are presented in box plot format instead. Box plots are explained in Part 3B.1.

*AUTHOR'S COMMENT – the reader should aware by now that the final version ignores this section and gone ahead and recommended these pay gap statistics are calculated and published. I am disappointed by this and the issue is exacerbated in the final version by reams of text on these statistics with comparatively a lot less on pay quarter breakdowns.*

### 3A.2 – Calculate and interpret your Overall Breakdown by Ethnic Category

Your Overall Breakdown by Ethnic Category is simply the number of employees (or percentage of employees if you prefer) falling in each ethnic category. This is not required in GPG reporting but you will already have the necessary data to do this calculation. All you have to do is total the numbers in the 4 pay quarter for each ethnic category. If you prefer to use percentages then it will be the average of the percentages across the 4 pay quarters in each ethnic category.

This calculation is demonstrated in the All Employees rows at the bottom of the tables in [worked example 3A.1](#).

#### 3A.2.1 – Find a data source for your Recruitment Population Breakdown by Ethnic Category

The goal is to see if your overall breakdown by ethnic category reflects the population from which you recruit which we call the **Recruitment Population**. In order to do this, you need to source data that tells what the **Recruitment Population Breakdown by Ethnic Category** is.

The most common data source for this will be the decadal census. Information on where you can get census data is given in section 2.2.1. As well as providing a breakdown by ethnicity at national level, you can also use the census to get a similar breakdown by these geographies.

- Region
- County
- Local Authority
- Parliamentary Constituency
- And many others

A reasonable starting point to decide which geography is appropriate is to look at where your current and former employees typically live. Two tools to enable you match their home post codes to a geography are this [postcode lookup facility](#) or [this map provided by the ONS](#). For example -

- Your employer might be a small business based in the middle of Devon. Your records show that nearly all of your employees now and in the past have typically lived in Devon in which case the census breakdown for the county of Devon would be an appropriate choice.
- Your employer might be a financial institution in the City of London. Whilst many of your employees live in London, many also choose to commute into London from the South East and East regions. In this instance a suitable weighted average of the census breakdowns of these 3 regions could be appropriate.

However, you are not required to use the census as a data source. Other sources provide information on the breakdown by ethnic category for a relevant population. Examples of other populations that could be relevant to you are –

- An industry sector.
- The population of graduates or people with a relevant qualification.
- A population based on age if your employees tend to be disproportionately young or old.

The Race Disparity Unit [provide data from a wide range of sources](#). It is worth checking out their website to see if they provide data for a population you consider more relevant.

When considering a data source, you should consider the following points before deciding whether to use it.

- Check the definitions of ethnicities the source uses to see if they are consistent with your definitions.
- Check whether the external source is an estimate (perhaps based on a survey) rather than known data. A survey will be subject to sampling error and therefore their estimates will only be accurate to a specified margin of error.

Whatever source you do decide to use for your Recruitment Population, you should provide details in your pay gap report.

### 3A.2.2 – Calculate your (adjusted) Recruitment Population Breakdown by Ethnic Category

Using the source you identified in the previous section, it should be straightforward to calculate the percentage of your Recruitment Population that fall into each of your ethnic categories. You can then multiply these percentages by the total number of employees to get the expected number of employees you would expect to recruit in each ethnic category from your Recruitment Population.

Before you proceed further, you need to check whether your Recruitment Population Breakdown needs to be adjusted to take into account N/As. For example, suppose your Overall Breakdown is 70% White, 20% Asian and 10% N/A and your Recruitment Population is 70% White and 30% Asian. At the moment, these cannot be compared because your Recruitment Population does not have N/As. If your overall breakdown does not have any N/As then there is no need to adjust but this is expected to be very unlikely.

To adjust your recruitment population to take into account N/As, you need to multiply the percentage for each ethnic category in your recruitment population by 100% - %N/A. So if the N/As are 10% of all employees and the recruitment population shows 70% white, you would multiply this 70% by 90% (=100%-10%) to get 63% white. You can then multiply these adjusted percentages by the total number of employees to get the adjusted expected number of employees you would expect to recruit in each ethnic category from your Recruitment Population

A demonstration is given in [Worked Example 3A.2.2](#)

#### 3A.2.2 Worked Example

We reuse employers PQR plc and ABC Ltd.

Overall Breakdown by Ethnic Category - PQR Plc									Overall Breakdown by Ethnic Category - ABC Ltd				
ALL EMPLOYEES	White-B	White-O	Mixed	Asian	Black	Other	N/A	TOTAL	ALL EMPLOYEES	White-B	Not White-B	N/A	TOTAL
Overall Breakdown (%)	64%	7%	4%	8%	4%	4%	9%	100%	Overall Breakdown (%)	79%	10%	10%	100%
Overall Breakdown (#)	800	84	53	103	50	53	107	1250	Overall Breakdown (#)	397	52	51	500
Rec Pop Breakdown (Adj #)	863	88	63	75	38	13	107	1250	Rec Pop Breakdown (Adj #)	299	150	51	500
Rec Pop Breakdown (Adj %)	69%	7%	5%	6%	3%	1%	9%	100%	Rec Pop Breakdown (Adj %)	60%	30%	10%	100%
Recruitment Population (%)	75%	8%	5%	7%	3%	1%	0%	100%	Recruitment Population (%)	67%	33%	0%	100%

PQR Plc chosen source gives a recruitment population breakdown by ethnic category as shown by the bottom line in the above left hand table. However, 9% of all employers did not disclose their ethnicity so these figures have to be multiplied by 91% = (100% - 9%) to arrive at the 2<sup>nd</sup> bottom pink line. These percentages are then multiplied by the total number of employees 1250 to arrive at the green line of expected number of employees per ethnic category.

ABC Ltd chosen source gives a recruitment population breakdown by ethnic category as shown by the bottom line in the above right hand table. However, 10% of all employees did not disclose their ethnicity so these figures have to be multiplied by 90% = (100% - 10%) to arrive at the 2<sup>nd</sup> bottom pink line. These percentages are then multiplied by the total number of employees 500 to arrive at the green line of expected number of employees per ethnic category.

### 3A.2.3 – Do you have an Overall Representation Gap?

You can now compare your Overall Breakdown by ethnic category with your adjusted Recruitment Population Breakdown by ethnic category. The simplest way is to produce a table with both sets of numbers. The [worked example 3A.2.2](#) is an example.

No employer will ever be a perfect match to their recruitment population. The laws of chance mean deviations from expected values can and will occur. Minor discrepancies should be put down to random chance but major differences should be investigated to see if this uncovers issues that you could take action on. Part 3B.3 describes a statistical method for determining if a difference is significant.

#### 3A.2.3 Worked Example

We reuse the table shown in worked example 3A.2.2 showing just the green rows.

Overall Breakdown by Ethnic Category - PQR Plc								Overall Breakdown by Ethnic Category - ABC Ltd					
ALL EMPLOYEES	White-B	White-O	Mixed	Asian	Black	Other	N/A	TOTAL	ALL EMPLOYEES	White-B	Not White-B	N/A	TOTAL
Overall Breakdown (#)	800	84	53	103	50	53	107	1250	Overall Breakdown (#)	397	52	51	500
Rec Pop Breakdown (Adj #)	863	88	63	75	38	13	107	1250	Rec Pop Breakdown (Adj #)	299	150	51	500

For PQR plc, the overall breakdown by the 7 ethnic categories is very similar to the adjusted breakdown for the recruitment population. This shows they do not have an overall representation gap.

For ABC Ltd, the number of Not White-B is only 1/3 of what would be expected from the Recruitment population. This is clearly a large disparity suggesting ABC Ltd are not representative of their recruitment population and therefore they have a significant overall representation gap.

### 3A.3 – Which representation gap is more important?

Based on the Pay Quarter Breakdowns (section 3A.1) and Overall Breakdown (section 3A.2) by ethnic categories, decide if either or both of these scenarios apply to you.

1. There is a significant difference in the breakdown by ethnic category between the 4 pay quarters i.e. a **pay quarter representation gap**.
2. There is a significant difference between your overall breakdown by ethnic category and your recruitment population breakdown by ethnic category i.e. an **overall representation gap**.

**Section 3A.3.1** explores next steps if you decide you have a pay quarter representation gap.

**Section 3A.3.2** explores what to do next if you decide you have an overall representation gap.

If both scenarios apply to you, then you should consider which representation gap should take priority over the other when working out your action plan in Part 4.

An example of how to decide which representation gap is more important is given in [Worked Example 3A.3](#).

#### 3A.3 Worked Example

We return to PQR plc and ABC Ltd.



The pay quarter breakdowns, overall breakdown and recruitment population breakdown (adjusted for the N/A category) are shown in the table below.

Pay Quarter Breakdown by Ethnic Category - PQR Plc									Pay Quarter Breakdown by Ethnic Category - ABC Ltd						
Number of Employees		White-B	White-O	Mixed	Asian	Black	Other	N/A	TOTAL	Number of Employees		White-B	Not White-B	N/A	TOTAL
Pay Quarter	Upper	219	26	7	16	5	5	35	313	Pay Quarter	Upper	105	14	6	125
	Upper Middle	206	16	15	40	10	8	17	312		Upper Middle	103	12	10	125
	Lower Middle	207	18	15	27	10	10	25	312		Lower Middle	96	14	15	125
	Lower	168	24	16	20	25	30	30	313		Lower	93	12	20	125
ALL EMPLOYEES		White-B	White-O	Mixed	Asian	Black	Other	N/A	TOTAL	ALL EMPLOYEES		White-B	Not White-B	N/A	TOTAL
Overall Breakdown (#)		800	84	53	103	50	53	107	1250	Overall Breakdown (#)		397	52	51	500
Rec Pop Breakdown (Adj #)		863	88	63	75	38	13	107	1250	Rec Pop Breakdown (Adj #)		299	150	51	500

For PQR plc,

- In worked example 3A.1.3 we concluded the breakdown by the ethnic categories did show notable differences between the 4 pay quarters so they do have a pay quarter representation gap.
- In worked 3A.2.3, we concluded there was little difference between the overall breakdown & adjusted recruitment population breakdown by ethnic categories and we concluded there was no overall representation gap.
- Clearly the priority for PQR plc is address their pay quarter representation gap.

For ABC Ltd,

- We identified in worked example 3A.1.3 that they don't have significant pay quarter representation gap though there is a significant difference between pay quarters with the N/A category.
- However, this issue is clearly not in the same league as the overall representation gap that was identified in worked example 3A.2.3.

### 3A.3.1 – What to do if you have a significant pay quarter representation gap?

The obvious follow up question is –

- “Why is it we appear to have no issues in recruiting a diverse set of employees that reflects the population we normally recruit from but some ethnic categories are more likely to found in higher paying roles and other ethnic categories are more likely to be found in lower paying roles?”

Some of the reasons might be the following which could be worth exploring with further analysis. It could be that a mix of these reasons explains what you see in your data –

- Lower paid roles see some ethnic categories overrepresented in job applications and other ethnic categories underrepresented.
- Higher paid roles see some ethnic categories overrepresented in job applications and other ethnic categories underrepresented.
- You see similar breakdowns by ethnic categories for each role when looking at job applications but when you look at appointments, you find some ethnic categories are more likely to be appointed and other ethnic categories are less likely to be appointed to some roles.

### 3A.3.2 – What to do if you have a significant overall representation gap?

The obvious follow up question is –



- “Is the reason for our significant overall representation gap due to the underrepresented ethnic category not applying for the available roles or are they applying but not being appointed or both or something else?”

Here are some possible reasons why an ethnic category might be underrepresented in your employer. It could be that a mix of these reasons explains what you in your data –

- They are not aware of vacancies in your employer.
- They are aware of vacancies but are not applying for the jobs.
- They are applying for the jobs but are not selected for interviews.
- They are selected for interviews but are not being appointed to roles.
- They are appointed to roles but end up leaving you sooner than other ethnic categories.

If you identify one or more of these reasons or indeed other reasons that explain your overall representation gap then this tells you where your action plan in Part 4 should be focusing on.

### **3A.4 - Do you see the same or different narrative in different parts of your employer?**

So far, we have been looking at pay quarter breakdowns and overall breakdowns by ethnic categories that are calculated using all employees. From these you will have identified a narrative that explains what you see. A natural question to ask is whether the narrative you’ve uncovered for all employees repeats itself for the different parts of your employer.

The first task is to split your employees by a suitable partition which you will have already given thought to when you collected your data as described in section 2.4 but **section 3.4.1** will give you some more ideas.

The next step is to plot your PQBs (or PHBs) by ethnic categories for each partition. This is to see if you arrive at the same narrative in each part. Situations with a similar narrative throughout will make it easier to plan actions to improve. Situations with different narratives for different parts will be more complex to plan for. A particular issue you need to be aware of when it comes to narratives is **Simpson’s Paradox** which is more likely to happen in EPG Reporting than GPG Reporting so please read **section 3.4.2**.

Before you proceed, please remember your specified Minimum Category as discussed in section 2.4. Suppose you set this to be 50 and in your PQB for all employees, one ethnic category has just 50 employees. If you now split your employees into two groups, that ethnic category will now have less than your minimum category size in both groups. This means you should not publish the PQBs for each group separately without either further aggregation of ethnic categories or you use a Pay Half Breakdown instead as explained in section 3A.1.2 and demonstrated in worked example 3A.1.2. Alternatively, you can still do your analysis and report your conclusions in a public report but refrain from plotting the PQBs or PHBs for each group.

#### **3A.4.1 - How to identify the most relevant partition of your organisation**

You will have already given this thought in part 2.4. The point is to choose something that best reflects how your employer operates today. Some possible options are –

- **Job Role** – e.g. for an airline, the split might be pilots/cabin crew/ground staff/office staff/etc.

- **Sites or Divisions** – If you have sites in and out of London and your London site is significant, please make sure you read section 3A.4.2 about Simpsons Paradox which is most likely to occur in this instance.
- **Perm/Temp** – Some industries like hospitality or agriculture rely heavily on a casual or seasonal workforce that contracts and expands. Splitting by Permanent & Temporary roles would make sense here.
- **Full Time/Part Time** – Retailers are known for having a large workforce of part time workers in their stores and depots. This might be an appropriate categorisation for them to use.
- **Pay Bands** – A number of employers disclose gender breakdowns by pay bands in their reports and they could choose to repeat this using ethnic categories as well.

### 3A.4.2 - Beware of Simpson’s Paradox!

[Simpson’s Paradox](#) occurs when you see a similar narrative for each partition of your employees but it is a very different narrative to the one you see when you look at all employees together. A demonstration is given in [Worked Example 3A.4.2](#) and a link to a real life example is given in section [3.5 Case Studies](#).

The reason why Simpsons Paradox is likely to be more common in EPG Reporting is because only 10% of white people in the England & Wales live in London whereas 38% of ethnic minorities live in London (2021 Census). Employers in London typically pay a London Premium of 30% or more (ONS estimate). Consequently any employer with a large London presence is vulnerable to Simpsons Paradox. Such employers must not rely on their narrative for the overall picture, they must look at London v non-London as well as other partitions.

#### 3A.4.2 Worked Example

This fictional employer has 2 offices, one in Derby and one in London. Each has 20 employees. The base pay in the 4 pay quarters is the same in both but a London premium of 40% is given to staff in London. There are two ethnic categories White and Black and the London office has equal numbers of each whilst Derby is 80% white. In both offices, black employees are more likely to be found in the lower pay half and white employees are more likely to be found in the upper pay half.

Derby	Hourly Pay by Employee					Pay Halves			London	Hourly Pay by Employee					Pay Halves				
UQ	£25	£25	£25	£25	£25	Upper	10	9	1	UQ	£35	£35	£35	£35	£35	Upper	10	6	4
UMQ	£20	£20	£20	£20	£20					UMQ	£28	£28	£28	£28	£28				
LMQ	£15	£15	£15	£15	£15	Lower	10	7	3	LMQ	£21	£21	£21	£21	£21	Lower	10	4	6
LQ	£10	£10	£10	£10	£10					LQ	£14	£14	£14	£14	£14				

*London Premium of 40% paid*

When they are combined, the total number of employees is now 40. This time though black employees are **more** likely to be found in the upper pay half than in the lower pay half and white employees are **less** likely to be found in the upper pay half than in the lower pay half.

COMBO	Hourly Pay by Employee										Pay Halves			
UQ	£26	£26	£26	£26	£26	£35	£35	£35	£35	£35	Upper	20	12	8
UMQ	£21	£21	£21	£21	£21	£28	£28	£28	£28	£28				
LMQ	£15	£15	£15	£15	£15	£20	£20	£20	£20	£20	Lower	20	14	6
LQ	£10	£10	£10	£10	£10	£14	£14	£14	£14	£14				

Nothing has changed in Derby and London. All that's happened is that we've changed from looking at each office separately to all employees together. But the picture flips completely in terms of the representation gaps seen and the narrative you would write. How has this happened?

The reason is the London premium combined with the fact that black employees are much more likely to be working in London. Within each office, black employees are more likely to be found in the lower pay half but because there are more black employees in higher pay London (a number of which are lower pay half London black employees earning more than higher pay half Derby white employees), when they are combined, black employees are now more likely to be found in the upper pay half.

This is Simpson's paradox, a well-known statistical phenomenon that crops when one changes from the global narrative to a local narrative.

### 3A.5 – Case Studies

- A classic example of Simpson's Paradox involving gender can be seen with [this pharmaceutical company](#). This employer had a male dominated factory in Grimsby and a female dominated head office in London. Separately, Grimsby and London both had a gender pay gap against women but when combined the gender pay gap flipped into one favouring women. Simpson's Paradox is rare in GPG Reporting because gender ratios are normally the same in all parts of the UK. This is not the case with ethnicity hence why examples like this will be more common.

### 3A.6 – Further Reading

- [Ethnicity Facts & Figures](#) – this is a resource created by the Race Disparity Unit which pulls together a wide variety of data sources related to ethnicity including the census.
- You may find this GEO guidance document [Eight ways to understand your organisation's gender pay gap - Gender pay gap service \(gender-pay-gap.service.gov.uk\)](#) helpful to see if there are any additional analyses you could undertake before finalising your narrative. Some of its recommendations mirror what is already written in Part 3 and some may not be applicable to ethnicity.
- If you want to seek help from a professional statistician, the Royal Statistical Society provides [this search facility](#).

## PART 3B – TURN YOUR DATA INTO INSIGHTS (Advanced calculations)

### 3B.1 - Use Box Plots to compare Hourly Pay by Ethnic Category

Box plots do not require much statistical expertise to produce and interpret but they are not well known. Part of the reason for this is that until 2016, you could not produce a box plot in Microsoft Excel (search for help on **Box & Whisker Plot**) so it was very much in the realm of statistical software.

However, the other reason why box plots are in Part 3B and not Part 3A is because they are probably better suited to an internal ethnicity pay gap report rather than a report put in the public domain. Ultimately it is a tool to supplement a PQB plot rather than replace a PQB plot.

A box plot is demonstrated in [worked example 3B.1](#) and consists of a number of elements. It starts with a box part roughly in the middle and two lines left and right of the box known variously as stalks or whiskers. From left to right, these features represent the following statistics for hourly pay for the stated ethnic category.

- **Minimum** - Left hand extent of left line
- **Lower Quartile** – left hand vertical line of the box part
- **Median** – middle vertical line of the box part
- **Upper Quartile** – right hand vertical line of the box part
- **Maximum** – right hand extent of right hand line
- **Average (or Mean)** – free standing marker which could be anywhere in the middle

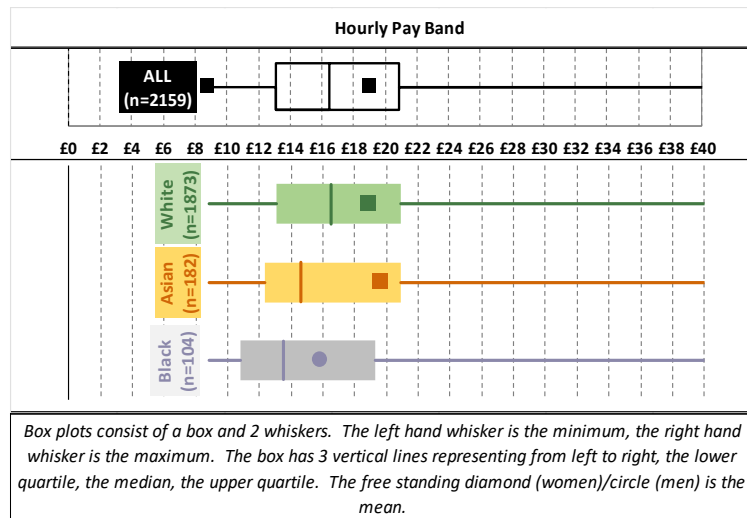
Box plots are a neat way of plotting the main statistics of hourly pay on a single chart. When a box plot is produced using **all** employees, this is the boundaries (lower quartile, median and upper quartile) that were used to create the 4 pay quarters of a PQB plot so this should give you a feel as to the connection between the two types of charts.

It's easy to state these observations from a box plot but it can be harder to turn them into insights that lead to actions. If there is no pay gap at all between any ethnic category anywhere, then we would expect the box plots for all ethnic categories to be identical. This is the same principle we used for PQB plots where we stated the ideal outcome is the same breakdown by ethnic category in each pay quarter. However, we contend it is easier to turn the data plotted in PQBs into insights and actions and than it is to do the same with the statistics shown in box plots.

A small drawback of box plots is that they do not indicate the size of each ethnicity as the width of each box plot is identical though some software packages will allow you to do this. PQBs however do show the size of each category.

#### 3B.1 Worked Example

Hourly pay data for 2159 employees split by 3 ethnic categories is shown here for fictional employer DEF LLP. The black box plot at the top represents all employees, the 3 box plots below represent the 3 ethnic categories of White, Black and Asian. This is the recommended format for box plotting, plot a box plot for all employees followed by separate ones for each ethnic category using the same hourly pay scale for each plot. The labels for each box plot should state how many employees were used to calculate the relevant statistics.



Here we see the median Asian employee is paid approximately 15% less than the median white employee but the average Asian employee is paid about 3% more than the average white employee. The median black employee is paid roughly the same as the lower quartile white employee whilst the average black employee is paid slightly less than the median white employee.

These kind of observations are easy to see on a box plot and demonstrate why you should never publish median and mean hourly pay figures on their own. Otherwise, they will lack any context for interpretation.

### 3B.2 – Estimate how long will it take you to close your gaps?

This section may be of interest to employers who wish to address a significant representation gap across their pay quarters. For those employers who have an overall representation gap, the method described can be used with some modifications which are not described here.

For each ethnic category, the worked example of **section 3A.1.3** demonstrated that elimination of pay quarter representation gaps first requires you to have the same number of employees in the upper pay half as in the lower pay half. Suppose a significant difference between your upper and lower pay halves exists today, on average how long will it take your employer to eliminate the gap for that ethnic category?

If the following assumptions are made for an ethnic category **e**, then a simple formula can be used to estimate this.

1. For the employer, the total number of employees across all ethnic categories does not change and remains at **N**.
2. For the ethnic category **e**,
  - a. The total number of employees will be **N(e)**.
  - b. There will be **UN(e)** employees in the upper pay half and **LN(e)** employees in the lower pay half.
  - c. The difference between the number of employees in the upper pay half and lower pay half is calculated ignoring the sign and recorded as a positive number **DH(e)**. It is this gap that you are trying to reduce to 0.
  - d. The proportion of employees who leave each year will be same for each year and each pay half and is denoted as **t(e)** i.e. the number of employees leaving the lower

pay half will be  $t(e) \times LN(e)$  and the number of employees leaving the upper pay half will be  $t(e) \times UN(e)$  which means a total of  $t(e) \times N(e)$  employees leave each year.

- e. The total number of employees recruited each year is equal to the total number leaving i.e.  $t(e) \times N(e)$ .
- f. The number of employees recruited each year in the lower pay half is equal to the number recruited each year in the upper pay half and is equal to  $t(e) \times N(e) / 2$ .

If these assumptions hold, **worked example 3B.2** shows it will take **Y** years on average to eliminate the difference between the upper and lower pay halves for ethnic category **e** where **Y** is calculated as follows -

- $Y = -\text{Log}(DH(e)/2) / \text{Log}(1 - t(e))$  where Log is the natural logarithm (=LN() in Excel).

A fuller explanation of this formula can found in 3B.5 Further Reading section.

Other formulas for different set of assumptions are possible. If you wish to explore these, we suggest you speak to a professional statistician.

It should be noted these assumptions amount to a best case scenario whereby whatever barriers that exist today that results in a difference between the two pay halves will no longer exist and all future recruitment of ethnic category **e** no longer sees a difference between the two pay halves. In practice it may take a number of years for you to transition to this scenario and those years have to be added to **Y**.

On the other hand, it can be shown that if you expect the total number of employees **N** to grow in future, then the time needed to close the gap between the upper and lower pay halves will be less than **Y** years. This is because the number of employees from ethnic category **e** joining will be greater than the numbers leaving provided those joining are equally split over the upper and lower pay halves.

### 3A.4.2 Worked Example

We start with the pay half breakdown of our fictional employer PQR plc and calculate the difference in the number of employees between the lower and upper pay halves for each ethnic category to get the **DH** row at the bottom of the table shown.

Pay Half Breakdown by Ethnic Category - PQR Plc									
Number of Employees		White-B	White-O	Mixed	Asian	Black	Other	N/A	TOTAL
Pay Half	Upper	425	42	22	56	15	13	52	625
	Lower	375	42	31	47	35	40	55	625
Diff DH = Lower - Upper		-50	0	9	-9	20	27	3	0

We will focus on the Black ethnic category for the demonstration. Currently there are 35 employees in the lower pay half and 15 in the upper pay half so  $UN(e) = 15$  and  $LN(e) = 35$ . If there was no gap in the representation of black employees by pay half, we would expect 25 employees in each pay half.

Let's assume 10% of the 50 black employees (i.e. 5 in total) leave each year and are replaced by 5 new black employees each year. The 10% is the expected employee turnover rate and is the value of  $t(e)$ . Note  $t(e)$  needs to be recorded as a decimal **0.1** here rather than 10%.

If we now follow the assumptions listed in section 3B.2, how many black employees will be in each pay half after 1 year? To work this out, it is necessary (and permissible) to allow for fractional employees in the calculation below.

#Employees	Year 0	Leaving	Joining	Year 1	Leaving	Joining	Year 2	Leaving	Joining	Year 3
Total N	50	5	5	50	5	5	50	5	5	50
Upper Pay Half UN	15	1.5	2.5	16	1.6	2.5	16.9	1.69	2.5	17.71
Lower Pay Half LN	35	3.5	2.5	34	3.4	2.5	33.1	3.31	2.5	32.29
Difference DH	20	2	0	18	1.8	0	16.2	1.62	0	14.58
Employee Turnover t		10%			10%			10%		

When we do this, we find that after the 1<sup>st</sup> year, the difference between the lower and upper pay halves **DH(e)** has fallen from 20 to 18, a fall of 10%. At the end of year 2, **DH(e)** falls from 18 to 16.2 another fall of 10%. Year 3 sees **DH(e)** fall by 10% yet again from 16.2 to 14.58.

In other words, if the assumptions hold, the value of **DH** falls by a percentage equal to the % of employees that leave each year i.e. the employee turnover value **t**. This means the value of **DH** in year **Y** can be calculated as **DH(year 0) x (1-t)<sup>Y</sup>**.

You may notice that mathematically, the formula for the expected value of **DH** can approach zero but never reach zero. In practice, random fluctuations in the numbers leaving and joining each year from each pay half will occur so the table above will never occur in real life. On average, though across all employers in a similar position to PQR plc, this is what will happen if the assumptions hold.

Since there is an even number of black employees at PQR plc, once **DH** drops below 2, then to all practical purposes, the gap between the upper and lower pay halves will have been eliminated. This is because our goal is 25 employees in each pay half and the next closest scenario is having 24 employees in one pay half and 26 in the other pay half which is a difference of 2. So if **DH** is less than 2, the next outcome has to be **DH** of 0. With this logic, the formula for estimating the value of **Y** can be derived.

If this formula is now applied to all ethnic categories at PQR plc, we will get the following values for **Y** depending on whether we think employee turnover **t** will be 5%, 10% or 20%. For the black ethnic category where **DH** is 20 and **t** is assumed to be 0.1, the formula **-Log( 20/2 ) / Log( 1-0.1 ) = 22** years.

Estimated #Years to close	White-B	White-O	Mixed	Asian	Black	Other	
Absolute Difference DH	50	0	9	9	20	27	
Employee Turnover	5%	63	na	29	29	45	51
	10%	31	na	14	14	22	25
	20%	14	na	7	7	10	12

Note to use the formula for **Y**, any negative signs in the calculation of **DH** has to be removed e.g. -9 for Asian is recorded as 9 as shown. This is known as the absolute value of **DH** hence the row name in the table.

The number of years needed to close these gaps on average is longer than you might have expected. It is also very dependent on the turnover rate of your employees. A loyal workforce with low turnover will take much longer to resolve any gaps compared to another workforce with high turnover.

It is important to ensure these timescales are borne in mind when you develop your action plans in part 4. Of course, these estimates of **Y** are just that, estimates. In practice, some employers will make faster progress whilst other employers will make slower progress. When devising your action

plan, you should consider what would need to be in place in order for your employer one of those that makes faster progress than the formula shown here

### 3B.3 - Use Logistic Regression for Intersectional Analysis and more rigour in general

When we observe in a PQB table there are 100 category A employees in the upper pay half but only 50 in the lower pay half, another way of expressing this is to say category A employees are twice (100/50) as likely to be in the upper pay half compared to the lower pay half. If instead there were 75 employees in each pay half then we could instead say that the probability of a category A employee being in the upper pay half is 50%.

When you make the mental leap from counting the numbers of employees in a category to thinking about the probability of an employee being in that category, you are on the way to using logistic regression.

Logistic regression is used to build a model whereby the probability of being in the upper pay half (or upper pay quarter, top pay band or any other category of interest) is a function of a number of different factors of interest. In some instances we would expect the probability to be dependent on certain factors e.g.

- Location especially if one is in London,
- Pay band
- Length of service
- Skill level required for job

However, there are other factors where we would hope to find that the probability is **not dependent** on these e.g.

- Gender
- Ethnicity
- Disability

It is not possible to build a logistic regression model in Microsoft Excel but a related method known as the Chi-Squared test can be undertaken. Whilst the various formulas and options in Excel are simple to use, you do need to know how to set up your data in order to use these properly. You should therefore take advice from a professional statistician if you wish to try this.

One advantage of working with a professional statistician is they are trained to draw conclusions from small sample sizes. Because of this, the Minimum Category Size requirement used in this guidance can be ignored since statisticians have the necessary skills to interpret data with smaller sample sizes.

More importantly, statisticians know how to interpret interactions (or intersections) between two or more factors. For example, you may find –

- the probability of a woman being in the upper pay half is 50% (good news)
- the probability of an Mixed race employee being in the upper pay half is also 50% (more good news)
- but the probability of mixed race man being in the upper pay half is only 25% which is not good news.

This is **intersectional analysis** and given that 75% of employers reporting gender pay gaps have less than 1000 employees, such a category as Mixed race women would almost certainly be in single



figures in terms of number of employees at many employers. In which case, only a professional statistician has the training to determine if an interaction between personal characteristics is significant or not.

### **3B.4 – Case Studies**

*Authors Comment – none available at this point in time.*

### **3B.5 – Further Reading**

- [Why Swap Numbers are so useful](#) when analysing pay gaps. This is a concept that builds on the idea that it is the difference in the number of employees in each pay half that is the main determinant of whether there is a pay gap. By following this link, more links can be found discussing the same concept.
- A more detailed explanation of the formula in part 3B.2 [can be found here](#).

*AUTHOR'S COMMENT – These links come from my blogs. [A full list of my pay gap related blogs can be found here](#).*

## **PART 4 – TURN YOUR INSIGHTS INTO ACTIONS**

*AUTHOR's COMMENT – A reminder that the plan was someone with more expertise than me to write this section. However, I noted much of the GEO guidance for gender pay gaps could possibly apply to ethnicity so I made a point of referencing the GEO material on gender where I thought relevant and then pointing out other material that is specific to ethnicity.*

The GEO already provides guidance on how to turn your insights into your gender pay/representation gaps into actions to improve them. Much of that guidance can also be used to turn your insights into your ethnicity pay/representation gaps into actions. Therefore this section will mostly point you to that guidance. Only where a different approach may be needed for ethnicity will we expand on it here.

To turn your insights from Part 3 into actions here, you need to –

1. Summarise the insights you extracted from your data in Part 3.
2. Share these with your employees and get their feedback.
3. Agree with your employees your key priorities for improvement.
4. Identify actions to deliver your priority improvements and put together a plan.
5. Decide how you will monitor the implementation of your action plan and report progress
6. Tell people what has worked and what hasn't

### **4.1 - Summarise the insights obtained from your data**

This should be a single document. The point was made in Part 3 that often you can capture your narrative with a single PQB chart or table so it could be possible to write a summary in 2 pages.

### **4.2 - Share with your employees and receive feedback**

Part 1 made the point that EPG Reporting is not something to be performed on your employees, it is a collaborative exercise to done with your employees. After all, you need your employees to share their ethnicity in order to have meaningful data in the first place. This is the point where the employee gets to find out how their ethnicity data was turned into insight.

By now you will have written a narrative that explains what your analysis Part 3 uncovered. It is possible though your analysis has missed some important context. By seeking feedback from your employees, you can add this context to your analysis. This will be particularly valuable for smaller ethnicities who had to be aggregated with other ethnicities into larger ethnic categories to comply with your specified Minimum Category Size. Feedback from employees can help confirm whether an insight that is applicable to a larger ethnic category is equally applicable to the ethnicities within e.g. do your employees of Black African ethnicity agree with their colleagues of Black Caribbean ethnicity that any insight relevant to a Black ethnic category applies to both ethnicities?

The feedback will allow you to produce a final narrative that is now the basis for identifying actions to improve.

### **4.3 - Agree the key priorities for improvement**

Again this should be a collaborative exercise with your employees. Ask them for ideas on how to improve prospects for underrepresented ethnicities in terms of application, recruitment and promotion. In doing this, do not allow the impression to be gained it is the responsibility of the underrepresented ethnicities to come up with the ideas. It is the responsibility of all employees to put forward ideas.

There are many ways you can undertake this exercise and examples are given in section 4.7 Case Studies and 4.8 Further Reading.

Once you have your list of possible actions, we recommend you pause to consider the timescales involved. Part 3B.2 showed it can take at least 20 years to close a gap even in a best case scenario. In light of this, we believe an action plan full of actions is likely to lead to a blizzard of activity that will run out of steam very quickly, leading to fatigue and disillusionment among your employees.

An alternative is to prioritise a single action each year that you believe will have large impact and is feasible to implement. Each year does not mean, forget about the previous year's action, it means give yourself a year to make a start on that action and put things in place so that the action will sustain itself in the following years. In year 2, kick off your next action and put the structures in place to make that sustainable and year 3, repeat with the next action.

#### **4.4 – Write your action plan**

The GEO provides guidance on how to write your action plan here [Gender Pay Gap Guidance booklet \(gender-pay-gap.service.gov.uk\)](https://gender-pay-gap.service.gov.uk). Much of what is written there also covers the previous 3 parts.

#### **4.5 - Decide how you will measure and report progress**

An action plan is more likely to be successful if there is a metric that can be tracked over time to see if it is working. You will need to give some thought as to what these will look like.

Whatever metrics are chosen, it is important to bear in mind these are likely to be subject to the laws of chance over time. This means it will be necessary to add what are known as **control limits** which allow you to determine if the change in your metric is within the bounds of what would be expected or whether progress is faster or slower than could be expected. There is a whole world of quality control methods that is applicable here including the widely used field of **Statistical Process Control or SPC**. Further reading on this can be found in section 4.8.

Once you start doing EPG Reporting and sit down with your employees each year to get feedback on your insights, it will be a natural opportunity to report progress on previous years actions.

#### **4.6 – Tell people what has worked & what hasn't worked**

What is the ultimate purpose of pay gap reporting?

It is not about the statistics, reports, narratives or actions plans or anything like this. They are simply means to an end.

The ultimate purpose is find out from employers what works and what doesn't work when it comes to improving diversity and inclusion in the world of work in the UK.

There is no shortage of people saying what they think will work but in the end, it is for the employees of employers in the UK to try these ideas out and then most importantly of all, to tell everyone whether it worked or not. That is the ultimate purpose of your pay gap report, it's your chance to say this idea worked for us but that one didn't and here are the reasons why.

You will find a list of what has worked for gender from the GEO here [Actions to close the gender pay gap - Gender pay gap service \(gender-pay-gap.service.gov.uk\)](https://gender-pay-gap.service.gov.uk).

Our hope is that if employers engage with EPG Reporting as described in this guidance, then an equivalent list for ethnicity can be published as well. As has been highlighted elsewhere in this

guidance the projected timescales for progress can be much longer than people might expect so employers may need to allow up to 5 years before it will become apparent what is working and what is not working when employers try close their ethnicity pay gaps.

#### **4.7 – Case Studies**

*AUTHORS NOTE – Again no good case studies are immediately apparent though [I did write this article not long after submitting my final draft.](#)*

#### **4.8 – Further Reading**

- What is SPC (Statistical Process Control)?
- [What is 6 Sigma & DMAIC and how can it be used to close pay gaps?](#)

*AUTHORS NOTE – Both of the links suggested here are cornerstones of the quality management and quality improvement field. I take the view that pay gaps are a metric of an employer's quality with regards to its people. Hence these methods are absolutely relevant to this section.*