

From: Leanne Cruden [<mailto:Leanne.Cruden@aigroup.com.au>]
Sent: Monday, 9 November 2015 2:53 PM
To: Chambers - Ross J
Cc: Dominic Macken
Subject: AM2014/305 - Redacted Affidavit of Dr Andrew Pratley

Dear Associate

I refer to the hearing of Dr Andrew Pratley's evidence in FWC Matter No. AM2014/305 last Thursday, 5 November 2015 and the request made by Ai Group on behalf of Dr Pratley that Table 1 appearing on page 57 of his affidavit affirmed on 3 November 2015 be treated as confidential.

During the hearing, Vice President Catanzariti requested that a redacted version of Dr Pratley's affidavit be filed with the Commission.

I now **attach** a redacted version of Dr Pratley's affidavit affirmed on 3 November 2015, which removes Table 1 on page 57 and replaces it with the words "Confidential Table 1 redacted". I confirm that Ai Group has no objection to this version being published on the award modernisation website.

Representatives of the SDA have been copied to this email.

Yours sincerely

Leanne Cruden
Senior Lawyer

Ai GROUP WORKPLACE LAWYERS



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Affidavit

No. AM2014/305

Fair Work Commission

2014 Four Yearly Review of Modern Awards – Penalty Rates

Re Application by: The Australian Industry Group

Affidavit of: Dr Andrew Pratley

Address: 25/52 – 54 Bay Street, Ultimo, New South Wales, 2007

Occupation: Statistical Consultant

Date: 3 November 2015

I, Andrew Pratley, of 25/52-54 Bay Street, Ultimo in the State of New South Wales, Statistical Consultant, affirm:

1. I am a Statistical Consultant and Director of a statistical consultancy company, Dr Andrew Pratley Pty Ltd. I am also an Adjunct Lecturer for the University of Sydney Business School. Exhibited to this affidavit and marked "AP-1" is a copy of my curriculum vitae.
2. I was retained by Ai Group Workplace Lawyers (AiGWL) to prepare a report commenting on a survey of employees from McDonald's and a survey of employees from Hungry Jack's conducted by Australian Survey Research Group Pty Ltd for AiGWL. Exhibited to this affidavit and marked "AP-2" is a copy of the amended retainer letter from AiGWL dated 21 August 2015.
3. Exhibited to this affidavit and marked "AP-3" is a copy of the report that I prepared pursuant to this retainer, initially dated 4 September 2015 and amended on 3 November 2015 (my **First Report**).
4. I have been provided with a copy of a report entitled "*Four Yearly Review of Modern Awards – Penalty Rates AM2014/305 Expert Opinion Report to Fair Work Commission*", authored by Helen Bartley of Bartley Consulting Pty Ltd and dated 26 October 2015 (the **Bartley Report**).
5. I have been requested by Ai Group Workplace Lawyers (AiGWL) to prepare a reply report to the Bartley Report. Exhibited to this affidavit and marked "AP-4" is a copy of the request letter from AiGWL dated 29 October 2015.
6. Exhibited to this affidavit and marked "AP-5" is a copy of the reply report that I prepared pursuant to that request (my **Second Report**).



Qualifications and Experience

7. I refer to paragraph 25 of the Bartley Report. I have qualifications and experience in the fields of market and social research, survey data collection and survey sampling. I set out my qualifications and experience on those matters below.

Market and Social Research

8. I am aware of the Australian Market and Social Research Society (**AMSRS**), a professional body for market and social researchers in Australia. I am not a member of the AMSRS. The AMSRS has a website (www.amsrs.com.au). On 2 November 2015, I accessed the website. The AMSRS defines "market and social research" on its website as:

Market and social research means the systematic investigation of the behaviour, needs, attitudes, opinions, motivations or other characteristics of a whole population or a particular part of a population, in order to provide objective, accurate and timely information to clients (government, commercial and not-for-profit organisations) about issues relevant to their activities, to support their decision-making processes.

(see www.amsrs.com.au/about/definition-of-market-and-social-research)

9. I have experience in undertaking market and social research arising from my PhD and my work as a Statistical Consultant.
10. From 2006 to 2012, I completed my PhD. My PhD thesis was entitled "*A templatised approach to the development of a contingent predictive model of team performance using partial least squares*". The aim of my thesis was to develop a method of predicting team success. As part of my thesis, I worked with teams of white-collar workers generally of less than 20 people. I worked on investigating the attitudes and opinions of the population comprising white-collar teams when completing my PhD.
11. Since 2012, I have worked as a Statistical Consultant. Since 2012, I have worked on at least 10 projects as a Statistical Consultant (through my own company), as well as overseeing at least a further 30 projects for The Loyalty Zone, an organisation that measures customer loyalty. The purpose of the projects was to investigate the attitudes and opinions of various populations. The purpose of my work as a Statistical Consultant on the 10 projects was to provide objective, accurate and timely information to clients about issues relevant to their activities and to support their decision making process.

Survey Design

12. I consider a population to be all elements (typically people) in a specified category.
13. Large populations are often difficult to capture information on. Sampling is used as the most common approach to understand characteristics of a population.

14. Survey design is a process of which sampling is a part.
15. I define "survey design" as the following series of steps and actions:
- (a) identifying the population (by which I mean identifying the people who are in the specified category);
 - (b) considering the sampling approach that will be taken (for example, random sampling or non-random sampling);
 - (c) designing the instrument to collect the data (for example, a survey to collect data, an interview script or a series of questions for a focus group);
 - (d) developing and testing of the instrument (for example, in the case of a survey, formulating the questions in the instrument and taking steps to check that a survey participant can answer the questions (such as checking that there are enough answer options and checking that the answer options are correct and not overlapping));
 - (e) developing the method of data collection (for example, in most cases, purchasing "off-the-shelf" software to collect data);
 - (f) collecting the data;
 - (g) checking and validating the data (that is, looking for any errors or problems that may have arisen during the data collection phase);
 - (h) summarising the data (that is, producing a summary of the results across the survey; for example, the number of people sampled who gave a particular response to a particular question);
 - (i) analysing the data (assessing the data against criteria);
 - (j) reporting the results; and
 - (k) undertaking further work and validation (for example, if the analysis and reporting of the data highlighted information that was new, unique or unexpected, the results should be validated (that is, new data collected) to ensure that that the new, unique or unexpected data is not the result of an error or a chance outcome).
16. I have experience in survey design arising from my PhD and my work as a Statistical Consultant.
17. From 2006 to 2012, I completed my PhD. I developed questionnaires for teams of white-collar workers generally of less than 20 people. I administered the questionnaires to the teams. I obtained statistically valid and reliable data from the questionnaires. In the work conducted for my PhD, I undertook all the parts of survey design that I set out at paragraph 15 above.

18. Since 2012, I have worked on a continuous basis as a Statistical Consultant. During this period, I have worked on at least 10 projects as a Statistical Consultant (through my own company), as well as overseeing at least a further 30 projects for The Loyalty Zone, an organisation that measures customer loyalty. For the 10 projects conducted by my company, I undertook all of the steps referred to in paragraph 15 above.
19. In paragraph 15 of my First Report (Exhibit AP-3), I stated that I designed the survey used in my PhD research. In the particular context of paragraph 15 of my First Report, I used the term “survey design” to refer to having designed the instrument (see paragraph 15(c) above). However, in the work conducted for my PhD, I undertook all the parts of survey design that I set out at paragraph 15 above.
20. In paragraph 16 of my First Report, I stated that I was currently the statistician at The Loyalty Zone. I have been the statistician at The Loyalty Zone on a continuous basis since October 2014. In my role at The Loyalty Zone, part of my work involves reviewing market research design. In my role at The Loyalty Zone, I estimate that I have reviewed the market research design for 30 projects. I consider market research design and survey design to be similar. In my view, the same steps are undertaken in market research design and survey design. My work at The Loyalty Zone reviewing market research design has involved:
 - (a) reviewing interview scripts for the purpose of ensuring that the questions will elicit the information needed (see paragraph 15(c) above); and
 - (b) reviewing analysis conducted by employees of The Loyalty Zone to look for errors, to see whether the research design question has been answered effectively and to see whether the data makes sense and whether the results need to be validated (see paragraph 15(g) – (k) above).
21. In paragraph 18 of my First Report, I referred to teaching Quantitative Business Analytics and Quantitative Methods at the University of Sydney. I have taught those courses on six occasions over three years. Those courses include teaching business analysis to students in a level of detail that allow students to conduct a basic analysis themselves (see paragraph 15(i) above), although it is necessary to address at a general level each of the steps in paragraph 15 above in order to be able to conduct a basic analysis. Topics covered in those courses have included sampling data, organizing data, probability distributions, sampling distributions, confidence interval estimations, hypothesis testing and linear regressions.
22. In paragraph 19 of my First Report, I stated that I am self-employed as a special statistical analyst and conduct work that involves (amongst other things) designing surveys. In the context of paragraph 19 of my First Report, I used the term “designing surveys” to refer to

designing survey instruments (see paragraph 15(c) above). However, within my own consultancy I have performed all aspects of survey design set out at paragraph 15 above.

23. In addition to my teaching positions, I have guided a number of PhD research students on the design, collection and analysis of their surveys. This work is both within and outside of Australia.

Survey Data Collection

24. I consider "survey data collection" to refer to the process of acquiring information from a source in a form that can be analysed. For example, survey data collection could be as simple as obtaining hand written notes on paper, transcripts from an interview or an electronic data file if survey software has been used to capture survey data.
25. I also have experience in all three forms of data collection.
26. In paragraph 15 of my First Report, I stated that I collected the data in my PhD research. In that particular case, the data was collected via "pen and paper" surveys.
27. In paragraph 19 of my First Report, I stated that my work as a self-employed special statistical analyst involves (amongst other things) managing data collection. The work I have completed in my consultancy mainly involves electronic data collection. I have completed at least 10 projects in which I have managed data collection. In that context, "managing" data collection involved uploading the questions, checking there are no errors in the upload, and downloading the data.
28. I have collected transcripts of interviews as part of my work at The Loyalty Zone. I have also run focus groups as part of my work at The Loyalty Zone, which are either transcribed *in situ* or after the event.

Survey Sampling

29. Ms Bartley does not define in the Bartley Report what she means by "survey sampling" (as referenced at paragraph 25 of the Bartley Report).
30. I consider "survey sampling" to be the methodology of selecting a sample from the population (or the sampling frame). (I consider the sampling frame to be a part of the population to be sampled.)
31. At paragraph 15(b) above I refer to sampling approach as being a component of survey design. I consider the survey sampling to be a component of market and social research.
32. The objective of survey sampling is to have a representative group of the population. To have a representative group of the population, the sample should attempt to minimise sampling bias. One of the objectives of survey sampling is to ensure that there is no bias in the approach.

33. Bias can arise in any number of ways:
- (a) One way is for the method of data collection to involve sampling bias or non-response bias. Sampling bias occurs the sample does not reflect fairly the population. Non-response bias occurs if the persons who do not participate in the survey have different responses to persons who participated in the survey.
 - (b) Sampling bias may occur if data is collected from a sample in a way that some members of the sample are less likely to participate. For example – an online survey excludes people without computer access; setting the question degree of difficulty above the literacy level of a 14 year old may discourage 14 year olds from answering the questions. (I addressed some of these potential biases in paragraphs 64 to 71 of my First Report)
 - (c) Sampling bias may also occur if certain participants are over represented or underrepresented in the participation in the survey. Recently, a client of The Loyalty Zone sought a survey about its waxing products. The client provided a sample customer list which was used to conduct telephone interviews. The ratio of survey participants was 20% male and 80% female. However, upon inquiry, it was revealed the population of the client was 2% male and 98% female. Without rectification, the survey would have had a sampling bias.
 - (d) Non-response bias may (but not necessarily will) arise if the survey permits the answering of questions to be optional. If people choose not to respond, the survey may get biased answers if there was a systematic reason why that occurred.
34. One of the roles I have at The Loyalty Zone is to ensure appropriate survey sampling. In my work overseeing at least 30 projects for The Loyalty Zone, I have considered potential biases when reviewing the data analysis and reporting by employees of The Loyalty Zone. Where potential biases are identified I advise as to whether the bias should be corrected (and if so, the way in which the approach to sampling should be modified to correct the bias) or whether the bias should be accepted (and how this should be understood and addressed in the subsequent analysis of the survey data).
35. In my work as a Statistical Consultant on at least 10 projects, I have considered the potential biases as part of the steps of survey design (both in designing the survey instrument (see paragraph 15(c) above) and analysing the data and reporting the results (see paragraphs 15(i) and 15(j) above).

Affirmed by the deponent

at Sydney

in New South Wales

on 3 November 2015

Before me:



Signature of witness

DAVID BRAY

Name of witness

LEGAL PRACTITIONER NSW

Qualification of witness

) 
) Signature of deponent

)

)

)

IN THE FAIR WORK COMMISSION

Matter No.: AM2014/305

Re Application by: The Australian Industry Group

This is the Exhibit marked **AP-1** produced and shown to **Andrew Pratley** at the time of affirming his affidavit on 3 November 2015.

Before me:



Signature of witness



Name of witness

Australian Legal Practitioner

Curriculum Vitae of Dr Andrew Pratley

P.O. Box 362
Broadway NSW 2007

andrew@drandrewpratley.com
+61 438 623 077

ACADEMIC QUALIFICATIONS

Doctor of Philosophy in Management Statistics, University of New South Wales
Predicting Engineering Team Performance using Partial Least Squares
Masters of Commerce, Business Strategy, University of New South Wales
Bachelor of Manufacturing Engineering and Management, University of New South Wales
Bachelor of Science, University of New South Wales

ACADEMIC EXPERIENCE

2013 – **University of Sydney**
Adjunct Lecturer

Lecturer in Quantitative Business Analytics for 150 undergraduate business students. The course covers how to interpret data involving uncertainty and variability, modelling of business data to make correct inferences and insightful business decisions. This is a compulsory unit for undergraduate students from finance, accounting and marketing.

Lecturer in Quantitative Methods for Accounting for 200 postgraduate accounting students. The course covers applications of statistics to finance and accounting.

2011 – 2012 **University of New South Wales**
Associate Lecturer

Co-lectured Masters Level Applied Statistics for engineering disciplines with Dr. Erik van Voorthusen. Topics covered: Discrete and continuous distributions, Two sample comparisons, Multiple sample comparisons, Regression and statistical modelling.

Taught also: Engineering Design and Innovation, Mechanical Engineering Design

2008 **University of New South Wales, School of Mechanical and Manufacturing Engineering**
Casual Lecturer

Re-designed the 4th year design course for the manufacturing engineering students, incorporating the latest knowledge and critical thinking, including teaching AutoCAD. Final project was to design a 10,000m² based on a real data set. Students were to incorporate a range of systems as required by the data analysis.

PUBLICATIONS AND PRESENTATIONS

- Pratley, A. J., Van Voorthuysen, E., & Chan R. (2014). A step-by-step approach for modelling complex systems with Partial Least Squares, *Proc IMechE, Part B: J Engineering*, 227, 1-13.
- Botros, A., & Pratley, A. (2013). Communicate Before You Simulate: The Imperative of Cross-boundary Communication Training in Simulation Education, *SimTecT 2013 Papers Committee*, 59.

INDUSTRY EXPERIENCE

2013 – **Data Driven Decisions**
Director

Working with start-ups, SMEs and ASX100 companies to identify the best business opportunities based on their data, and implement measurable success. My clients include; Canon, Zurich, Cardno, Norman Disney & Young, The Loyalty Zone, Carpet Court, Jim's Mowing and neergy. All my work is grounded in best practice market research based on research from my PhD.

2012 – 2014 **Expressive Engineering**
Associate

Design and deliver advanced statistics and technical communication workshops to business clients including scientific centres and Fortune 500 companies. Advanced course covers ANOVA, MANOVA, and ANCOVA, SLR, MLR, and all associated non-parametric tests, in addition to various clustering techniques including FA, PCA, and PLS.

2006 – 2010 **Peter J. Ells & Associates**
Project engineer

Design engineer for Foxtel set top box refurbishment project winner Manufacturing Logistics Award (John Thompson Trophy) – Australian Supply Chain & Logistics Association of Australia. Projects worked on include the design of manufacturing facilities, distribution centres, risk management procedures and traffic flow analysis.

2005 – 2006 **BOC Gases**
Gas Loss Manager

Responsible for reducing gas losses by half, achieved almost complete reduction resulting in annual savings in excess of \$170,000. Developed and implemented revised systems to ensure compliance with Sarbanes Oxley (SOX). In addition, these systems ensured quality controls were in place. Completed project handover and trained the staff member which will take on the role of managing the new system.

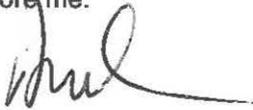
IN THE FAIR WORK COMMISSION

Matter No.: AM2014/305

Re Application by: The Australian Industry Group

This is the Exhibit marked **AP-2** produced and shown to **Andrew Pratley** at the time of affirming his affidavit on 3 November 2015.

Before me:



Signature of witness



Name of witness

Australian Legal Practitioner



Ai GROUP WORKPLACE LAWYERS

51 Walker Street
North Sydney NSW 2060
PO Box 94
North Sydney NSW 2059
Australia

Ai Group Legal Unit Trust ABN 68 671 268 671

AP-2

21 August 2015

PRIVILEGED AND CONFIDENTIAL

Dr Andrew Pratley
Adjunct Lecturer
University of Sydney Business School

By email: andrew@drandrewpratley.com

Dear Dr Pratley

Proposal for engagement as an expert witness in Fair Work Commission proceedings

1. Ai Group Workplace Lawyers (**AiGWL**) acts on behalf of the Australian Industry Group (**Ai Group**). Ai Group is representing employer parties covered by *the Fast Food Industry Award 2010* in the four yearly review of modern awards currently being conducted by the Fair Work Commission (the **Proceedings**).
2. AiGWL wishes to retain your services to provide an expert opinion in the Proceedings and to be cross-examined (if required).

Background

3. For the purpose of the Proceedings, AiGWL engaged Australian Survey Research Group Pty Ltd (**ASR**) to assist with the conduct of two online surveys.
4. The first survey was a survey of the employees of McDonald's Australia Limited (**McDonald's**), Hungry Jack's Pty Ltd (**Hungry Jack's**) and the employees of franchisees of McDonald's and Hungry Jack's (the **Fast Food Employee Survey**). The second survey was a survey of the franchisees of McDonald's (the **Fast Food Franchisee Survey**).
5. On 11 August 2015, AiGWL filed with the Fair Work Commission the following:
 - (a) In relation to the Fast Food Employee Survey:
 - (i) Affidavit of Patricia Ann Deasy affirmed 10 August 2015, which annexes a copy of the online survey and survey report prepared by ASR.
 - (ii) Affidavit of Marek Kopias affirmed 10 August 2015.
 - (iii) Affidavit of Gina Feast affirmed 10 August 2015.

[Paragraph text removed]

Scope of work

6. AiGWL wishes to retain your services to:
 - (a) prepare a report (the **Report**), which is proposed to be an annexure to an

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Ai Group Legal Pty Ltd, the trustee for Ai Group Legal Unit Trust, an incorporated legal practice under the Legal Profession Act 2004 (NSW) wholly owned by The Australian Industry Group t/a Ai Group Workplace Lawyers



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affidavit, to be filed with the Fair Work Commission in the Proceedings, by no later than Friday 28 August 2015; and

- (b) be available, and willing, to give evidence before the Fair Work Commission in the Proceedings on a date (or dates) within the period 12 to 30 October 2015 (inclusive) (with the precise day still to be determined).

In order to allow us to file your report and affidavit by Friday 28 August 2015, we will require you to provide us with a copy of your report by no later than **12:00 pm on Friday 28 August 2015**.

Report

7. Subject to paragraphs 9 and 10 below, the Report is required to set out your opinion in relation to the following matters for each of the Fast Food Employee Survey and the Fast Food Franchisee Survey:
 - (a) the representativeness of each data set;
 - (b) whether the number of respondents for each survey was adequate;
 - (c) whether the sample characteristics are representative of what is expected in the population, and if not, options to mitigate or improve the results;
 - (d) the need for and/or relevance of weighting of each of the data sets; and
 - (e) the confidence level of each data set.
8. Your opinion contained in the Report is to be based on your consideration of the information contained in the Affidavits and associated annexures to those Affidavits, set out at paragraph 5 above, as well as your qualifications, skills, training and experience. Copies of the Affidavits will be provided to you, should you accept the retainer for this matter. Two Affidavits contain confidential exhibits, which are not proposed to be provided. Should you require copies of those confidential exhibits, please write to AiGWL as a **matter of urgency** to request the confidential exhibits that you require.
9. If you are unable to provide an opinion in relation to any of the matters set out in paragraph 7 above due to the absence of information, please write to AiGWL as a **matter of urgency** with respect to the additional information you require in order to provide the opinion sought.
10. If there are other items which in your opinion would be desirable or necessary to provide an opinion on, in addition to those set out in paragraph 7, please write to AiGWL as a **matter of urgency** with respect to such items, setting out the proposed additional item(s) and the reasons why you consider it desirable or necessary to provide an opinion on them.
11. The Report is required to be prepared in accordance with the Federal Court of Australia *Practice Note CM7 – Expert Witnesses in Proceedings in the Federal Court of Australia* (the **Practice Note**), a copy of which is enclosed with this letter.
12. The Report is required to include a section that addresses your qualifications, skills, training and experience that enables you to provide your opinion.
13. The Report is required to include a section that records any assumptions that you

AP



Ai GROUP WORKPLACE LAWYERS

51 Walker Street
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have made. (To this end, you should assume that all of the matters in the Affidavits are accurate.)

14. The Report is required to include a section that identifies the facts or information upon which you base your opinion, including the paragraph numbers of the Affidavits or page numbers of associated annexures to those Affidavits.
15. The Report is required to include a statement that your opinion is wholly or substantially based on your specialised knowledge obtained from your qualifications, skills, training and experience.
16. The Report is required to include a statement that you have read the Practice Note and that you agree to be bound by it.
17. The Report is required to be marked "PRIVILEGED AND CONFIDENTIAL".
18. The Report is not to be disclosed to any party without the prior written consent of AiGWL.

Please confirm your acceptance (or otherwise) of this retainer to AiGWL, in writing, as a matter of urgency.

Yours Sincerely

Leanne Cruden
Senior Lawyer
Ai Group Workplace Lawyers

IN THE FAIR WORK COMMISSION

Matter No.: AM2014/305

Re Application by: The Australian Industry Group

This is the Exhibit marked **AP-3** produced and shown to **Andrew Pratley** at the time of affirming his affidavit on 3 November 2015.

Before me:



Signature of witness



Name of witness

Australian Legal Practitioner

PRIVILEGED AND CONFIDENTIAL

Amended Report prepared on behalf of Ai Group Workplace Lawyers

Ai Group Workplace Lawyers

Submission to Fair Work Commission

Your reference: LWR1400452

by

Dr Andrew Pratley

Adjunct Lecturer University of Sydney Business School – Discipline of Business
Analytics

Date of Issue **of Amended report:** **3 November 2015**

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Executive summary

- 1 At the request of Ai Group Workplace Lawyers, I have completed the following expert witness report to assess the representativeness of a survey of employees from McDonald's, a survey of employees from Hungry Jack's [paragraph text removed].
- 2 To complete the report I have made assumptions based on information provided to me. In addition I have made assumptions about the circumstances of the survey. I have made assumptions regarding the statistical analysis.

Assumptions are detailed in sections: 5.1, 6.1, 7.1, 8.1 and 9.1.

- 3 All assumptions are conservative.
- 4 The statistical analysis in this report cannot prove or disprove representativeness of the surveys that have been conducted.
- 5 The report is limited to assessing reasonableness of the approach. All conclusions are based on the reasonableness of approach.
- 6 My analysis concludes that based on the assumptions, the employee survey of McDonald's is representative of McDonald's employees with regard to reasonableness. The employee survey of Hungry Jack's is representative of Hungry Jack's employees with regard to reasonableness. [paragraph text removed]
- 7 From the information provided in the affidavits supplied by Ai Group Workplace Lawyers, I conclude that the employee survey of McDonald's and Hungry Jack's is representative of fast food industry employees with regard to reasonableness, except in the circumstances where questions specifically relate to hours outside that of standard trade within the fast food industry.

Standard hours of trade in the fast food industry are hours of operation less than 24/7.

Compliance with the Expert Witness Code of Conduct

- 8 I certify that I have read and understood Rule 31.23 and the *Expert Witness Code of Conduct* contained in Schedule 7 of the Uniform Civil Procedure Rules 2005 (NSW). I agree to be bound by the Code. To the best of my ability, this report has been prepared in accordance with the Code.

Sources of Information and References

- 9 Prior to the preparation of this report, Ai Group Workplace Lawyers provided me with sources of information listed below. References made to these sources will appear in this report as a parenthesised number corresponding to the list number below:

In relation to the Fast Food Employee Survey:

1. Affidavit of Patricia Ann Deasy affirmed 10 August 2015.
2. Affidavit of Marek Kopias affirmed 10 August 2015.
3. Affidavit of Gina Feast affirmed 10 August 2015.
4. [paragraph text removed]
5. [paragraph text removed]
6. [paragraph text removed]

In relation to other information:

7. Fast Food Environment Scan, 2014.
- 10 For the sake of completeness it should be noted that I have not visited Hungry Jack's, McDonald's or Australian Survey Research head office to inspect the equipment or data referred to in the affidavits.
- 11 In forming my opinions I have relied upon my formal education in statistics as furthered by my research, industrial experience and academic teaching positions as outlined in section 2.

1. Introduction

- 12 In a letter dated 21 August 2015 I received instructions from Ai Group Workplace Lawyers regarding a matter currently before the Fair Work Commission.
- 13 The instructions I received were: For [paragraph text removed] the Fast Food Employee Survey [paragraph text removed]
- (a) The representativeness of each data set.
 - (b) Whether the number of respondents for each survey was adequate.
 - (c) Whether the sample characteristics are representative of what is expected in the population, and if not, options to mitigate or improve the results.
 - (d) The need for and/or relevance of weighting of each of the data sets.
 - (e) The confidence level of each data set.

2. Qualifications of the Author Relevant to this Case

- 14 I hold the degrees of Bachelor of Engineering (Manufacturing), Bachelor of Science (Psychology) and Doctor of Philosophy from the University of New South Wales.
- 15 My PhD research was a statistical analysis of teams in organisations. The organisations were all Sydney based and were from the industries of manufacturing, pharmaceutical and medical devices. I designed the survey, collected the data, analysed the data and presented the results back to partners. This research program ran for approximately five years.
- 16 My professional experience covers 12 years in a variety of positions and environments. I have been employed in diverse roles including as consultant, analyst and statistician. I worked as a consultant at Expressive Engineering where I reviewed the data from clients and advised regarding approaches to improve experimental design. I worked as an analyst at Peter J. Ellis & Associates where I analysed data from manufacturing plants to make decisions about process improvements. I am currently the statistician at The Loyalty Zone where I review market research design and analysis of results.
- 17 My academic appointments span ten years in part-time and full-time capacities. I have taught subjects including masters level statistics, undergraduate statistics and engineering innovation and design at the University of New South Wales and the University of Sydney.

18 I currently teach Quantitative Business Analytics and Quantitative Methods for Accounting at the University of Sydney. My most recent appointment is an Adjunct Lecturer at the University of Sydney Business School – Discipline of Business Analytics.

19 I am now self-employed as a specialist statistical analyst. I conduct work designing surveys, managing data collection and analysing results. My work includes data collection and analysis both within and external to organisations.

3. Circumstances

20 From the information provided I understand the following facts to be correct:

21 Ai Group Workplace Lawyers acts on behalf of the Australian Industry Group.

22 Ai Group is representing employer parties covered by the Fast Food Industry Award 2010 in the four yearly review of modern awards.

23 This review is currently being conducted by the Fair Work Commission.

24 Ai Group Workplace Lawyers engaged Australian Survey Research Group Pty Ltd to assist with the conduct of two online surveys.

25 The first survey was conducted at McDonald's Australia Limited (McDonald's) and Hungry Jack's Pty Ltd (Hungry Jack's) with employees.

26 [paragraph text removed].

4. Overview of sampling

4.1 Terminology

27 A population refers to all the elements in a specified category.

28 The sampling frame is the part of the population to be sampled from.

29 A sample is a subset of a population.

30 A sample is collected from a sampling frame.

31 A sample is the actual data collected.

32 A survey encompasses the design, collection and analysis of data.

33 A questionnaire is the instrument used to collect data.

- 34 A confidence interval (expressed as a percentage) is the approximate proportion that similar intervals constructed will contain the true value of the parameter.

4.2 General concepts

- 35 Populations are generally very large. Examples of populations include: All Australian citizens, all employees of a specific industry and all staff members within an organisation.

- 36 A sampling frame may include the entire population or part thereof.

- 37 Samples are collected because it is often impossible to measure characteristics of populations.

- 38 All samples exclude some members of the population.

- 39 All samples will vary slightly.

- 40 For a sample to be representative the survey should not systematically exclude any sub group within the sampling frame.

- 41 All samples have a time restriction on collection.

- 42 This time restriction should be reasonable for the participants.

4.3 Approaches

- 43 Sampling can either be random sampling and non-random sampling.

- 44 Random sampling is almost always preferred over non-random sampling.

- 45 There are three approaches to random sampling.

- 46 Simple random sampling – each element in the population has equal chance of being selected.

- 47 Stratified random sampling – the population is divided into strata (e.g. age, income, location) and random samples are selected from each. Samples are often selected proportionally by strata.

- 48 Cluster sampling – a group within a population is selected then split into groups, or randomly sampled.

4.4 Organisations

- 49 There are many ways to sample from an organisation. The most commonly accepted method for data collection is to use an online questionnaire platform.

- 50 The most effective way to collect data via an online questionnaire platform is to contact people through electronic communication. This is most commonly completed using email.
- 51 A senior member of staff within the organisation would usually send out an electronic written request to complete the online questionnaire with a direct link to the online questionnaire platform.
- 52 The member of staff should also provide contact details for employees who have problems or difficulties completing the questionnaire.
- 53 This approach is an application of simple random sampling.

4.5 Industries

- 54 Sampling from industries is more difficult than organisations.
- 55 The accuracy of data regarding industries is less than the data of organisations.
- 56 Industries are often broadly defined and open to interpretation by individual organisations.
- 57 Small organisations are often hard to reach in industries.
- 58 If there is accurate information regarding all the organisations in industries, simple random sampling or stratified random sampling can be used.
- 59 If accurate information is not available on all organisations in industries, cluster sampling with grouping or random sampling is more appropriate.
- 60 When selecting a cluster, the cluster must be broadly representative of the industry. Representative can be inferred from relative size (employees) or market share.
- 61 A cluster may be one or more organisations.

5. Representativeness of each data set (a)

5.1 Assumptions

- 62 There are many assumptions that need to be considered when reviewing survey data.
- 63 Without any information to the contrary I have assumed that:
- 64 All employees [paragraph text removed] have working email addresses.

- 65 All employees [paragraph text removed] that were in the workplace during the time of the survey had access to a computer or similar electronic device so that they could complete the survey.
- 66 All employees [paragraph text removed] have sufficient English language skills to understand the questions asked.
- 67 All employees [paragraph text removed] were either competent enough to navigate to the online questionnaire platform, or were assisted if requested.
- 68 There were no threats to employees [paragraph text removed] if the survey was not completed.
- 69 There was no major industrial action that might interrupt the normal workplace.
- 70 There were no natural disasters that impacted on one or more groups of employees [paragraph text removed].
- 71 There were no significant factors that reduced or excluded participation by any one group of employees [paragraph text removed]. A group can be defined by age, gender, location, ethnicity or other factor.

5.2 McDonald's employee survey

- 72 The following conclusions are drawn based on the evidence in affidavit (1) – Affidavit of Patricia Ann Deasy affirmed 10 August 2015 and affidavit (2) – Affidavit of Marek Kopias affirmed 10 August 2015.

5.2.1 Review of the approach to data collection

- 73 McDonald's conducted the initial collection of data between 26th June 2015 and 19th July 2015.
- 74 McDonald's conducted further data collection between 24th July 2015 and 27th July 2015.
- 75 The electronic communication was sent to members of staff directly through the McDonald's internal email system.
- 76 This email reached 101,028 employees. By the time the survey closed 101,201 staff had access to the survey.

5.2.2 Review of the data

- 77 From the 101,028 employees, 26,665 completed responses were received.

5.2.3 Conclusions about representativeness

78 Based on the design of the survey and the implementation by McDonald's, I conclude that the data is representative of the population of employees in McDonald's with regard to reasonableness.

This view is formed based on sections 4.1 – 4.4, 5.1 and paragraphs 72 – 77.

5.3 Hungry Jack's employee survey

79 The following conclusions are drawn based on the evidence in affidavit (1) – Affidavit of Patricia Ann Deasy affirmed 10 August 2015 and affidavit (3) – Affidavit of Gina Feast affirmed 10 August 2015.

5.3.1 Review of the approach to data collection

80 Hungry Jack's conducted the initial collection of data between 23rd June 2015 and 14th July 2015.

81 McDonald's conducted further data collection between 23rd July 2015 and 27th July 2015.

82 The electronic communication was sent to members of staff directly through the Hungry Jack's internal email system.

83 This email reached 13,563 employees. By the time the survey closed 13,564 staff had access to the survey.

5.3.2 Review of the data

84 From the 13,564 employees, 1,123 completed responses were received.

5.3.3 Conclusions about representativeness

85 Based on the design of the survey and the implementation by Hungry Jack's, I conclude that the data is representative of the population of employees in Hungry Jack's with regard to reasonableness.

This view is formed based on sections 4.1 – 4.4, 5.1 and paragraphs 79 – 84.

5.4 [heading removed]

86 [paragraph text removed].

5.4.1 [subheading removed]

87 [paragraph text removed].

88 [paragraph text removed].

89 [paragraph text removed].

90 [paragraph text removed].

5.4.2 [subheading removed]

91 [paragraph text removed].

5.4.3 [subheading removed]

92 [paragraph text removed].

5.5 Employee survey of the fast food industry

93 The following conclusions are drawn based on the evidence in affidavit (1) – Affidavit of Patricia Ann Deasy affirmed 10 August 2015, affidavit (2) – Affidavit of Marek Kopias affirmed 10 August 2015, affidavit (3) – Affidavit of Gina Feast affirmed 10 August 2015 and (6) Fast Food Environmental Scan 2014.

5.5.1 Review of the approach to data collection

94 The fast food industry is comprised of a relatively small number of franchisees with a large number of stores and a large number of independent businesses with a small number of stores.

95 There are approximately 24,600 fast food establishments across Australia employing approximately 214,265 people.

96 McDonald's and Hungry Jack's combined account for approximately 114,765 employees across less than 1,500 stores.

97 The remaining 100,000 employees in the fast food industry are spread across over 23,000 establishments. This is an average of approximately 4 employees per store.

98 Conducting a simple random sample on the size of the fast food industry would be very time consuming and expensive.

99 Stratified random sampling would not be as time consuming and expensive.

100 Cluster sampling is the most appropriate approach to sampling the fast food industry.

"Cluster sampling is particularly useful when it is difficult or costly to develop a complete list of the population members (making it difficult and costly to generate a simple random sample). It is also useful whenever the population elements are widely dispersed geographically."¹

This view is formed based on paragraphs 95 – 99.

101 As McDonald's and Hungry Jack's account for more than 50% of the staff employed nationally they provide a reasonable cluster.

"...intuition, which tells that the larger the sample size is, the more accurate we can expect the sample estimates to be."²

The conclusion with regard to reasonableness of a cluster is drawn from paragraphs: 38, 40, 44, 48, 59, 60 and 61.

102 Data was collected from McDonald's and Hungry Jack's during the period 23rd June 2015 to 27th July 2015.

103 Employees in both organisations were provided with the opportunity to participate via the online questionnaire platform.

5.5.2 Review of the data

104 From the 114,765 employees, 27,788 completed responses were received.

5.5.3 Conclusions about representativeness

105 Based on the design of the survey and the implementation by McDonald' and Hungry Jack's, I conclude that the data is representative of the population of fast food employees with regard to reasonableness.

This view is formed based on sections 4.1 – 4.5 and 5.1.

5.5.4 Limitations

106 A number of McDonald's stores operate 24/7. Where questions in the employee survey specifically relate to working hours outside of normal fast food trading hours, the conclusions will not have the same validity across the fast food industry as those questions which are independent of the working hours.

Normal trading hours is considered to be the same as standard trading hours.

¹ Selvanathan, E., Selvanathan, S., & Keller, G. (2014). *Business statistics*. 6th Ed. Cengage, Melbourne, p34.

² Selvanathan, E., Selvanathan, S., & Keller, G. (2014). *Business statistics*. 6th Ed. Cengage, Melbourne, p34.

6. Adequate number of respondents for each survey (b)

6.1 Assumptions

- 107 There is no statistical measure of an adequate sample size independent of the population.
- 108 Larger samples are more representative of the population.
- 109 Samples with a higher proportion of respondents are more representative of the population.
- 110 A sample of 100 items from a population of 10,000 is probably not better than a sample of 60 items from a population of 100.
- 111 Samples which are less than 50 may not be adequate.
- 112 Samples where conditions of statistical tests are not met may not be adequate.

6.2 McDonald's employee survey

- 113 From the 101,028 employees, 26,665 completed responses were received.
- 114 The number of completed responses is greater than 50.
- 115 The number of responses is adequate.

6.3 Hungry Jack's employee survey

- 116 From the 13,564 employees, 1,123 completed responses were received.
- 117 The number of completed responses is greater than 50.
- 118 The number of responses is adequate.

6.4 [heading removed]

- 119 [paragraph text removed].
- 120 [paragraph text removed].
- 121 [paragraph text removed].

6.5 Employee survey of the fast food industry

- 122 From the 114,765 employees, 27,788 completed responses were received.
- 123 The number of completed responses is greater than 50.

124 The number of responses is adequate.

7. Sample characteristics representative of the population (c)

7.1 Assumptions

125 Sample characteristics is inferred to mean the sample.

126 Samples are considered to representative if the approach does not exclude any sub group within the sampling frame.

127 Samples are considered representative if the small size is large enough to meet the requirements of the statistical tests applied to the sample.

7.2 McDonald's employee survey

128 Based on the design of the survey and the implementation by McDonald's, I conclude that the data is representative of the population of employees in McDonald's with regard to reasonableness.

This view is formed based on sections 4.1 – 4.4 and 5.1 – 5.2.

7.3 Hungry Jack's employee survey

129 Based on the design of the survey and the implementation by Hungry Jack's, I conclude that the data is representative of the population of employees in Hungry Jack's with regard to reasonableness.

This view is formed based on sections 4.1 – 4.4, 5.1 and 5.3.

7.4 [heading removed]

130 [paragraph text removed].

7.5 Employee survey of the fast food industry

131 Based on the design of the survey and the implementation by McDonald' and Hungry Jack's, I conclude that the data is representative of the population of fast food employees with regard to reasonableness.

This view is formed based on sections 4.1 – 4.5, 5.1 – 5.3 and 5.5.

132 A number of McDonald's stores operate 24/7. Where questions in the employee survey specifically relate to working hours outside of normal fast food trading hours, the conclusions

will not have the same validity across the fast food industry as those questions which are independent of the working hours.

Normal trading hours is considered to be the same as standard trading hours.

8. Weighting of each data set (d)

8.1 Assumptions

- 133 The decision to weight data sets should be made before analysis is conducted.
- 134 Weighting data sets will provide different results to unweighted data sets.
- 135 To weight data, more than one data set is required.
- 136 Weighting is subjective choice.
- 137 Weighting is usually conducted to overcome a specific issue in the data set.

8.2 Fast Food Employee Survey

- 138 The Fast Food Employee Survey is comprised of data from McDonald's and Hungry Jack's.
- 139 The approach to the survey at each organisation was deemed to representative based on reasonableness.
- 140 Both organisations had more than 50 respondents.
- 141 There is no need for weighting either data set.

This view is formed from sections 4.1 – 4.5, 5.1 – 5.3, 5.5 and 8.1.

8.3 [heading removed]

- 142 [paragraph text removed].

9. Confidence level of each data set (e)

9.1 Assumptions

- 143 Confidence level is inferred to mean confidence interval.
- 144 For proportional data the confidence interval is based on; the alpha level, the proportion that selected the option, the proportion that did not select the option and the sample size.

- 145 The formula for calculating confidence intervals on proportions is: $z_{\alpha/2} \times \sqrt{\frac{p(1-p)}{n}}$
- 146 Where $z_{\alpha/2}$ is the alpha level, p is the proportion of people that select the option, $(1-p)$ is the remaining proportion that did not select the option and n is the sample size.
- 147 The alpha level chosen is 0.05 which produces 95% confidence intervals.
- 148 This approach is based on the assumption the number of responses (n) multiplied by the proportion (p) is greater than 5, as well as the assumption the number of responses (n) multiplied by the one minus the proportion ($1 - p$) is greater than 5.
- 149 This assumption holds true for analysis conducted.
- 150 As each question has different proportions (p), each question would require an individual confidence interval to be calculated for each type of response.
- 151 A more general approach is to calculate an overall confidence interval for each survey using an alpha level of 0.05.
- 152 To calculate the overall confidence interval the total number of respondents will be used for each survey. The proportion selected will be 0.5. By selecting 0.5 this ensures that the confidence intervals will always be conservative, unless the response rate is 0.5.
- 153 Conservative means that the confidence interval is wider than it would be if an exact calculation was made.

9.2 McDonald's employee survey

- 154 For the McDonald's employee survey 26,665 completed responses were received.
- 155 The 95% confidence interval for when the proportion is 50% is equal to 0.60.
- 156 A question with a response of 0.5 can be interpreted as the 95% confidence interval is (0.4940,0.5060).

9.3 Hungry Jack's employee survey

- 157 For the Hungry Jack's employee survey 1,123 completed responses were received.
- 158 The 95% confidence interval for when the proportion is 50% is equal to 2.92.
- 159 A question with a response of 0.5 can be interpreted as the 95% confidence interval is (0.4708,0.5292).

9.4 [heading removed]

160 [paragraph text removed].

161 [paragraph text removed].

162 [paragraph text removed].

9.5 Employee survey of the fast food industry

163 For the fast food employee survey 27,778 completed responses were received.

164 The 95% confidence interval for when the proportion is 50% is equal to 0.59.

165 A question with a response of 0.5 can be interpreted as the 95% confidence interval is (0.4941,0.5059).

10. Conclusion

166 From the information provided in the affidavits supplied by Ai Group Workplace Lawyers I conclude that the employee survey of McDonald's is representative of McDonald's employees.

167 From the information provided in the affidavits supplied by Ai Group Workplace Lawyers I conclude that the employee survey of Hungry Jack's is representative of Hungry Jack's employees.

168 [paragraph text removed].

169 From the information provided in the affidavits supplied by Ai Group Workplace Lawyers I conclude that the employee survey of McDonald's and Hungry Jack's is representative of the fast food industry employees, except in the circumstances where questions specifically relate to hours outside that of standard trade within the fast food industry.

AP

IN THE FAIR WORK COMMISSION

Matter No.: AM2014/305

Re Application by: The Australian Industry Group

This is the Exhibit marked **AP-4** produced and shown to **Andrew Pratley** at the time of affirming his affidavit on 3 November 2015.

Before me:



Signature of witness



Name of witness

Australian Legal Practitioner



Ai GROUP WORKPLACE LAWYERS

51 Walker Street
North Sydney NSW 2060
PO Box 94
North Sydney NSW 2059
Australia

Ai Group Legal Unit Trust ABN 68 671 268 671

AP-4

29 October 2015

PRIVILEGED AND CONFIDENTIAL

Dr Andrew Pratley
Adjunct Lecturer
University of Sydney Business School

By email: andrew@drandrewpratley.com

Dear Dr Pratley

Proposal for engagement to prepare a reply report in Fair Work Commission proceedings

1. You have previously been retained, by letter of retainer dated 21 August 2015, on behalf of the Australian Industry Group (**Ai Group**) to provide expert opinion and to give evidence before the Fair Work Commission in the four yearly review of modern awards currently being conducted by it (the **Proceedings**).
2. Pursuant to that retainer you prepared a report dated 4 September 2015 for use in the Proceedings (your **First Report**), which was exhibited as Exhibit AP-3 to an affidavit affirmed by you on the same date (your **Affidavit**).
3. The Shop, Distributive and Allied Employees' Association (**SDA**) has now filed in the Proceedings an expert report authored by Ms Helen Bartley of Bartley Consulting Pty Ltd, titled "*Four Yearly Review of Modern Awards – Penalty Rates AM2014/305 Expert Opinion Report to Fair Work Commission*" and dated 26 October 2015 (the **Bartley Report**). The Bartley Report contains an opinion in relation to various matters contained in your Affidavit (including but not limited to your First Report).
4. A copy of the Bartley Report is enclosed with this letter. We also draw your attention to the letter of retainer given to Ms Bartley by the SDA, and a copy of Ms Bartley's curriculum vitae, which are attached to the Bartley Report.

Scope of work

5. Ai Group Workplace Lawyers (**AiGWL**) wishes for you to prepare a reply report to the Bartley Report (**Reply Report**), which is proposed to be an annexure to an affidavit, to be filed with the Fair Work Commission in the Proceedings, by no later than Tuesday, 3 November 2015.
6. The Reply Report is to set out your reply to the Bartley Report (including if relevant the attachments to the Bartley Report), based on your consideration of the contents of the Bartley Report as well as your qualifications, skills, training and experience. We request that the Reply Report indicates whether you agree or disagree with the opinions expressed by Ms Bartley and if you disagree, the basis upon which you hold differing views.
7. If you are unable to provide a reply in relation to any of the matters contained in the Bartley Report due to the absence of information, please write to AiGWL as a matter of urgency with respect to the additional information you require in order to provide the opinion sought.

T 1300 554 581

F 02 9466 5593

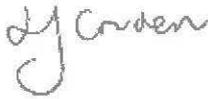
W www.aigroupworkplacelawyers.com.au

Reply Report

8. The Reply Report is required to be prepared in accordance with the Federal Court of Australia Practice Note CM7 – Expert Witnesses in Proceedings in the Federal Court of Australia (the **Practice Note**), a copy of which is enclosed with this letter.
9. The Reply Report is required to include a section that addresses your qualifications, skills, training and experience that enables you to provide your opinion.
10. The Reply Report is required to include a section that records any assumptions that you have made. For the purpose of your Reply Report, please assume that the first sentence in paragraph 12 of the Bartley Report is accurate.
11. The Reply Report is required to include a section that identifies the facts or information upon which you base your opinion, including the paragraph numbers of Bartley Report or page numbers of the annexures to the Bartley Report.
12. The Reply Report is required to include a statement that your opinion is wholly or substantially based on your specialised knowledge obtained from your qualifications, skills, training and experience.
13. The Reply Report is required to include a statement that you have read the Practice Note and that you agree to be bound by it.
14. The Reply Report is required to be marked “PRIVILEGED AND CONFIDENTIAL”.
15. The Reply Report is not to be disclosed to any party without the prior written consent of AiGWL.

Please confirm your acceptance (or otherwise) of this request to AiGWL, in writing, as a matter of urgency.

Yours sincerely



Leanne Cruden
Senior Lawyer
Ai Group Workplace Lawyers

IN THE FAIR WORK COMMISSION

Matter No.: AM2014/305

Re Application by: The Australian Industry Group

This is the Exhibit marked **AP-5** produced and shown to **Andrew Pratley** at the time of affirming his affidavit on 3 November 2015.

Before me:



Signature of witness



Name of witness

Australian Legal Practitioner

PRIVILEGED AND CONFIDENTIAL

Report prepared on behalf of Ai Group Workplace Lawyers

In response to the Bartley Report

Ai Group Workplace Lawyers

Submission to Fair Work Commission

Your reference: LWR1400452

by

Dr Andrew Pratley

Adjunct Lecturer, University of Sydney Business School – Discipline of Business Analytics

Date of Issue: 3rd November 2015

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Executive summary

- 1 At the request of Ai Group Workplace Lawyers, I have completed the following expert witness report in reply to Four Yearly Review of Modern Awards – Penalty Rates AM2014/305 2015 by Helen Bartley of Bartley Consulting Pty Ltd (Bartley Report).
- 2 The Bartley Report identified six areas of differing views with my original report;
 - i. Suitability of data collection method (Bartley Report paragraph 8 – 9). This is addressed in Section 4.2 of this report.
 - ii. Understanding of cluster sampling (Bartley Report paragraph 10 – 13). This is addressed in Section 4.3 of this report.
 - iii. The survey response/non-response rate (Bartley Report paragraph 14 – 16). This is addressed in Section 4.4 of this report.
 - iv. Sample size assumptions (Bartley Report paragraph 17 – 18). This is addressed in Section 4.6 this report.
 - v. Understanding of the relationship between a sample design and achieved sample (Bartley Report paragraph 19). This is addressed in Section 4.7 of this report.
 - vi. The purpose of weighting of data (Bartley Report paragraph 20 – 21). This is addressed in Section 4.8 of this report.
 - vii. Confidence intervals (Bartley Report paragraph 22 – 24). This is addressed in Section 4.9 of this report.
- 3 The Bartley Report states that because a non-probability (non-random) sampling approach was taken that the conclusions from the sample cannot be extended to either the:
 - i. The sampling frame – the organisations (paragraph 19).
 - ii. The population of the fast food industry (paragraph 12).
- 4 Based on reviewing the data (Section 4.5 of this report) it is my opinion that that the sampling approach has not resulted in bias in the data set.
- 5 By drawing this conclusion it is my opinion that the combined employee survey sample is representative to the sampling frame (McDonald's and Hungry Jack's).
- 6 It is my opinion that the sample is representative to major chains (greater than 50 stores) that operate 24/7 in the fast food industry.

- 7 It is my opinion that the sample is representative with regard to reasonableness to major chains that do not operate 24/7 in the food industry, except where questions specifically relate the 24/7 nature of the operation.
- 8 It is my opinion that the sample only has limited representativeness to the minor chains in the food industry. Minor chains do not operate in all states and are often a specific cuisine (e.g. Miss India, Mad Mex etc).
- 9 It is my opinion that the sample would have very limited representativeness of the independents in the food industry.
- 10 To complete the report I have made assumptions based on information provided to me. In addition I have made assumptions about the circumstances of the survey. I have made assumptions regarding the statistical analysis. All assumptions in this report are conservative.
- 11 The statistical analysis conducted in this report cannot prove or disprove representativeness of the survey that has been conducted.
- 12 The report is limited to assessing reasonableness of the approach. All conclusions are based on the reasonableness of approach.
- 13 My analysis concludes that based on the revised assumptions and additional analysis, the combined employee survey is representative of the sampling frame of McDonald's and Hungry Jack's.
- 14 My analysis concludes that based on the revised assumptions, additional analysis and additional information the combined employee survey is representative of major chains that operate 24/7.
- 15 My analysis concludes that based on the revised assumptions, additional analysis and additional information the combined employee survey is representative of major chains that do not operate 24/7 except where questions specifically relate the 24/7 nature of the operation.
- 16 It is my opinion that the survey only has limited representativeness to the minor chains in the food industry. Minor chains do not operate in all states and are often a specific cuisine (e.g. Miss India, Mad Mex etc).
- 17 It is my opinion that the survey would have very limited representativeness of the independents in the food industry.

Compliance with the Expert Witness Code of Conduct

- 18 I certify that I have read and understood Rule 31.23 and the *Expert Witness Code of Conduct* contained in Schedule 7 of the Uniform Civil Procedure Rules 2005 (NSW). I agree to be bound by the Code. To the best of my ability, this report has been prepared in accordance with the Code.

Sources of Information and References

- 19 Prior to the preparation of this report, Ai Group Workplace Lawyers provided me with sources of information listed below. References made to these sources will appear in this report as a parenthesised number corresponding to the list number below:

In relation to the Fast Food Employee Survey:

1. Affidavit of Patricia Ann Deasy affirmed 10 August 2015.
2. Affidavit of Marek Kopias affirmed 10 August 2015.
3. Affidavit of Gina Feast affirmed 10 August 2015.

In relation to other information:

4. Fast Food Environment Scan, 2014.
5. The Bartley Report 26 October 2015.
6. Food Industry Foresight – Fast Food in Australia 2013.

- 20 For the sake of completeness it should be noted that I have not visited Hungry Jack's, McDonald's or Australian Survey Research head office to inspect the equipment or data referred to in the affidavits.
- 21 In forming my opinions I have relied upon my formal education in statistics and survey design as furthered by my research, industrial experience and academic teaching positions as outlined in section 2.

1. Introduction

- 22 In a letter dated 29 October 2015 I received instructions from Ai Group Workplace Lawyers regarding a matter currently before the Fair Work Commission.
- 23 The instructions I received were for the Bartley Report specifically to set out:
- i. Whether I agree or disagree with the opinions expressed.
 - ii. If I disagree, the basis upon which I hold differing opinions.

2. Qualifications of the Author Relevant to this Case

- 24 I hold the degrees of Doctor of Philosophy, Bachelor of Science (Psychology) and Bachelor of Engineering (Manufacturing) from the University of New South Wales.
- 25 My PhD research was a statistical analysis of teams in organisations. The organisations were all Sydney based and were from the industries of manufacturing, pharmaceutical and medical devices. I designed the questionnaire, collected the data, analysed the data and presented the results back to partners. This research program ran for approximately five years.
- 26 The specific contribution to the body of knowledge of my research was a process for developing unique questionnaires for each organisation and team. In addition to this contribution, I also extended the statistical analysis technique of Partial Least Squares to small sample sizes. I have published on both of these topics.
- 27 My professional experience covers 12 years in a variety of positions and environments. I have been employed in diverse roles including as consultant, analyst and statistician. I worked as a consultant at Expressive Engineering where I reviewed the data from clients and advised regarding approaches to improve experimental design. I worked as an analyst at Peter J. Ellis & Associates where I analysed data from manufacturing plants to make decisions about process improvements. I am currently the statistician at The Loyalty Zone where I review market research design and analysis of results.
- 28 My current work at The Loyalty Zone encompasses all aspects of survey design from the initial framing of the research question, through to the data collection methodology and including the preparation and reporting of results. On most projects I act in an advisory capacity working with a team of analysts. I have also run my own projects independently.
- 29 My academic appointments span ten years in part-time and full-time capacities. I have taught subjects including masters level statistics, undergraduate statistics and engineering innovation and design at the University of New South Wales and the University of Sydney.

- 30 I currently teach Quantitative Business Analytics and Quantitative Methods for Accounting at the University of Sydney. My most recent appointment is an Adjunct Lecturer at the University of Sydney Business School – Discipline of Business Analytics.
- 31 In addition to my teaching positions, I have guided a number of PhD research students on the design, collection and analysis of their surveys. This work is both within and outside of Australia. I have travelled overseas as part of these projects.
- 32 I am now self-employed as a specialist statistical analyst and researcher. I conduct work designing instruments, managing data collection and analysing results. My work includes data collection and analysis both within and external to organisations.
- 33 I am a member of the Statistical Society of Australia and meet all the requirements for accreditation.

3. Assumptions

- 34 Ai Group Workplace Lawyers acts on behalf of the Australian Industry Group.
- 35 Ai Group is representing employer parties covered by the Fast Food Industry Award 2010 in the four yearly review of modern awards.
- 36 This review is currently being conducted by the Fair Work Commission.
- 37 Ai Group Workplace Lawyers engaged Australian Survey Research Group Pty Ltd (Australian Survey Research) to conduct an online survey of McDonald's and Hungry Jack's employees.
- 38 The survey was conducted separately at McDonald's Australia Limited (McDonald's) and Hungry Jack's Pty Ltd (Hungry Jack's) with their employees.
- 39 All statements in this report regarding statistical assumptions are always based on the assumption 'all other factors being held constant', unless specifically stated otherwise.
- 40 The first sentence of paragraph 12 of the Bartley report to be correct. "I understand the neither McDonald's nor Hungry Jack's organisations were selected by chance from a population of fast food franchise operators, using cluster sampling, or any other probability sampling technique."

4. Sampling

4.1 Summary of information to date

- 41 The population of approximately 214,265 employees in the fast food industry was identified from the Fast Food Environment Scan, 2014.
- 42 A summary of the approach was provided in my previous report (4th September). Briefly, Australian Survey Research was engaged by Ai Group Workplace Lawyers to conduct research on McDonald's and Hungry Jack's.
- 43 For the purpose of this report the sampling frame remains as McDonald's and Hungry Jack's.
- 44 An online questionnaire was sent out to all employees in both organisations. 20,635 completed responses were received from McDonald's and 944 completed responses were received from Hungry Jacks.

4.2 Suitability of data collection method

- 45 In the Bartley Report, Ms Bartley agreed that an online questionnaire is the most common approach when working with organisations (paragraph 8). Ms Bartley based this opinion on the online platform being the least expensive (paragraph 8).
- 46 Ms Bartley states in paragraph 8 that "This does not mean an online survey is methodologically the best method of ensuring a *representative sample* is achieved."
- 47 Ms Bartley follows this statement with "In fact, as evidenced by McDonald's and Hungry Jack's employee surveys, the response rates were 20% and 6% respectively, which in my opinion are low to very low, resulting in significant potential for non-response bias..." Ms Bartley refers to the potential non-response bias or low response rate in paragraph 15, 16, 19 & 20 of the Bartley Report.
- 48 I understand that Ms Bartley is basing her opinion for the sample not to be representative on the response rate.
- 49 I disagree with this opinion and will outline why I believe this is incorrect in section 4.5.
- 50 Ms Bartley quotes me in paragraph 9 and disagrees with my statement "Small organisations are often hard to reach in industries." Ms Bartley replies that "In my experience, it is usually easier to reach small organisations because they tend to be more clearly defined (e.g. have one address. One contact number and are more likely to belong to a single industry compared to a large complex organisation). On this basis it is generally easier to identify and reach the appropriate individual to participate in a survey."

- 51 I cannot comment on Ms Bartley's experience and instead draw reference to the facts as have been presented to me in this particular industry.
- 52 There are approximately 214,265 employees in the fast food industry spread across 24,600 locations. McDonald's and Hungry Jack's have approximately 114,943 employees spread across approximately 1,236 stores. That is to say, they employ over 50% of all staff in this industry in about 5% of the locations.
- 53 If you wanted to reach half of all the people that work in the fast food industry would it be easier to visit 1,236 locations or 23,364 locations? It is my opinion that it would be easier to choose the former not the latter.
- 54 If you wanted to find out the total number of employees in a geographic area (e.g. NSW) would it be easier to contact two companies or to contact every other organisation that sells fast food in NSW? It is my opinion it would be easier to contact two companies.
- 55 If you wanted to reach 1,000 randomly selected individuals in the population of the fast food industry, you would know that roughly half will work at either McDonald's or Hungry Jack's and the other half will work at one (or more) of the other organisations. Would it be easier to make two phone calls to reach approximately 500 of the randomly selected individuals (who you know will be working at McDonald's or Hungry Jack's) or the number of phone calls required to reach the other 500 randomly selected individuals?
- 56 Based on the above scenarios it is my opinion that small organisations are often hard to reach. Those small organisations that do not belong to an industry body may be very difficult to reach, even with extensive research.

4.3 Understanding of cluster sampling

- 57 In paragraph 11 Ms Bartley provides an overview of cluster sampling. I agree with this summary.
- 58 In my first report I assumed that McDonald's and Hungry Jack's had been chosen at random. As such, cluster sampling was an appropriate choice of reviewing the data.
- 59 On the basis of cluster sampling I drew conclusions with regard to the sampling frame (McDonald's and Hungry Jack's).
- 60 On the basis of cluster sampling, I also drew conclusions about the entire population.
- 61 In the Bartley report, paragraph 12 states that the assumptions for cluster sampling were not met.

62 As McDonald's and Hungry Jack's have not been chosen at random as assumed, the conclusions in the original report need to be revised. Later in the report I discuss my conclusions with regard to representativeness of the sampling frame and the population.

63 In paragraph 12 Ms Bartley states that based on the fact that because neither cluster sampling nor any other probability sampling approach was used to select the sampling frame that "It is not possible to draw any conclusions about the population of all fast food industry employees from data obtained from surveys of two deliberately selected organisations."

64 I disagree that it is not possible to draw *any conclusions* about the population of the fast food industry. In Section 5 of this report I address why I believe this to be the case.

4.3.1 Convenience sampling

65 Ms Bartley states that the method described is "...sometimes called convenience sampling." (paragraph 10) to describe the process covered in section 4.1

66 I do not agree that this approach is convenience sampling.

67 Convenience sampling is generally referred to as a sampling process where the items sampled are easily accessible and in close proximity to the researcher.¹

68 The most common example of convenience sampling is a researcher who stands in a shopping centre and only samples people that walk past them.

69 The key feature of convenience sampling is that no attempt is made to capture the entire sampling frame (in the case of the shopping centre).

70 Convenience sampling is open to bias as the researcher picks the people they wish to interview. It is possible they only select people who are smiling.

71 The purpose of the survey conducted by Australian Survey Research was to capture the views of all employees. This would be closer to a census than a convenience sample.

72 A convenience sample would have been for the researcher to attend one area and visit all the locations in the area for both McDonald's and Hungry Jack's, or possibly only one location.

73 I conclude that the survey undertaken was a non-probability census of McDonald's and Hungry Jack's.

¹ Lavrakas, P. J. (2008). *Encyclopaedia of survey research methods*. Sage Publications.

4.4 The survey response/non-response rate

- 74 In paragraphs 14 – 16 Ms Bartley calculates the response rate of the McDonald's and Hungry Jack's employee surveys to be 20% and 6% respectively. I calculate Hungry Jack's to be 6.9%.
- 75 In paragraph 14 Ms Bartley states "...the response rate was small to very small and could significantly affect the validity of any conclusions sought to be drawn about the populations of fast food industry employees from the responses received."
- 76 In paragraph 16 Ms Bartley reiterates the point regarding Hungry Jack's stating that "...the Hungry Jack's employee survey was only 6%. This is a very low response rate."
- 77 Ms Bartley does not supply a reference for the definition of "low" and "very low" response rates.
- 78 From paragraph 14 I understand that Ms Bartley believes the low to very low response "...could significantly affect the validity of the conclusions..." that is to say that there is a direct causal link between the response rate and the validity of the results.
- 79 This would imply that the non-response rate has reduced the representativeness of the sample.
- 80 In paragraph 19 Ms Bartley links the low response rate with the sample being biased. "Again, due to the low response rates to the surveys, the achieved samples may be biased and I cannot be confident that the samples are unbiased." Ms Bartley makes reference to bias in paragraph 18.
- 81 It is my understanding that from the information contained in paragraphs 14 – 19 Ms Bartley is presenting the case that the non-response rate is not representative of the population and this is due to the sample being biased (from the non-response rate) i.e. there is non-response bias. I disagree with this conclusion. In the following section I will outline why I believe there is no bias.

4.5 Bias

- 82 Ms Bartley refers to bias in paragraphs 18, 19 and 22 of the Bartley Report but does not define the term, or explain what bias is.
- 83 Bias is any form systematic error.
- 84 Bias reduces the representativeness of the sample.

85 Sampling bias occurs when the sample is collected in a way that the sample is likely to over represent some groups more than other groups.

86 Bias can only be measured when there is a population, or outcome that can be assessed.

87 Bias can often be corrected for by adjusting the weighting of the sample.

4.5.1 Self-selection bias

88 Self-selection bias is one of the types of sampling bias.

89 Self-selection bias occurs when one or more groups of individuals select themselves into the sample causing the sample to be biased.

90 Self-selection bias was observed when surveys were conducted via magazines and respondents had to mail in their responses. More recently, self-selection bias is a concern with internet polls.

91 The reason for concern of self-selection bias is twofold; firstly the researcher is not attempting to gain an understanding of the population, secondly those that respond are often highly motivated. This motivation may be due to a strong agreement or disagreement with the topic.

4.5.2 Non-response bias

92 Non-response bias is considered a sub part of self-selection bias.

93 Ms Bartley suggests in paragraph 19 that due to the non-response rate, "... the achieved samples may be biased and I cannot be confident that the samples are unbiased."

94 The mostly commonly cited example of non-response bias is The Literary Digest. In 1936 The Literary Digest mailed out approximately 10 million questionnaires of which 2.3 million were returned. Based on the data The Literary Digest predicted that the Republican candidate would win 370 of 531 electoral votes. The candidate won 8.

95 More modern examples include conducting a survey where part of the population either cannot answer or it is unlikely for them to answer. Calling teachers to determine workload might exclude those with high face-to-face contact hours.

96 Non-response bias assumes that there is a difference in one or more characteristics between those that choose to respond, and those that do not in terms of representativeness.

97 Non-response does not necessarily introduce bias.

98 The bias in non-response bias is not due to the fact that there is a level of non-response (or even the level itself), it is the underlying reason there is non-response.

- 99 Non-response bias assumes that those that didn't participate would have significantly altered the results.
- 100 It is entirely possible that a survey with a 95% response rate is more biased than a survey with a 5% response rate (e.g. the example of the teachers). More specifically there is no reason to assume that a low response rate indicates an underlying bias.
- 101 In the Bartley Report no evidence is presented of a specific reason for bias. The low response rate is discussed extensively (paragraph 8, 14, 15, 16, 19 & 20). There is no causal link between the response rate and one or more factors that would cause bias mentioned in any of these paragraphs.
- 102 Examples of non-response bias might include, but not be limited to: employees who respond are those who believe that participation is linked to bonuses, or, employees who respond might believe that their manager thinks they do not have enough work to do.
- 103 If either of the above examples were found to be true, then the fact that some people choose to respond, or choose not to respond would be of interest and likely to be cause of bias (once independently verified).
- 104 When non-response rate is raised, the alternative case is rarely considered. Is a non-response rate of 0% more accurate?
- 105 There are few instances of a 0% non-response rate outside of elections where voting is mandatory. There is evidence that when everyone is forced to provide a response not everyone wants to.
- 106 The Australian Electoral Commission² reported that in the 2010 federal election for the House of Representatives there was an informal voting rate of 5.55%. In a number of electorates this was over 10%. In one electorate this was over 14%. This means when constituents attended the polling booth up to 14% choose not to participate in the process to elect their local representative.
- 107 In surveys where participation is not compulsory the non-response rate is a reflection of external factors. These factors include availability, interest and incentives.
- 108 Recent research has called into question the assumed correlation between non-response rate and non-response bias.³⁴⁵

² Australian Electoral Commission (2011). *Analysis of Informal Voting – House of Representatives 2010 Federal Election*, Research Report Number 12, 29 March 2011.

³ Locke III, G. R., Schleck, C. D., Ziegenfuss, J. Y., Beebe, T. J., Zinsmeister, A. R., & Talley, N. J. (2013). A low response rate does not necessarily indicate non-response bias in gastroenterology survey research: a population-based study. *Journal of Public Health*, 21(1), 87-95.

⁴ Groves, R. M. (2006). Nonresponse rates and nonresponse bias in household surveys. *Public Opinion Quarterly*, 70(5), 646-675.

4.5.3 Assessing bias in the sample

- 109 From the information I have reviewed in the Affidavits (1 – 3) I have seen no evidence to link the response rate to bias.
- 110 One measure of bias would be a difference between the demographic data of the sample and the population of McDonald's and Hungry Jack's.
- 111 From the Affidavits of Marek Kopias, Gina Feast & Patricia Deasy there are two pieces of information that can be compared to assess bias between the sample and the population (of McDonald's and Hungry Jacks):
- i. The age of the employees
 - ii. The location of the employees
- 112 The age of employees is ordinal data. Ordinal data is data with an order on an arbitrary scale (the distance between the values is not constant).
- 113 Figure 1 is a plot of the cumulative percentage by sample age group compared to the population by age group.

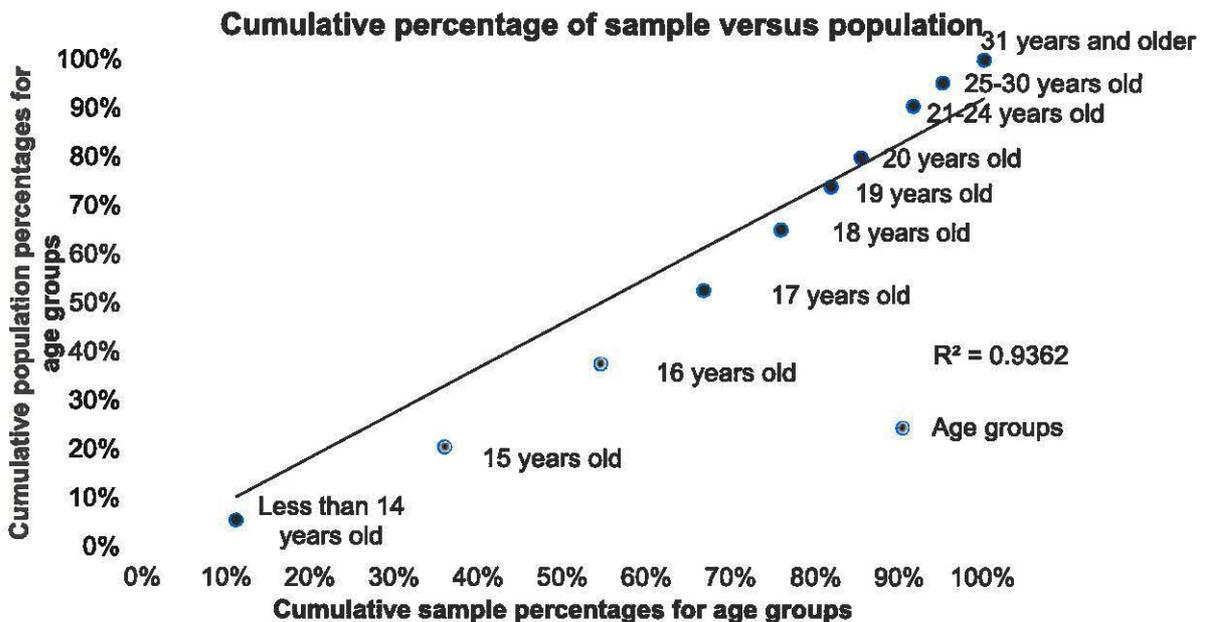


Figure 1: Cumulative percentage by of sample age group compared to the population by age group

⁵ Holbrook, A., Krosnick, J., & Pfent, A. (2007). The causes and consequences of response rates in surveys by the news media and government contractor survey research firms. *Advances in telephone survey methodology*, John Wiley & Sons, Inc, 499-528.

- 114 This plot in Figure 1 is based on a Q-Q plot. A Q-Q plot is a probability plot for comparing two distributions by plotting quantiles against each other. A Q-Q plot is graphical visualisation providing a view of properties such as location, scale and skewness. If two distributions are similar the Q-Q plot will lie approximately on the line $y = x$ (a straight line at 45 degrees, crossing the intercept at 0). Q-Q plots are also used to compare the distribution of a sample to a theoretical distribution.
- 115 Q-Q plots require interval or ratio data (data with distance e.g. counting the number of items 1, 2, 3, 4 etc).
- 116 The coefficient of determination r^2 or R^2 is a measure of how well the data fits a statistical model. In the context of prediction the coefficient of determination provides a measure of the total variation of outcomes explained by the model. The coefficient of determination is usually bounded by 0 and 1. Values of the coefficient of determination closer to 1 indicate a very close fit, values closer to zero indicate a poor fit.
- 117 In the case of the sample age and population age data, if all the percentages were exactly equal, the cumulative graph would lie on the line $y = x$. The coefficient of determination would be equal to 1.
- 118 From Figure 1, the coefficient of determination is 0.9362. This is a measure of how close the sample data fits the population data.
- 119 There are no specific rules regarding a 'good' or 'bad' coefficient of determination. Values about 0.9 are generally considered very good.
- 120 The location data is nominal data. That is the categories are separate, but there is no order.
- 121 With no order, nominal data cannot be plotted as a cumulative percentage sample vs population. All sample values for the number of locations are within +/- 4% of the population values.

4.5.4 Conclusion

- 122 Based on the data in Figure 1 and no specific evidence of bias within the sample, I conclude that the sample is representative of the population (McDonald's and Hungry Jack's).

4.6 Sample size assumptions

- 123 I believe that Ms Bartley and myself mostly agree on the sample size assumptions as set out in paragraphs 17 & 18. There has been some confusion in the wording, in both our reports.
- 124 When assumptions are not met, collecting more data does not necessarily improve the sample.

- 125 When assumptions are met, larger samples almost always tend to be more representative and produce narrow confidence intervals.
- 126 Inferences about a population can only be made when there is evidence that the sample is representative.
- 127 The purpose of sampling is to draw conclusions regarding the population.
- 128 One of the assumptions of many statistical tests is normality.
- 129 Normality can be tested for directly, or inferred through the central limit theorem.
- 130 The central limit theorem has a minimum sample size of approximately 30 – 50 to be considered true among other assumptions.

4.7 Relationship between sample design and achieved sample

- 131 Ms Bartley raises a number of different items in paragraph 19. As I understand the issue being discussed it is that “A well-designed sample ensures that bias is not introduced when planning a survey. However it does not guarantee that an unbiased sample will be achieved.” Reference is then made with regard to my original conclusions regarding extrapolating from the sample to the entire population of fast food employees.
- 132 In paragraph 19 Ms Bartley once again refers to the concept that due to a low response rate (paragraph 8, 14, 15, 16 & 20 stating she “...cannot be confident that the samples are unbiased.”
- 133 In paragraph 19 Ms Bartley also refers the concept of a minimal sample size. I cannot conclude whether she agrees, or disagrees with the idea of a minimum sample size, or what the size would be.
- 134 As with all aspects of statistics, anything is technically possible when we do not have all of the data available. The statement: “A well-designed sample ensures that bias is not introduced when planning a survey. However it does not guarantee that an unbiased sample will be achieved.” is theoretically true. The assumption here would be that somewhere in the process of collecting the sample bias has been introduced.
- 135 The default assumption is that if the process is well designed then you would assume there is no bias in the sample. Bias is a systematic error. It is entirely possible that a (small) sample may appear to be biased (e.g. over represented by one or more groups).

136 I disagree with Ms Bartley that "In each of the three surveys the survey non-response was large and possible differences between survey participants and non-respondents could affect the results." I form this conclusion from section 4.5.

137 I agree with Ms Bartley that based on the assumptions of the first report not being true that the sample cannot be generalised to the population without further investigation. I will address this later in the report (Section 4.10).

4.8 Weighting the data (sets)

138 Ms Bartley raises two points about weighting of data. The first point is to do with the size of the populations involved (paragraph 20). The second point is with regard to the response rate (paragraph 21).

139 Ms Bartley states in paragraph 20.1 that "The McDonald's population of employees is much larger than the Hungry Jack's employee population. This means that in pooling the results of the two surveys, they should be weighted to reflect the correct proportion from each organisation."

140 As I understand Ms Bartley is suggesting that because McDonald's is a larger organisation (101,028 compared to 13,564 for Hungry Jack's), their results should be weighted so that they have less impact on the results.

141 I cannot understand the reason for this suggestion. What would happen if the second organisation only had 100, 10 or even 1 person employed? Would you give equal weight to one person as 100,000? Ms Bartley does not propose a specific weighting, so I cannot elaborate any further on my view.

142 It is my professional opinion that weighting of data would be addressed and agreed to before conducting research, or in the event of a specific issue. I have seen no evidence of any specific issues.

143 In paragraph 21 Ms Bartley again refers to the non-response rate. I am not clear from paragraph 21 if Ms Bartley is concluding that because there are different response rates, the data should be weighted.

144 I disagree with both reasons for weighting the data. I form this opinion based on section 4.5 and the following information.

145 When conducting a census there is no logical reason to weight the data. If everyone was to respond, weighting the data would bias the results. This survey was conducted as a census with the opportunity for all employees to respond.

- 146 Referring back to the earlier example of voting in elections, using the idea of weighting data would suggest that those ballot boxes with a high rate of informal voting these boxes should be weighted. This would imply that the vote of one person is worth more than the vote of another person in the same electorate.
- 147 One of the most important tenets of statistical practice is not to adjust the analysis post-hoc (having seen the data). Once the data has been viewed, hindsight becomes obvious. There are specific tests that can be undertaken as a post-hoc analysis, weighting is not one of these.
- 148 If weighting were to be required this would have been determined at the design stage. One possible example where weighting may have been appropriate is if 100 employees of each company were to be randomly selected and interviewed. As the difference in population size is known before the start of data collection, weighting may have been conducted after the data is collected.

4.9 Confidence intervals

- 149 Ms Bartley discusses confidence intervals with regard to the franchisee survey. I have been informed that the McDonald's franchisee survey is no longer included in the updated retainer letter. Therefore I will not review aspects of the Bartley report that relate specifically to confidence intervals with regard to the McDonald's franchisee survey.
- 150 I have been unable to replicate the confidence interval Ms Bartley refers to in paragraph 23. Ms Bartley does not provide a formula for her calculation.

4.10 Conclusion of representativeness of the sample to sampling frame

- 151 Having reviewed the data a second time under the revised assumptions I conclude there is no evidence of bias in the sample.
- 152 I draw this conclusion based on the following evidence:
- i. Non-response does not necessarily introduce bias (section 4.5.2).
 - ii. I could find no underlying reasons for bias as outlined in the Bartley Report (section 4.5.2).
 - iii. Recent research has called into question the assumed correlation between non-response rate and non-response bias (section 4.5.2).
 - iv. When I reviewed the data of the sample age group compared to the population by age group I found a very strong linear relationship (section 4.5.3).

153 As a result of concluding there is no evidence of bias in the sample, it is my opinion that the sample is representative of the sampling frame with regard to reasonableness.

4.11 The population

154 The population is considered to be all employees in the fast food industry.

155 There are approximately 214,265 people employed in fast food establishments across Australia (4).

156 McDonald's and Hungry Jack's combined account for approximately 114,765 employees.

157 The Food Industry Foresight – Fast Food in Australia 2013 report identifies three main types of stores in the fast food industry; major chains (greater than 50 stores), minor chains (less than 50 stores, but greater than 15 stores) and independents (less than 15 stores).

158 Major chains could be further broken down into stores that operate (some stores) 24/7 and those that do not operate any stores 24/7.

159 Based on the Food Industry Foresight – Fast Food in Australia 2013 and my knowledge of the industry I believe there are four categories of stores:

- i. Major chains that operate (some stores) 24/7.
- ii. Major chains that do not operate any stores 24/7.
- iii. Minor chains.
- iv. Independents.

160 The data collected by Australian Survey Research is from organisations in group (i) – major chains that operate some stores 24/7.

161 Table 1 is an extract from the Food Industry Foresight – Fast Food in Australia 2013 showing the breakdown by state of the number of stores for each of the 17 chains with 50 or more stores.

Confidential Table 1 redacted

- 162 Table 2 is a summary of the data either provided or publically available regarding staffing numbers for the major chains.
- 163 Sources for each of the numbers are provided in the relevant footnotes.
- 164 Where numbers are missing this is due to information not being able to accessed through the public domain.
- 165 All numbers are conservative in their nature. Where there was uncertainty the most recent figures were used. In some cases these figures are from 2007.
- 166 Where data could be extrapolated from historical information to the current number of stores this was undertaken.
- 167 Data was available for Subway, McDonalds, KFC, Domino's Pizza, Red Rooster, Hungry Jacks, Pizza Hut, Oporto and Chicken Treat.
- 168 Due to the nature of the change in business of Eagle Boys Pizza over the past 12 months, data has not been included for Eagle Boys Pizza.

Table 2: Summary of number of employees

Company	Total number of employees
Subway	16,550 ^a
McDonald's	101,201 ^b
KFC	21,262 ^c
Domino's Pizza	9,000 ^d
Red Rooster	7,500 ^e
Hungry Jack's	13,564 ^f
Eagle Boys Pizza	
Pizza Hut	10,738 ^g
Nando's	
Oporto	4,000 ^h
Crust Gourmet Pizza	
Pizza Capers	
Sumo Salad	
Chicken Treat	2,500 ⁱ
Noodle Box	
Sushi Sushi	
Grill'd	
TOTAL	184,315

^a Subway employees calculated from a Franchise Business Australia article which reported that "more than 12,000 staff work in 1060 stores in Australia" producing an average of 11.3 employees per store. Using this ratio to the total stores number (1,462) = 16,550. Franchise Business (2008). "Subway: sandwich franchise celebrates 20 years in Oz" 14 November. Available at <http://www.franchisebusiness.com.au/case-study/subway-sandwich-franchise-celebrates-20-years-oz> Accessed 2 November 2015.

^b Affidavit.

^c In its letter to the Committee Secretary of the Senate Education, Employment and Workplace Relations Committee, entitled "Submission to the Senate Standing Committee on Education, Employment and Workplace Relations, Inquiry into the Fair Work Act 2008", dated 6 January 2009, the parent company of KFC and Pizza Hut, Yum!, confirms "Yum! Restaurants Australia Pty Limited and its franchisees employ approximately 32,000 people in two brands – KFC and Pizza Hut" <http://www.aph.gov.au/DocumentStore.ashx?id=8a520039-c02f-48d2-b8e1-87f4bb132879>. Current data calculated by extrapolating the ratio of stores at that time (590 KFC stores and 298 Pizza Hut stores) as found in Yum's corporate website, http://www.yum.com/investors/media/Top25MarketsYearEnd2009_1210.pdf Accessed 2 November 2015. As KFC and Pizza Hut now have a combined number of 908 stores, these staff numbers underestimate the true staff numbers.

^d Estimated using data from Domino's corporate website that "Domino's Pizza Enterprises now extends across six countries with more than 1500 stores, employing approximately 30,000 staff" Domino's (2015) "Domino's Corporate" <https://www.dominos.com.au/inside-dominos/corporate/> Accessed 2 November 2015.

^e Red Rooster employee number sourced from Red Rooster's corporate website. Red Rooster (2015) "Our Story" Available at <http://www.redrooster.com.au/redrooster-story>, Accessed 2 November 2015.

^f Affidavit.

^g In its "Submission to the Senate Standing Committee on Education, Employment and Workplace Relations, Inquiry into the Fair Work Act 2008", the parent company of KFC and Pizza Hut, Yum!, confirms 32,000 employees across KFC and Pizza Hut. <http://www.aph.gov.au/DocumentStore.ashx?id=8a520039-c02f-48d2-b8e1-87f4bb132879> Current data calculated by extrapolating the ratio of stores at that time (590 KFC stores and 298 Pizza Hut stores) as found in Yum's corporate website, http://www.yum.com/investors/media/Top25MarketsYearEnd2009_1210.pdf

^h In 2007, QSR purchased Oporto's 106 stores. Business News (2007) "Romano's Quick Service pays \$60m for NSW fast food chain" 18 July. <https://www.businessnews.com.au/article/Romanos-Quick-Service-pays-60m-for-NSW-fast-food-chain> accessed 2 November 2015. In this report it states there are 14,000 stores across company and franchise network (which previously included only Red Rooster and Chicken Treat). From earlier information Red Rooster current staffing numbers are estimated to be 7,500. The remaining 6,500 people are split between Oporto and Chicken Treat proportionally based on current store numbers. In 2007 QSR Holdings Pty Ltd had 540 stores between the three companies. There are now 590 stores. These staff numbers underestimate the true staff numbers at Oporto and Chicken Treat.

ⁱ As per previous footnote.

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- 169 No employee data was available in the public domain for Nando's, Crust Gourmet Pizza, Pizza Capers, Sumo Salad, Noodle Box, Sushi Sushi or Grill'd.
- 170 No investigation of employee numbers was undertaken of minor chains or independents.
- 171 Based on the data collected, the nine companies have approximately 184,315 employees. This represents approximately 86% of all employees in the fast food industry.
- 172 Given no evidence of bias, it is my opinion that the results of the survey would be representative to all other employees of organisations in the major chains that operate (some stores) 24/7.
- 173 It is my opinion that there a small difference between major chains that operate 24/7 and those that don't operate 24/7. A number of the stores that do not trade 24/7 operate extended (evening) trading hours over the weekend. I draw this conclusion based on the following information
- i. Some of the participants from the employee survey work in stores that are not 24/7 and therefore directly correlate to major chains that do not operate 24/7.
 - ii. The geographic distribution is similar among major chains that are 24/7 and not 24/7 based on Table 1.
 - iii. There is no evidence in any of the material presented of a specific difference between major chains that operate some stores 24/7 against those that operate non 24/7.
- 174 It is my opinion that the sample is representative with regard to reasonableness to major chains that do not operate 24/7 except where questions specifically relate the 24/7 nature of the operation. I draw this conclusion based on the above information.
- 175 It is my opinion that the survey only has limited representativeness to the minor chains. Minor chains do not operate in all states and are often a specific cuisine (e.g. Miss India, Mad Mex etc).
- 176 It is my opinion that the sample would have very limited representativeness of the independents.

5. Conclusion

- 177 From the information provided in the affidavits supplied by Ai Group Workplace Lawyers I conclude that the data in the sample is representative of the sampling frame (McDonald's and Hungry Jack's).

- 178 From the information provided in the affidavits and other documents I conclude that the sample is representative of major chains that operate (some stores) 24/7.
- 179 From the information provided in the affidavits and other documents I conclude that the sample is representative of major chains that operate no 24/7 except where questions specifically relate the 24/7 nature of the operation.
- 180 From the information provided in the affidavits and other documents I conclude that the sample only has limited representativeness to the minor chains.
- 181 From the information provided in the affidavits and other documents I conclude that the sample would have very limited representativeness of the independents.
- 182 From the information provided in the affidavits and other documents I conclude that the survey is representative of major chains that operate (some stores) 24/7.
- 183 From the information provided in the affidavits and other documents I conclude that the survey is representative of major chains that operate no 24/7 except where questions specifically relate the 24/7 nature of the operation.
- 184 From the information provided in the affidavits and other documents I conclude that the survey only has limited representativeness to the minor chains.
- 185 From the information provided in the affidavits and other documents I conclude that the survey would have very limited representativeness of the independents.
- 186 Based on these conclusions I respectfully disagree with the statement made by Ms Bartley in paragraph 12 that "It is not possible to draw any reliable conclusions about the population of all fast food employees from data obtained from the surveys of the two deliberately selected organisations."