# The Australian Anti-Discrimination Acts: Information and Practical Suggestions for Actuaries

*Prepared by members of the Anti-Discrimination Working Group*

Presented to the Actuaries Institute
20/20 All-Actuaries *Virtual* Summit
3-28 August 2020

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# 1. Introduction

## 1.1. Background, Purpose and Limitations

This paper has been produced by members of the Actuaries Institute's Anti-Discrimination Working Group ("ADWG"), to assist actuaries in understanding the practical implications of the Australian Anti-Discrimination legislation for their work.

The ADWG consists of:

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The ADWG has been assisted since its inception by dialogue with a wide range of interested parties, some views of which have made their way into this report. We thank those who gave their time to assist us. We also give special thanks to Colette Reid for peer reviewing this paper.

This report has been written by practitioners, for practitioners, and should not be taken as legal advice or opinion. Actuaries are encouraged to seek legal advice for aspects of their work where they are uncertain as to the application of the various anti-discrimination laws. In this paper, we identify areas where we consider that the application of the legislation is fairly clear (notably where there is recent, directly relevant case law or specific supplementary guidance), as well as areas where we consider that some uncertainty may exist. We include a range of source materials as notes at the end of the paper.

The ADWG was formed in response to the recommendations of the Victorian Equal Opportunity and Human Rights Commission ("VEOHRC") in their 2019 report "Fair-minded cover: Investigation into discrimination in the travel insurance industry"[1], where the following recommendation was made:

The Actuaries Institute should develop a strategy for educating members regarding anti-discrimination laws, which:

- outlines insurers' obligations regarding anti-discrimination laws
- outlines actuaries' role and obligations to comply with these laws as part of their professional obligations
- provides guidance on the standards of actuarial analysis required, having regard to the Australian Human Rights Commission's Guidelines for providers of insurance and superannuation under the Disability Discrimination Act 1992 (Cth).

This paper represents an important part of the Institute's strategy in response to this recommendation.

Societal and legal discussion of discrimination have rapidly evolved in recent years, and actuaries should be aware of and responsive to these changing norms. Recent examples such as the (draft) Productivity Commission report into Mental Health[2] (the final report of which is awaiting release), the Human Rights and Technology project of the Australian Human Rights Commission[3], and the publication of an AI Ethics Framework by the Department of Industry, Innovation and Science[4] may lead to changes to both societal norms and regulations in the near future.

Draft versions of this paper should not be relied on by anyone for any purpose. We encourage feedback on the content of this paper, which should be addressed to Chris Dolman[5].

## 1.2. The Relevance of Discrimination Law to Actuaries

Actuaries traditionally work within financial services, notably in superannuation, general and life insurance. However, actuaries are certainly not bound to these industries, and are increasingly involved in work across a range of other sectors.

Actuaries rarely find themselves with primary responsibility for any direct customer interaction or the final decisions of the organisation. However, actuaries are experts and professional advisers to companies and their Boards, so should ensure that any advice they give takes into account the relevant legislation. They should not contribute to a client or the organisation for whom the actuary works making a decision contrary to the law.

In financial services, the most common practices that actuaries are ordinarily involved in that may be potentially discriminatory are pricing, underwriting and product design. This is the primary focus of this paper, though we do consider broader topics.

For insurance companies, there are specific exemptions within several of the Australian anti-discrimination pieces of legislation that make it legal for insurers to discriminate against individuals in certain circumstances. Actuaries working in these areas should be aware of these exemptions, as actuarial advice is generally relied upon to support any such practices by companies. This is explored in more depth in Section 3.

Such exemptions to permit discrimination align with much of the relevant discrimination case law in insurance, which has tended to focus on terms and conditions in policies and contracts, sales practices (particularly refusal of service), or claims decisions arising due to a policy exclusion or term.

This paper does not consider general discrimination matters that are not specific to actuaries nor targeted at their typical areas of work. For example, discrimination in employment is generally prohibited under the various anti-discrimination acts, so actuaries must ensure that processes such as recruitment are not discriminatory.

After outlining the Australian anti-discrimination legislation in more detail, this paper provides practical examples of applications and complexities of applying these to the relevant work of actuaries including:

- Within insurance firms, designing and analysing the effect of current or proposed terms and conditions in insurance contracts, or of material service practices such as declining cover or claims
- Within insurance firms, analysis and advice to support pricing, including decisioning algorithms
- Broader analytical work, including model building and deployment of decisioning algorithms across many industries and contexts. This also includes decisioning algorithms in insurance firms outside of pricing and underwriting.

## 2. The Legislation

### 2.1. History and Nature of the Legislation

Inspired by the UN's Universal Declaration of Human Rights in 1948[6], anti-discrimination laws were enacted across many countries in various forms in the second half of the twentieth century. In Australia, this generally occurred from the 1970s onwards. The Australian Human Rights Commission ("AHRC") website contains an excellent summary of the historical development of human rights legislation both globally and in Australia[7], which is a useful starting point for the interested reader.

In Australia, legislation is enacted at both the State and Federal level. This section discusses the core concepts of the legislation, specific applications to insurance, and finally summarises the various State and Federal instruments according to the protected attributes included in them.

This is intended to be a useful initial reference point for actuaries but is not exhaustive. Practitioners are encouraged to familiarise themselves with the aspects of the primary sources which are most relevant to their work, keep up to date with the regularly updated State and Federal legislation, and seek independent legal advice when needed.

### 2.2. Core Concepts in the Legislation

Many of the various pieces of State and Federal anti-discrimination legislation appear somewhat similar, however, variation exists which adds a significant degree of complexity for practitioners. Nevertheless, there are several common concepts which generally apply to all, which we outline below. These give some consistency to the legislation and are important for actuaries to understand.

#### 2.2.1. Protected Attributes

In order to protect people against discrimination, we must first define who needs protection. The legislation achieves this by declaring various attributes of individuals as "protected attributes" which define those considered in need of protection from discrimination. Protected attributes include things such as age, disability, race and sex.

Some pieces of legislation refer to a single protected attribute or a small set of very closely related attributes - for example, the Age Discrimination Act 2004[8] refers to age discrimination alone. Other legislation covers a wide range of protected attributes. For example, the Victorian Equal Opportunity Act 2010[9] lists seventeen protected attributes, as well as an additional provision protecting people from discrimination by association.

### 2.2.2. Context

While protected attributes always exist, apparently discriminatory practices involving them are not always in breach of the legislation. The legislation typically lists a series of contexts in which it would be unlawful to discriminate against someone due to a protected attribute. Note that 'context' is a descriptive term we use here for convenience; it is not a term used within the legislation.

Examples of contexts include employment, education and the provision of goods and services, such as selling an insurance contract. When considering potential discrimination, it is important to know the context of the action or practice in question as well as the protected attribute being discussed.

### 2.2.3. Direct and Indirect Discrimination

Discrimination can occur both directly and indirectly. Some instruments also define additional forms of discrimination, such as discrimination based on characteristics that may be generally associated with or imputed from a person with a protected attribute.

The AHRC's 2016 publication "Guidelines for providers of insurance and superannuation under the Disability Discrimination Act 1992 (Cth)"[10] provides useful examples to help delineate these concepts (pages 4-5):

> Discrimination can be direct, meaning a person with disability is treated less favourably than a person without that disability in the same or similar circumstances.
>
> For example, it would be direct discrimination to refuse to insure someone because he or she is blind.
>
> Discrimination can also be indirect. Indirect disability discrimination can happen when conditions or requirements are put in place that appear to treat everyone the same, but actually disadvantage some people because of their disability.
>
> For example, requiring all applicants for insurance to provide details from a driver's licence for identification indirectly discriminates against anyone who is unable to drive because of a disability.

Imputed or associated characteristics require additional consideration. It is not just the direct use of a protected attribute that may be considered as discriminatory, but under some legislation also the use of factors that a layperson would generally consider to be closely associated with or imputed to a person of protected status. These should

effectively be treated as protected attributes themselves, and this may widen the net considerably.

Whilst the degree of association required for this to be triggered is perhaps unclear, it can be observed that indirect discrimination concepts may also capture discrimination based on such associated data or characteristics.

The complexities of indirect discrimination in the context of insurance are further addressed in Section 3.

## 2.3. Grounds for Claiming Discrimination

Legislation defines the specific circumstances when an action can be seen as discriminatory. Generally, this can be characterised as follows:

Firstly, a claim of discrimination usually requires a negative impact or disadvantage to have happened to an individual that can be demonstrated with some evidence. Commonly this requires a counterfactual test[11], though in some regimes, for example Victoria, the test is one of "unfavourable treatment"[12]

Secondly, the person claiming discrimination must usually show either:

a) Harmful treatment as outlined above occurred because of the attribute, in the case of direct discrimination, i.e. a causal mechanism reliant on the attribute, or
b) Harmful treatment as outlined above occurred due to an alleged discriminatory practice, in the case of indirect discrimination, and for the practice to have the likely effect of causing harm to a person or class of persons with a protected attribute.

Finally, the context in which discrimination is occurring must be one covered under the legislation in question.

## 2.4. When Can Discrimination Be Lawful?

Looking at the insurance industry, exclusions, pricing algorithms and underwriting practices that appear to be discriminatory in the manner outlined above are widespread. What provisions exist under the law which might allow such practices?

This section is intended as a high-level guide for actuaries, and we encourage practitioners to carefully consider guidance and case law for their specific situation, seeking the assistance of legal professionals if required.

Typically, if discrimination can be demonstrated (for example using an argument of the form above), then if a complaint is made the burden of proof then lies on the respondent to show the discrimination was allowable. The following are commonly allowable situations:

### 2.4.1. Unjustifiable Hardship

Whilst it may be possible to take some action in order not to discriminate, there will clearly be situations where the burden of action required to be non-discriminatory is very great. The AHRC provides some illustrative guidance on what might constitute such unjustifiable hardship[13]:

> "It may not be against the law to provide entry to a building only by a set of stairs if the owner of the building can show that it would cause unjustifiable hardship to modify the building because it is beyond the financial means of the owner to do so."

The notion of unjustifiable hardship is clearly dependent on the individual circumstances of each case, and in particular on the relative means of the defendant.

Actuaries should note that large companies may find this form of defense difficult to argue successfully in the context of discriminatory practices against an individual. For example, in Ingram vs QBE, an attempted defense of unjustifiable hardship by the insurer (on grounds of claims costs being higher, and hence premiums needing to increase or the insurer suffer a loss) failed.[14]

### 2.4.2. Reasonable in the Circumstances

For indirect discrimination, a commonly legislated defense is that the conduct was "reasonable in the circumstances". For example, the Sex Discrimination Act 1984[15] gives a (non-exhaustive) list of factors to consider in determining reasonableness. The AHRC gives further guidance on this matter, including some discussion of relevant case law[16].

The notion of what is reasonable is clearly very dependent on the individual circumstances of the matter at hand. We encourage actuaries to consider their individual situation carefully, using the available guidance and independent legal advice if needed.

### 2.4.3.  Positive Discrimination

Sometimes also referred to as "affirmative action", positive discrimination is often allowed. The AHRC gives some useful guidance on the intent and meaning of this.[17] In essence, positive discrimination is an attempt to discriminate using a protected attribute, but in a manner which seeks to positively affect an otherwise disadvantaged section of the community. A common example is the use of concession pricing for seniors. If discrimination is alleged but the discrimination occurred due to a deliberate policy of positive discrimination, it may sometimes be allowed.

### 2.4.4.  Specific Exemption

In several pieces of legislation, there are specific circumstances described under which discrimination may be considered lawful. One such area is in relation to insurance and superannuation. Since this is of relevance to the work of many actuaries working in financial services, this is explored in more depth below.

However, such specific exemptions should be considered within the context of current societal expectations. For example, recent reviews (such as "Fair Minded Cover") have led to changing norms and standards and increased scrutiny of traditional avenues of defense.

Actuaries should be mindful of current and evolving community expectations and specific case law examples.

### 2.5. Insurance and Superannuation Exemptions

To recognise the importance of some protected attributes as strong risk differentiators, legislation was drafted to recognise some of these factors that insurers have traditionally used (and would continue to want to use) as part of policy design, pricing and underwriting.

For example, someone's age is clearly an important factor in determining their expected mortality risk. Rather than having regular disputes over the use of age in determining life insurance premiums, the use of age as a rating factor was permitted, under clearly specified circumstances. Certain other factors such as sex and disability were granted similar provisions, subject to meeting the legislative requirements as summarised in this report, but not all protected attributes have such provisions.

Critical for actuaries to recognise is that even for these factors such as age that have been given special consideration, insurers are not allowed to discriminate unless they can clearly meet the provisions of the regulations.

The core notion of discrimination being wrong unless justified as reasonable under the legislation remains. The default position must be to not discriminate, until and unless any exemption has been met. Each time a decision is made, or a standardised decision process is updated, the insurer should take steps to assure itself that the provisions in the regulations can be met and that these reasons are documented. Practical considerations relating to this are explored in Section 3.

## 2.6. Requirements of the Insurance Exemption

There is substantial guidance available for practitioners seeking to understand how to meet the requirements of the typical insurance exemption. Most notable is the recent guidance from the AHRC in relation to the Federal Disability Discrimination Act: "Guidelines for providers of insurance and superannuation under the Disability Discrimination Act 1992 (Cth)"[18] [the *Guidelines*]. Since the structure of other anti-discrimination legislation is similar (but to the best of our knowledge no similar published guidance document exists), we believe it is reasonable to generalise and extend the approaches from the Guidelines to other protected attributes with an insurance exemption.

The Guidelines lay out the key provision for the insurance exemption (page 6):

> "Section 46 of the DDA provides that discrimination in relation to provision of insurance or superannuation by either refusing to offer a product, or in respect of the terms or conditions on which the product is offered or may be obtained, is not unlawful if the discrimination:
>
> - is based upon actuarial or statistical data on which it is reasonable to rely, and the discrimination is reasonable having regard to the matter of the data and other relevant factors (**the data limb**)
>
> or
>
> - in a case where no such actuarial or statistical data is available and cannot reasonably be obtained — the discrimination is reasonable having regard to any other relevant factors (**the no data limb**)."

The practical meaning of this guidance and the steps actuaries can take to meet it is explored further in Section 3 below. For now, we observe that:

1. The **data limb** comes first and cannot be ignored. The first obligation is to attempt to collect data "...on which it is reasonable to rely." The **no data limb** can only be relied upon where "no... data is available and cannot reasonably be obtained."
2. Even if data is available, under the **data limb** the discrimination must still be reasonable, having regard to "the matter of the data and other relevant factors". Use of the data alone with no other considerations of reasonableness or other factors is not sufficient.
3. Where no data is available (and hence the **no data limb** is being relied on), this test of reasonableness having regard to "any other relevant factors" still holds.

Based on recent case law (e.g. Ingram vs QBE), and as made plain in the "Fair Minded Cover" report, it is important for actuaries to ensure that evidence for reliance on the data and/or the no data limb must be obtained and documented at the time that the decisions are made and enacted. Typically, this would be at the time of product issue, pricing or underwriting rather than at claim time.

Exceptions for other industries outside of insurance and superannuation do exist. Actuaries working in such areas may take our comments and discussion about insurance as a starting point for considerations in those sectors, where such legislative similarities exist. For example, the Age Discrimination Act 2004 makes provision[19] for age discrimination to be lawful in the provision of credit.

## 2.7. Summary of Protected Attributes in Legislation

Protected attributes differ throughout various State and Federal legislation.

The table below summarises the inclusion (or not) of specific protected attributes within the various state and federal instruments. This is intended to give practitioners an overview of the content of the legislation. Some simplifications and interpretations have been made for brevity, and some terms have been grouped or renamed where the legislation may use a variety of terms or definitions, but the meaning appears sufficiently similar, in our judgement.

This is a high-level summary only, limited in the ways noted above. It is not legal advice. Practitioners are encouraged to read the detailed legislation and associated guidance to ensure they comply with it and seek legal advice if they are unsure. That said, it is presented with the intention of being a useful starting point for practitioners seeking a high-level understanding of the protected attributes listed in the various Acts.

| Protected Attribute | Jurisdiction | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Federal** | **NSW** | **VIC** | **QLD** | **ACT** | **SA** | **WA** | **TAS** | **NT** |
| Accommodation Status | | | | | ✔ | | | | |
| Age | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Breastfeeding | ✔ | ✔ | ✔ | ✔ | ✔ | ✔[20] | ✔ | ✔ | ✔ |
| Disability[21] | ✔ | ✔ | ✔ | ✔[22] | ✔ | ✔ | ✔[23] | ✔ | ✔ |
| Employment Status, Trade or Occupation | | | | | ✔ | | | | |
| Family Responsibilities[24] | ✔ | | | ✔ | | ✔ | ✔ | ✔ | |
| Family Violence | | | | | ✔ | | | | |
| Gender Identity | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔[25] | ✔ | ✔[26] |
| Genetic Information | | | | | ✔ | | | | |
| Historic Fines | | | | | | | ✔[27] | | ✔[28] |
| Identity of Family Members[29] | | | | | | ✔[30] | ✔[31] | | |
| Industrial Activity[32] | | | ✔[33] | ✔[34] | ✔ | | | ✔ | ✔ |
| Irrelevant Criminal Record | | | ✔[35] | | ✔ | | | ✔ | ✔ |
| Irrelevant Medical Record | | | | | | | | ✔ | ✔ |
| Lawful Sexual Activity | | | ✔ | ✔ | | | | ✔ | |
| Marital or Relationship Status | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Parental or Carer Status[37] | | ✔ | ✔ | ✔ | | | | ✔ | ✔ |
| Personal Association with Protected Status Person[38] | | ✔ | ✔ | ✔ | ✔ | | | ✔ | ✔ |
| Physical Features | | | ✔ | | ✔ | | | | |
| Political Belief or Activity[39] | | | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ |
| Pregnancy | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Race | ✔ | ✔ | ✔ | ✔ | ✔[40] | ✔ | ✔[41] | ✔ | ✔ |
| Religious Belief or Activity | [42] | ?[43] | ✔ | ✔ | ✔ | ?[44] | ✔ | ✔ | ✔ |
| Sex[45] | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔[46] | ✔ | ✔ |
| Sexual Orientation | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |

Practitioners should observe the wide range of protected attributes covered by the legislation, and the divergence across States. It is important to understand a company's customer profile by State, since protected attributes vary by State. Clearly if an actuary is advising a client who operates nationally, the advice should ensure compliance in all jurisdictions, noting the variation that exists.

We also observe that the legislation is regularly updated, with new protected attributes added to the list from time to time. This means continuous vigilance is required. We note that this table was produced in late 2019 and early 2020; any changes since that time may not be reflected accurately.

Appendix A sets out links to the various pieces of legislation considered in producing this table of protected attributes.

## 3. Considerations for Actuaries Working in Insurance

For actuaries working for insurance companies, it is common to provide advice on underwriting and pricing. This naturally extends to the impact of policy design on claims determinations, notably the operation of policy exclusions. Hence it is important for actuaries to be aware of the implications of the discrimination legislation on insurers, particularly the operation of the insurance exemptions for the use of otherwise protected attributes such as age, gender and disability.

### 3.1. Common Methods of Risk Discrimination in Insurance

Insurance is a risk-transfer product; hence risk assessment is an essential element of the sales and underwriting process. Risk assessment may be entirely driven by data or may involve the judgement of professional experts. Typically, it is some combination of the two.

It is generally considered acceptable for those judged to be at greater risk of claim to be discriminated against (in an economic sense) - either paying more for their policy or by having certain conditions imposed to make the risk more aligned to that of the general population. Since each individual's risk is unique, a core task of an insurer is to estimate the level of expected risk of that individual and then consider whether some level of discrimination is necessary in the context of the risk management of the portfolio.

If an insurer determines that a risk is higher than the average for some particular reason, there are a wide range of strategies adopted in the industry to economically discriminate. Common approaches include:

1. Declining to offer any cover
2. Broad exclusions to remove claims arising from the cause of higher risk, and potentially other claims
3. Narrow exclusions to remove only claims arising from the specific cause of higher risk
4. Time bound exclusions or "waiting periods" tied to the increased risk, such as related to certain medical conditions
5. Limiting the benefit entitlements for the areas of higher risk, for example via an increased excess or a sum insured variation for claims arising from that risk
6. Increased premiums to reflect the increased risk
7. To allow the insured the option to decide whether to include cover or not, or to accept a condition or not, for claims arising from the higher risk. This decision is available at a cost by policy endorsement. Essentially, this allows the insured to choose between some of the options listed above.

Where exclusions or other special conditions are imposed, or where options are not taken up, the insurer will then seek to apply those exclusions or conditions at the time a customer makes a claim. Hence it is at claims time that most complaints and issues relating to exclusions are raised. However, the underlying discriminatory decision occurs when the policy is designed or sold, not specifically within the claims process.

Insurers could theoretically discriminate on any sort of risk attribute that is able to be (and allowed to be) collected, however if discrimination is intended to be based on a protected attribute it must be within the bounds of a relevant insurance exemption. In such cases, the insurer must ensure it can meet the provisions of the **data limb** or **no-data limb** of the legislation, as outlined above, and that the evidence of meeting the provisions is documented when the product is designed, priced and sold.

### 3.2. Collection of Actuarial or Statistical Data

The data limb of the legislation requires an insurer to collect "actuarial or statistical data" to support a discriminatory decision.

Data can be internal or external to the insurer. The term "data" obviously covers raw data but can also cover models and analysis undertaken (including, for example, the results of academic studies) and any resulting interpretation of the data and analysis, which may overlay professional judgment.

Examples of internal sources of data may include:
- Historical claims and policy data;
- Historical data of claims denied or claims paid, including by cause of claim;
- Historical claims experience for policies without the protected attribute, coupled with any underwriting tools the insurer may utilise to understand relativities between risk groups.

Examples of external sources of data may include:
- Population data such as the Australian Life tables or information published by the Australian Bureau of Statistics
- Industry collated statistical data such as insured life tables
- Medical research and academic studies
- Reinsurance claims and pricing data - noting reinsurers may have coverage in other countries
- Relevant statistics from other industries or sectors

As the data should be relevant for the portfolio being considered, local data would be more likely to be applicable than international data. The actuary should consider how international data may need to be modified for applicability.

Satisfying the requirements of the **data limb** has complications for products with existing exclusions or limitations. The relevant dataset to analyse to demonstrate an increased risk is one collected in the absence of the exclusion or limitation. However, by having exclusions or limitations in place, the insurer may not be collecting this data.

Recent examples in travel insurance suggest that the lack of internal claims data may not be sufficient in itself for an insurer to rely on the no data limb. Instead, insurers will need to demonstrate why external sources are insufficient or inappropriate. The clear expectation at the present time is that insurers, and the actuaries that advise them, in evaluating the riskiness of a protected attribute, will consider the process more broadly and think laterally in respect to the data that is relevant and useful and any analysis that could be undertaken, and document these data sources and any analysis of their relevance.

It is important to repeat what was said previously - the legislation requires that evidence be obtained and documented *before* any discriminatory decisions are made. This includes the collection of actuarial or statistical data, or documentation of a decision not to rely on certain available data.  Insurers and the actuaries assisting them should ensure all supporting data and conclusions drawn are complete and fully documented prior to decisions to discriminate being made. This effectively means a continual process is required to ensure evidence is maintained to justify discrimination under the insurance exemptions. At a minimum, we suggest that such evidence should be reviewed for appropriateness each time decision processes or prices are materially reviewed or updated.

### 3.3. Analysis and Adjustment of Actuarial or Statistical data

Key to the data limb is the requirement of "actuarial or statistical data" to support a discriminatory decision, the reasonable and appropriate use of which may require careful professional judgement.

The 2016 DDA Guidelines of the AHRC suggests the following:

> In considering whether it is reasonable to rely on actuarial or statistical data, you should take into account whether:
>
> - the data is applicable to the particular decision in question;
> - the data is subject to any qualifications;
> - there is a sufficient sample for reliable use;
> - the data is complete;

- the data is up to date;
- the use of the data set has been discredited;

In addition to, and building on concepts in this list, we suggest that there are several common considerations insurers and actuaries need to address in using data to justify discriminatory pricing and product decisions.

### 3.3.1. Representativeness of the data

When analysing data, it is important that it is representative of the situation to which it will be applied. This includes the business context and the mix of the population, as well as aspects such as recency and completeness.

Notably, data from outside the organisation is likely to represent a different mix of individuals (for example different demographic or socioeconomic characteristics) to those of the likely policyholders. Any analysis should consider adjustment of the data to ensure it is relevant and appropriate. For example, population statistics commonly show the highest prevalence of mental health conditions in age groups 15 to 24. However, travel insurance policyholders (for example) are likely to be older on average than the general population - if this population data is to be used by a travel insurer, it should take this into account.

If the information is in the form of medical or academic research the context of the research should be considered for relevance. The population studied may be a narrow subset of the general population or may be a different but related population (for example from overseas). The context of a study may require an adjustment before use, and this may be entirely a matter of professional judgement.

For life insurance, local insured lives data including disability tables will likely be the most relevant data to be used as a basis. Appropriate adjustments will need to be made depending on the insured lives being considered and the date of the data. Individual companies will be able to supplement and adjust this data based on their own experience of the portfolio, input from reinsurance data and trends in improvement or deterioration since the date of the data. All analysis and sources of data should be documented.

Similarly, data must be used correctly for the context at hand. If incidence data is required, such as "first presentation" of a medical condition, then it is inappropriate to use statistics of the general prevalence of a medical condition in the population.

### 3.3.2. Grouping of Data Points for Analysis

It is important to understand and consider the spectrum of risk for individuals with protected attributes in order to determine the most appropriate way to group individuals together for analysis. For example, in analysing age, grouping middle aged people into cohorts of 5 years for travel insurance may be non-controversial. However, for a product like motor insurance, risk materially changes from age 18 to 23, so a finer level of grouping may be warranted at younger ages.

Similarly, for life insurance it may be more appropriate to use individual ages rather than broad age bands which introduce cross-subsidies between ages within the band.

In some cases, grouping may be inappropriate and unable to be supported by data. For example, a blanket term of "mental health conditions" covers a wide spectrum of conditions from mild anxiety to life threatening psychotic episodes. Resultant insurance claim frequency and severity will vary hugely depending on the specific condition within that broad grouping. Using aggregate statistics that cover a range of conditions may be inappropriate to support the use of a general exclusion. Actuaries should consider whether more specific product exclusions linked to more specific data available, such as for more severe conditions, would be more appropriate when considering the discrimination legislation.

### 3.3.3. Smoothing of Results

Raw data is typically noisy. In interpreting data or model results, actuaries may have to smooth out any noise prior to applying it to a situation. The method and amount of smoothing required is typically a matter of judgement.

### 3.3.4. Data Transformation, Imputation or Adjustment

Raw data frequently contains flaws. This may include missing, incomplete or inaccurate data points. There are a range of techniques available to address such shortcomings. Judgement is required when utilising any such method, and care should be taken where the results of any analysis are particularly sensitive to the adjustment method used. The final approach taken should be suitably documented.

### 3.3.5. Uncertainty

The data itself is likely to include an inherent level of uncertainty, which will require careful professional judgement in determining how the data is ultimately used.

However, actuaries are used to addressing uncertainty in decision making. Useful techniques include scenario analysis and stress testing to understand the size of the risks and the potential impacts on outcomes for the insurer and for consumers.

Where limited data is available, piloting strategies, involving a 'test, learn, retest' approach are useful to examine the risk characteristics and understand the potential materiality of the risk, whilst limiting the insurer's potential for downside exposure. This strategy can enable an insurer to determine the most appropriate way to mitigate the risk through testing various mechanisms, such as those outlined above in "Common Methods of Risk Discrimination in Insurance".

### 3.4. Reasonable in the Circumstances

Even if actuarial or statistical data exists showing a risk to be greater than average as a result of a protected factor, this does not mean that all of the discriminatory strategies listed above are open to the insurer. Nor does it enable any other strategy that one may envisage. The conduct must still be "reasonable" having regard to the data and "all other relevant factors". The AHRC's "Guidelines for providers of insurance and superannuation under the Disability Discrimination Act 1992 (Cth) 2016[47]" is instructive as to the intended meaning of "all other relevant factors":

> The Federal Court has stated that a 'relevant' factor would include '[a]ny matter which is rationally capable of bearing upon whether the discrimination is reasonable'. This includes factors that may increase the risk to the insurer as well as those that may reduce it.
>
> The following are some examples [note - lots of detail is included in the guidance]
>    (a) Medical Opinions
>    (b) Relevant information about the particular individual seeking insurance
>    (c) Opinions from other professional groups
>    (d) Actuarial advice or opinion
>    (e) Practice of others in the insurance industry[48]
>    (f)  Commercial judgement[49]

Then in weighing reasonableness, again there is significant guidance available:

> A court assessing whether discrimination was reasonable for the purposes of s 46 is required to 'weigh the nature and extent of the discriminatory effect on the one hand against the reasons advanced in favour of the requirement or condition on the other'.

Matters taken into account include:

- practical and business considerations
- whether less discriminatory options were available
- the individual's particular circumstances
- all other relevant factors of the particular case
- the objects of the DDA, especially the object of eliminating disability discrimination as far as possible.

(a) Guidance as to what is not reasonable discrimination

It will not be reasonable and therefore will be unlawful under the DDA for a provider of insurance or superannuation to:

- refuse to insure a person with a disability simply because the provider does not have any data if it would otherwise be reasonable to provide insurance having regard to other relevant factors
- refuse to insure a person with a disability merely because of historical practice
- base decisions about insurance or superannuation on inaccurate assumptions or stereotypes of people with disability
- impute a disability merely from the fact that a person has consulted with a medical practitioner
- impute a disability merely from the fact that a person has failed to disclose to an insurer that they consulted with a medical practitioner
- impute a disability from information disclosed by a person if the person has not disclosed that they have a disability and the imputation is not supported by medical opinion.

It is particularly important that any assumptions which underpin the decision to discriminate are supported by reasonable evidence.

For example, while it may be reasonable to make certain assumptions if data reasonably links a particular type of disability with someone being predisposed to future complications or the possibility of secondary disabilities, it is not reasonable to assume, without evidence, that someone who is blind in one eye because of an injury is more likely than anyone else to become blind in the other eye.

For example, it is not reasonable to assume without evidence that people with one disability are more accident-prone and more likely to incur a workplace injury than coworkers without a disability, or that people with a disability are at greater risk of becoming unable to work.

For example, it is not reasonable to assume that someone who has in the past consulted a psychologist has an increased likelihood of suffering from a mental illness and to refuse insurance cover on that basis.

(b) Alternatives to refusing to provide any cover

...the Federal Magistrates Court and Federal Court in the Bassanelli case appear to have confirmed that:

- excluding cover for pre-existing conditions is an accepted part of insurance
- insurers should consider use of appropriately limited exclusion clauses as an alternative to denying cover
- it may be reasonable to charge a higher premium for cases which are reasonably assessed as presenting a higher risk or where risks are unusually difficult to determine
- this approach should also be considered before refusing cover
- it may be reasonable to defer a decision in order to seek further information on risks.

Practical guidance is then given for insurers to avoid unlawful discrimination:

To minimise the risk of unlawful discrimination, the Commission suggests that providers of insurance and superannuation:
- seek to ensure good communication with people who are insured or seeking insurance, so that information is brought out which might reduce or eliminate the need for a discriminatory decision
- before refusing to provide cover:
  - provide the opportunity to the applicant to either provide further information, including supporting medical documents, or withdraw the application
  - consider whether alternatives such as providing a policy with an appropriate exclusion clause, restricting the cover or imposing an additional premium would effectively manage any additional risk
- give reasons to customers for decisions, as clear communication about concerns and about reasons for decisions may help to avoid unlawful discrimination, and also avoid complaints resulting from misunderstandings about justifiable decisions
- when non-standard terms or higher premiums are applied this might also include:
  - advice about how long the non-standard terms or higher premiums

> would apply
>   - ○ any criteria that would need to be satisfied to have the policy 'standardised'
>   - ○ the process for removing or amending the non-standard terms or higher premiums
> - ● ensure that applications for insurance that reveal a mental health condition or symptoms of a mental health condition are not automatically declined
> - ● refer applications for insurance that reveal a mental health condition or symptoms of a mental health condition to an appropriately qualified underwriter.

In our view, actuaries should also consider the following, in addition to and in light of the guidance above:

### 3.4.1. Reliance on Medical or Other Professional Opinion

It is common for insurers to seek the opinion of professionals, notably medical professionals, either at underwriting, product design or at claims time. In doing so, the evidence of that individual opinion is to be weighed against any other evidence available, for example via any analysis of actuarial and statistical data available.

In general, we suggest that an expert opinion about a particular risk characteristic for an individual being insured (for example following a medical exam as part of an underwriting process) and the translation of that opinion into underwriting criteria, would be more relevant and should be weighted more strongly than aggregate statistical data about the expected risks of the condition in the general population.

Reliance on such an opinion can increase uncertainty, recognising the potential for disagreement amongst professionals, particularly for a medical condition which may have fluctuating symptoms or which is otherwise difficult to diagnose.

Similarly, co-morbidity of risks based on professional opinions and/or statistics can be taken into account as part of the underwriting and risk assessment process. This assessment should be documented to support any premium loadings, policy conditions or exclusions or declining of cover for an individual.

### 3.4.2. Discriminate in The Least Harmful Manner

The guidance above is clear regarding the manner of discrimination - even if an insurer may discriminate, it should seek to use the least harmful discriminatory practice in doing so. This implies that blanket exclusion clauses and broad reaching practices such as denial of all cover should not be the default practice. Instead, where discrimination is

necessary to manage the increased risk presented, insurers should look to discriminate by way of:

- a tight, narrow exclusion clause,
- specific policy option, or
- premium loading

Insurers should communicate such situations clearly to customers and seek to minimise the effect it may have using things such as time limits or regular review, to ensure the discrimination only occurs to the extent necessary to manage the heightened risk.

### 3.4.3. Considerations on Adverse Selection and Affordability

A key challenge in insurance is the balance between selection risks and affordability. It is generally accepted that when selection effects become too strong, products may become unaffordable or unattractive to the majority and, at the extreme, a market can fail.

Many products are sold at relatively low cost, using automatic acceptance rules based on specified data and no bespoke underwriting. In such cases, there is a careful balance that needs to be struck between the economic desire for a simple, low cost product, and for coverage and price to be suitably tailored to an individual's unique circumstances, supported by appropriate evidence.

Broad brush exclusion clauses or denial of cover to individuals may have been historically argued as appropriate in circumstances where a more complicated insurance design and process would be administratively expensive. Community expectations may now negatively view such practices, and practices may need to evolve, particularly where there is no clear alternative product in the market, or where the administrative costs of a less harmful practice are not significant, or the anti-selection risk for an insurer is not viewed as high. Clearly, this is something that the company must make a judgement on but should be mindful of compliance with the discrimination legislation and evolving community expectations.

Discriminatory practices such as those outlined above, together with disclosure obligations, are an important control against such anti-selection effects. Any move to modify discriminatory practices should have regard to the insurer's risk appetite and any resulting anti-selection and moral hazard risk. The guidance offers this consideration under the "practical and business considerations" allowance.

There are two types of selection effects commonly considered:

a. Competitive. If one insurer uses a factor that is a risk differentiator any other insurer that does not do similarly can be at a competitive disadvantage
b. Individual. A customer may deliberately change their insurance buying behaviour based on the risk factor they are well aware of but that the insurer does not consider.

The individual selection (anti-selection) is a common reason for insurer actions that some may think of as unduly discriminatory. The common 13-month exclusion for suicide for individual life insurance products is an example of a provision protecting against anti-selection and moral hazard risks.

### 3.4.4. Pre-existing conditions (PECs)

The balance between selection and affordability is heightened particularly in relation to potentially opaque matters such as health and medical conditions.

Many life insurance products, and some general insurance products, are sold excluding claims arising as a result of pre-existing conditions (PECs). In some cases, these have been very broad and related to long periods of time when the medical condition was considered to "pre-exist". In some cases, clauses included references to causes of claim that were only indirectly related to the pre-existing condition. PECs have been a frequent subject of community debate, particularly where claims are denied on the basis of a PEC clause which may not have necessarily been seen as meeting community expectations.

Generally, PEC clauses are an additional form of defense against the adverse selection and moral hazard problems illustrated above, particularly for products sold in a standardised, low-cost manner and where a simplified form of underwriting at issue is used.

However, some recent cases have made it clear that reliance on PECs to deny a claim should demonstrate a clear link between the claim event and the excluded condition. For example, it would be inappropriate to deny a disability income claim due to cancer on the basis of an exclusion of certain mental health conditions under the policy. We note that it is unlikely that the available actuarial and statistical data would support co-morbidity off these types of risks.

Mental health conditions have been the focus of much discussion about potential discrimination (including suicide and self-harm), but the principles are no different for any type of disability. What is perhaps different about mental health, however, is the rapid change in social acceptance of relatively common conditions such as depression and anxiety disorders. This recent change exemplifies the need for actuaries to actively review any discriminatory terms in the light of new data or the changing environment and

consider tighter policy conditions and less broad exclusions, supportable by data when developing products.

### 3.4.5.  Materiality and Impact on the Business

Under the "practical and business considerations" allowance, the guidelines require assessing the impact on the business when considering whether or not to discriminate. If the impact is immaterial, discrimination may be seen as unreasonable, even if justifiable using actuarial or statistical data.

As an illustrative example, individuals with conditions such as post-traumatic stress disorder may have an increased likelihood of claiming on their travel insurance. However, these individuals could be much less likely to travel and hence buy travel insurance, in which case the additional exposure to the insurer would be limited, and thus have a negligible impact on profitability.

In such a case, it might not be considered appropriate to discriminate, even though there may be credible evidence that the risk is materially higher for a particular group of insureds.

It would be reasonable in circumstances like this for an insurer to monitor its experience and seek to impose a discriminatory condition when the materiality becomes too great - for example if exposures of this form significantly increase, or if there is material anti-selection in the portfolio.

In addition to underwriting performance, capital requirements may also be worthy of consideration, particularly if volatility increases as a result of not discriminating as part of the policy design.

In meeting the legislative requirements, it is helpful for an insurer to have examined the impacts of any discriminatory practices on the profitability and general financial viability of their company and used stress and scenario testing as part of this process. In order to justify discrimination, the impact should be able to be demonstrated as material - the threshold for which is a matter of judgement and should be considered in line with the company's risk appetite.

### 3.5. Specific Considerations for Direct Discrimination in Pricing

A common form of managing increased risk is through increased prices. This is one of the options available for an insurer if discrimination is allowable.

However, pricing is different from the other forms of discrimination considered in this paper. The other methods were binary options: a decision to impose a condition or not;

a decision to provide cover or not, etc. Pricing goes further than this - in that a decision is taken as to the *degree* of price discrimination imposed. Care needs to be taken to ensure that the degree of price discrimination is consistent with the provisions under the legislation.

### 3.5.1. Considerations in Claims Cost Modelling

A common task for many actuaries is to construct predictive models of claims cost for use in insurance pricing. The actuary will typically have access to a wide range of data attributes - some may be protected factors with an insurance exemption, such as age or sex.

It is generally considered poor practice to rely only on simple one-way analysis of each individual rating attribute in setting premiums. Rating attributes may be correlated or otherwise related in complex ways, which could distort such a simplistic analysis.

Instead it is common for multivariate analysis techniques to be utilised in pricing, particularly for general insurance. There are common challenges in multivariate analysis which require the judgement of the modeller. As a result, the same data may be used by two different actuaries to yield two different models of cost - and two different proposed rates for a protected attribute. In this case both models may be equally valid and appropriate to use.

To meet the provisions of the legislation, actuaries involved in such analysis should ensure that their modelling (and hence any direct use of it) is "reasonable having regard to the matter of the data and other relevant factors". Actuaries should carefully document their modelling assumptions in order that their models can be demonstrated to be reasonable, and hence relied upon under the insurance exemption clauses.

### 3.5.2. Considerations in Market Pricing

In setting market prices, an insurer may have regard to claims cost models but it may also be influenced by other matters such as the limitations of pricing delivery software or systems, growth ambitions in a new region, or by market forces such as the relative prices of competitor products. The legislation does appear to allow for commercial considerations of this nature, under the banner of "other relevant factors".

However, when performing such an action, actuaries should consider the expected profit margin impact of any discriminatory pricing strategy. It would appear unreasonable for an insurer to directly discriminate using a protected attribute in a manner which leads to large disparity in the expected profitability across a protected class in a portfolio.

## 3.6. Indirect Discrimination

Indirect discrimination is far more challenging than direct discrimination to conceptualise.

We should acknowledge that many datasets are likely to include data which is correlated, at least to some degree, with a protected attribute. It is generally understood that the removal of protected attributes from a dataset is no protection from discrimination, since many datasets can otherwise encode them within non-protected attributes (Pedreshi et al, 2008)[50]. Indeed, such "unawareness" procedures can be shown to make outcomes for protected classes worse than if the protected attributes had been retained in the data – at least in some circumstances (see Gradient Institute, 2018[51] for a worked example)

Given the richness and granularity of the data used in insurance pricing and underwriting, it is highly likely that one or more variables would be correlated, at least to some degree, with at least one protected attribute. The large number of protected attributes now covered under legislation exacerbates this fact.

Realistically, most insurance pricing algorithms or analysis of insurance data is likely to give rise to at least some form of indirect discrimination against at least some protected attribute, to at least some degree.

We note that there is nothing unique about insurance data in this regard. Any data set of sufficient granularity used for decisioning will be likely to contain similar features. This was a point made recently by the Actuaries Institute in response to the AHRC's "Human Rights and Technology" discussion paper.[52]

### 3.6.1. When is Indirect Discrimination Reasonable?

Given the complexity of this question, the academic community is still grappling with approaches to ensuring non-discrimination when protected data is not directly observable. This is not an insurance specific challenge.

However, pricing and underwriting criteria, set using data that may be correlated with protected attributes, may still be considered as reasonable in many circumstances. For example, if the data used can be argued to be directly related to risk in some intuitive manner, this could be a suitable argument to allow the use of the factor.

This is arguably supported in legislation, where indirect discriminatory practices are typically allowed when "reasonable". The VEOHRC "Victorian Discrimination Law, 2nd edition 2019" guidelines give some context as to the meaning of "reasonable" (p24):

The question of reasonableness is factual. In relation to Commonwealth discrimination law, the Federal Court of Australia stated:

As Wilcox J. held the test of reasonableness is less demanding than one of necessity, but more demanding than a test of convenience. We agree. The criterion is an objective one, which requires the court to weigh the nature and extent of the discriminatory effect, on the one hand, against the reasons advanced in favour of the requirement or condition on the other. All the circumstances of the case must be taken into account.

Section 9(3) of the Equal Opportunity Act is consistent with this approach. It sets out a number of factors to be considered in deciding reasonableness. In summary:

a.  the nature and the extent of the disadvantage caused
b.  whether the outcome is proportionate to what the respondent sought to achieve by imposing the requirement, condition or practice
c.  the costs of any alternative measures
d.  the respondent's financial circumstances
e.  whether reasonable adjustments or accommodation could be made to reduce the disadvantage caused.

The Explanatory Memorandum of the Equal Opportunity Bill 2010 clarifies that none of these factors in isolation will determine reasonableness. There may also be other relevant factors depending on the particular case (page 14).

### 3.6.2.  Challenges in Avoidance of Indirect Discrimination

Common multivariate analyses used by actuaries and insurers in pricing will seek to extract the "pure effect" of a rating factor, normalising for other population biases in the observed data. By construction, this avoids indirect discrimination by the use of direct discrimination - where this is allowed by an insurance exemption. If direct discrimination against that variable is also to be avoided, normalisation procedures can also be used (for example as outlined in Lindholm, Richman, Tsanakas and Wuthrich, 2020)[53].

Where the insurance exemption does not exist, data about protected attributes is generally not collected, especially where collection is restricted by privacy law. This means that correction procedures which require utilisation of a protected attribute are not available options, and indirect discrimination may remain.

As an illustrative example, consider the following:

- The engine size of a vehicle is frequently found to be a good predictor of car insurance claim costs. Partially, this is thought to be because bigger engines cost more to repair, partially, because more powerful cars can cause more damage to the things they hit. In either case there is a clear causal relationship to claims cost.
- It is also generally accepted that engine size is correlated with gender. Males tend to drive cars with bigger engines. This means engine size, if used in premium rating, might be said to cause indirect discrimination (in this case, against men)
- However, in the EU, where gender discrimination is prohibited in insurance rating, engine size is still commonly used as a rating attribute, and is allowable provided it can be shown to be a "true risk factor"[54]

In this situation use of the variable is generally considered reasonable on two grounds:

- it has a generally accepted direct relationship to risk, and
- engine size is not innate to the protected group itself: men can, if they choose, freely purchase a car with a small engine.

However, if we wanted to remove the gender bias imposed by the use of engine size, this requires us to first fit a multivariate model including gender, to remove the indirect effect driven by the engine size variable.

Whilst this would generally be possible for variables like gender which are commonly collected, most protected attributes are unobserved, which means that this sort of procedure is not possible.

This example demonstrates that throughout the pricing process, actuaries should consider holistically whether their pricing and underwriting algorithms could be defended as "reasonable in the circumstances", since they almost certainly contain some indirect bias against some unobserved protected class. This is a more generic problem for decision making algorithms, which is explored further in Section 4 below.

## 4. Actuaries Involved in Producing Decisioning Algorithms in Other Areas

Actuaries are increasingly involved in sectors outside the traditional financial service areas. Many actuaries find themselves involved in "data science", "AI" or related roles – producing decisioning algorithms using data, in a wide variety of contexts.

In traditional fields, the role of the actuary has also broadened as those industries have adopted more algorithmic decision making, "AI" and "data science".

Whatever the context, and however they are constructed, decisioning algorithms need to operate in line with discrimination law.

### 4.1. Direct Discrimination

Direct discrimination should usually be more straightforward to avoid. Removal of protected attributes and strong, obvious proxies from datasets is common practice, and seems adequate as a process to demonstrate care has been taken to avoid direct discrimination.

As noted above, whilst arguably required under laws prohibiting direct discrimination, this sort of practice has been criticised for some time as remaining vulnerable to indirect discrimination.

It may be argued that as long as the decision procedure itself is not directly discriminatory (i.e. if model scoring does not require the protected attribute), then the model training procedure may be adjusted with knowledge of the protected attribute with an aim of countering any risk of indirect discrimination. However, approaches vary and the literature is fast evolving, with (at least to our knowledge) no clear standards of "best practice".

A remaining risk of direct discrimination is a close proxy of a protected attribute available in the dataset which is not obvious, and where the protected attribute is not available to discover it. This is a well-known and previously studied problem in other contexts (Speicher et al, 2018)[55]. Approaches have recently been developed to attempt to remove such bias through approximate methods (Chen et al, 2019)[56]. However, such research is still in its infancy, and by its nature any approximate adjustment will be imprecise. In our view it is not realistic to remove such a risk entirely without collection of all protected attributes for all decisions, which is impractical and perhaps socially undesirable.

### 4.2. Indirect Discrimination

With the popularisation of "data science" and "AI", there has been a lot of energy recently put into research on fairness, ethics and discrimination, which grapples with

indirect discrimination and similar themes. However, there are many open research questions, and little agreement on fundamental standards or methods.

In many jurisdictions, there appears tacit acknowledgement that there needs to be some additional thought put into how discrimination law ought to operate in relation to model driven processes and "'AI". This can be seen in the form of recent and ongoing government enquiries and regulatory projects across the globe. Locally, for example, the recent publication by the AHRC touches on this issue.[57]

Given the developing environment, we can say little that is concrete. What follows is some high-level guidance for actuaries grappling with these emerging topics. As stated previously, we encourage actuaries to seek legal advice where they feel the operation of the law is unclear – this is certainly one such area.

### 4.2.1. Good Intent Is Not Enough

Indirect discrimination is subtle and often unintentional. One can have no intention or desire to discriminate, take care to remove all potential forms of discrimination, and still risk indirect discrimination of some form occurring as a result of a decision procedure. The legislation generally implies that lack of intent to discriminate is not a sufficient defense. Hence professionals should be creative and thorough in their use of risk management techniques to attempt to identify and remove potential risks of unintended indirect discrimination.

### 4.2.2. Accidental Association and Preferences

As noted previously, rich datasets are, by the very nature of their granularity, likely to include correlations of some degree with one or more protected attributes. Correlation with a protected attribute could be due to some historic, entrenched discrimination or disadvantage, in which case it represents an important opportunity for society to improve. However, it might also be due to the different preferences of different groups. Given the number of protected attributes now present in the legislation, it may also arise in a historic dataset due to chance.

A case of apparent indirect discrimination being found due to differential preferences can be seen in the famous examination of U.C. Berkley admissions (Bickel et al, 1975)[58]. In this case the alleged discrimination against women was found to be false, and once analysed accounting for preferences the discrimination was found, on average, to be slightly in favour of women. This represents a particular case of Simpson's Paradox – and an important theme to bear in mind when considering whether indirect discrimination exists or not. Conclusions might be model dependent.

### 4.2.3. Fairness, Harm and Incompatible Metrics

It has become relatively common in recent years for decisioning algorithms to be accused of discrimination. Usually, the alleged discrimination is indirect - rarely can someone point to the direct use of a protected attribute as a cause of discrimination.

If similar cases were brought forward in Australia today, it seems the company would have to rely on either an "unreasonable hardship" or a "reasonable in the circumstances" defense.

In most of the high-profile cases, a particular definition of harm or fairness is used to make the allegation. It is not always obvious that this is the correct way to interpret the data. For example, in the well-known COMPAS case there was genuine disagreement about the correct definition of harm to use.[59]

The research community has proven that there are unresolvable issues of compatibility between various theories of fairness or harm. In such situations, an organisation has to make a decision about how a tradeoff should be stuck between competing ideals – a challenging task but an unavoidable one. This is an issue explored by members of the ADWG previously (Dolman & Semenovich, 2019)[60].

From a practical perspective, an actuary should ensure that fairness has been considered and an appropriate mechanism to consider fairness, harm and tradeoffs exists and is used. This will give the organisation a considered argument under the "reasonable in the circumstances" provision if challenged – though does not guarantee its success.

## Appendix A: Legislation

**Federal**
Age Discrimination Act 2004:
https://www.legislation.gov.au/Details/C2020C00211

Disability Discrimination Act 1992:
https://www.legislation.gov.au/Details/C2018C00125

Racial Discrimination Act 1975:
https://www.legislation.gov.au/Details/C2016C00089

Sex Discrimination Act 1984:
https://www.legislation.gov.au/Details/C2018C00499


**NSW**
Anti-Discrimination Act 1977 No 48:
https://www.legislation.nsw.gov.au/#/view/act/1977/48

**VIC**
Equal Opportunity Act 2010:
https://content.legislation.vic.gov.au/sites/default/files/29c43705-c5ac-3ef7-9ca2-366392ee6f7e_10-16aa020%20authorised.pdf

**QLD**
Anti-Discrimination Act 1991:
https://www.legislation.qld.gov.au/view/html/inforce/current/act-1991-085

**ACT**
Discrimination Act 1991:
https://www.legislation.act.gov.au/a/1991-81/current/pdf/1991-81.pdf

**SA**
Equal Opportunity Act 1984:
https://www.legislation.sa.gov.au/LZ/C/A/EQUAL%20OPPORTUNITY%20ACT%201984/CURRENT/1984.95.AUTH.PDF

**WA**
Equal Opportunity Act 1984
https://www.legislation.wa.gov.au/legislation/statutes.nsf/main_mrtitle_305_homepage.html

**TAS**

Anti-Discrimination Act 1998

https://www.legislation.tas.gov.au/view/pdf/authorised/2019-05-08%202019-05-28/act-1998-046

**NT**

Anti-Discrimination Act 1992

https://legislation.nt.gov.au/Legislation/ANTIDISCRIMINATION-ACT-1992

## Appendix B: References and Notes

[1]https://www.humanrights.vic.gov.au/resources/fair-minded-cover/

[2]https://www.pc.gov.au/inquiries/current/mental-health/draft

[3]https://tech.humanrights.gov.au/

[4]https://www.industry.gov.au/data-and-publications/building-australias-artificial-intelligence-capability/ai-ethics-framework

[5]chris.dolman@iag.com.au

[6]https://www.un.org/en/universal-declaration-human-rights/

[7]https://www.humanrights.gov.au/education/human-rights-explained-fact-sheets

[8]https://www.legislation.gov.au/Details/C2019C00132 paragraphs 5, 6, 14

[9]https://content.legislation.vic.gov.au/sites/default/files/29c43705-c5ac-3ef7-9ca2-366392ee6f7e_10-16aa020%20authorised.pdf

[10]https://www.humanrights.gov.au/our-work/disability-rights/guidelines-providers-insurance-and-superannuation-under-disability

[11]such as comparing the treatment against what would have occurred to an otherwise identical individual if the protected attribute were different, and showing it to be worse

[12]VEOHRC "Victorian Discrimination Law" Second Edition, 2019, pp12-13

[13]https://www.humanrights.gov.au/quick-guide/12105

[14]https://www.legalaid.vic.gov.au/sites/www.legalaid.vic.gov.au/files/vla-ingram-v-qbe-insurance-case-note.docx

[15]https://www.legislation.gov.au/Details/C2018C00499 s7(B)(1) - (2)

[16]https://www.humanrights.gov.au/our-work/legal/federal-discrimination-law-2005-chapter-4-sex-discrimination-act#a4.3.3

[17]https://www.humanrights.gov.au/quick-guide/12099

[18]https://www.humanrights.gov.au/sites/default/files/AHRC_DDA_Guidelines_Insurance_Superannuation2016.pdf

[19]in s.37(4)-(5)

[20]Covered under "association with a child"

[21]Disability means: (a) total or partial loss of a bodily function; or  (b) the presence in the body of organisms that may cause disease; or  (c) total or partial loss of a part of the body; or  (d) malfunction of a part of the body, including—  (i) a mental or psychological disease or disorder; (ii) a condition or disorder that results in a person learning more slowly than people who do not have that condition or disorder; or  (e) malformation or disfigurement of a part of the body

[22]Noting the term "impairment" is used, rather than "disability", within the QLD Anti-Discrimination Act 1991

[23]Noting the term "impairment" is used, rather than "disability", within the WA Equal Opportunity Act 1984

[24]Family responsibilities of a person means the person's responsibilities to care for or support:

a) a dependent child of the person;

b) any other member of the person's immediate family who is in need of care or support

[25]Noting the term "Gender History" is used, rather than "Gender Identity", within the WA Equal Opportunity Act 1984.

[26]"Sexuality" is a protected class which includes transsexual status, but this appears less clear than in other jurisdictions.  The Act is currently being reviewed.

[27]Refers to publication on the "Fines Enforcement Registrar's Website"

[28]Published under section 66M of the Fines and Penalties (Recovery) Act 2001

[29]Note that WA uses the term "Family Status". "Family Status" is the status of being a relative of a particular person or having the status of being a particular relative. SA uses the term "Spouse or Partner" identity which is referring to who the person's current or former spouse or domestic partner is.

[30]"Spouse and Partner" identity is covered under the Equal Opportunity Act 1984 (SA)

[31]Referred to as "family status" - being a relative of a particular person or having the status of being a particular relative

[32]Industrial activity means any of the following:

a) being or not being a member of, or proposing or refusing to join, an industrial organisation;

b) participating in, not participating in, or proposing or refusing to participate in, a lawful activity organised or promoted by an industrial organisation

[33]Note a separate category of "employment activity" is also included in the legislation, which incorporates requests for information about or raising concerns about employment entitlements. For brevity we include that within this category

[34]Described as "trade union activity", within the QLD Anti-Discrimination Act 1991

[35]Note "expunged homosexual conviction" is a separate category - for brevity we include it here

[36]We include "spent conviction" in this category

[37]Parental status is the status of being a step-parent, surrogate parent, adoptive parent, guardian or foster parent, or being childless. Carer status is the status of having responsibility for the care of another person, whether or not that person is a dependent, other than in the course of paid employment, or not having this responsibility.

[38]Personal Association with Protected Status Person means any connection or cooperative link to a person who has one of the protected attributes listed in the legislation. This definition is not directly from any legislation, but is inferred.

[39]Political activity means engaging in, not engaging in, or refusing to engage in political activity.

Political belief or affiliation means holding or not holding a political belief or view.

[40]Note that "immigration status" is separated out - for brevity we have assumed that as part of "race"

[41]Note also this splits out "racial harassment" as a separate category

[42]We note that at the time of writing this has been the subject of (significant) debate, but no legislation has yet been passed

[43]The NSW legislation uses the term "ethno-religious background" within race discrimination which will admit some but perhaps not all religions

[44]Includes "religious appearance or dress" only

[45]In some legislation "intersex status" and similar is split out, we consider this combined here

[46]Includes "sexual harassment" as a specific separate category

[47]https://www.humanrights.gov.au/sites/default/files/AHRC_DDA_Guidelines_Insurance_Superannuation2016.pdf

[48]Noting this clause within the guideline, in this instance, refers to consideration of whether other insurers (with similar knowledge) are prepared to issue policies

[49]Note the example provided in the guidelines is with respect to fraudulent claims - including "clear evidence that a particular mental illness creates a higher propensity for fraud"

[50]Dino Pedreshi, Salvatore Ruggieri, and Franco Turini. 2008. Discrimination-aware data mining. In Proceedings of the 14th ACM SIGKDD international conference on Knowledge discovery and data mining (KDD '08). Association for Computing Machinery, New York, NY, USA, 560–568. DOI: https://doi.org/10.1145/1401890.1401959

[51]Gradient Institute, 2018. 'Ignorance Isn't Bliss' https://gradientinstitute.org/blog/2/

[52]https://actuaries.asn.au/Library/Submissions/2020/2020AHRC.pdf

[53]Lindholm, Mathias and Richman, Ronald and Tsanakas, Andreas and Wuthrich, Mario V., Discrimination-Free Insurance Pricing (January 16, 2020). Available at SSRN: https://ssrn.com/abstract=3520676 or http://dx.doi.org/10.2139/ssrn.3520676

[54]European Commission; Guidelines on the application of Council Directive 2004/113/EC to insurance, in the light of the judgment of the Court of Justice of the European Union in Case C-236/09 (Test-Achats)(2012/C 11/01) (paragraph 17)
https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012XC0113(01)&from=EN

[55]Speicher et al. "Potential for discrimination in online targeted advertising." FAT 2018-Conference on Fairness, Accountability, and Transparency. Vol. 81. 2018.
http://proceedings.mlr.press/v81/speicher18a/speicher18a.pdf

[56]Chen et al. "Fairness under unawareness: Assessing disparity when protected class is unobserved." Proceedings of the conference on fairness, accountability, and transparency. 2019. https://arxiv.org/abs/1811.11154

[57]https://tech.humanrights.gov.au/sites/default/files/2019-12/TechRights_2019_DiscussionPaper.pdf

[58]Bickel, P.J.; Hammel, E.A.; O'Connell, J.W. 'Sex Bias in Graduate Admissions: Data from Berkeley'. Science, 07 Feb 1975 : 398-404
https://science.sciencemag.org/content/187/4175/398

[59]https://www.washingtonpost.com/news/monkey-cage/wp/2016/10/17/can-an-algorithm-be-racist-our-analysis-is-more-cautious-than-propublicas/

[60]Dolman, C. & Semenovich, D. 'Algorithmic Fairness: Some Practical Considerations for Actuaries'. Actuaries Summit, 2019. https://actuaries.logicaldoc.cloud/download-ticket?ticketId=e548493a-31d4-4099-a572-6a4eeebf5d9b