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A Quantitative Research Report on:

**2014 HEATWAVE BUSINESS IMPACTS –  
SOCIAL RESEARCH**

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## Management Summary

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With a predicted increase in the frequency and severity of heatwaves that Melbourne will be exposed to in future years, understanding their impact on different parts of our community is important for the City of Melbourne.

The current study was developed to determine the **perceived impact** of the heatwave that occurred in Melbourne from 14 to 17 January 2014 on the **businesses** in the Melbourne municipality. The study is based on 601 telephone interviews with business owners or operators conducted approximately four to seven weeks after the January heatwave.

At a headline level...

- Six in ten (57%) businesses in the Melbourne municipality expect an increase in the frequency and severity of heatwaves in Melbourne **over the next 20 years** to negatively affect their businesses (vs. 7% that expect a positive impact); and
- Half of businesses (52%) are *very* or *fairly* concerned about the potential impacts on their businesses.

The majority of businesses report **perceived negative impacts** of the **four day heatwave** in terms of...

- The operational costs of air-conditioning and other cooling equipment (62%);
- The level of comfort for their workforce (59%); and
- The motivation and morale of their workforce (59%).

Between three and four in ten report perceived negative impacts of the heatwave on their business in terms of...

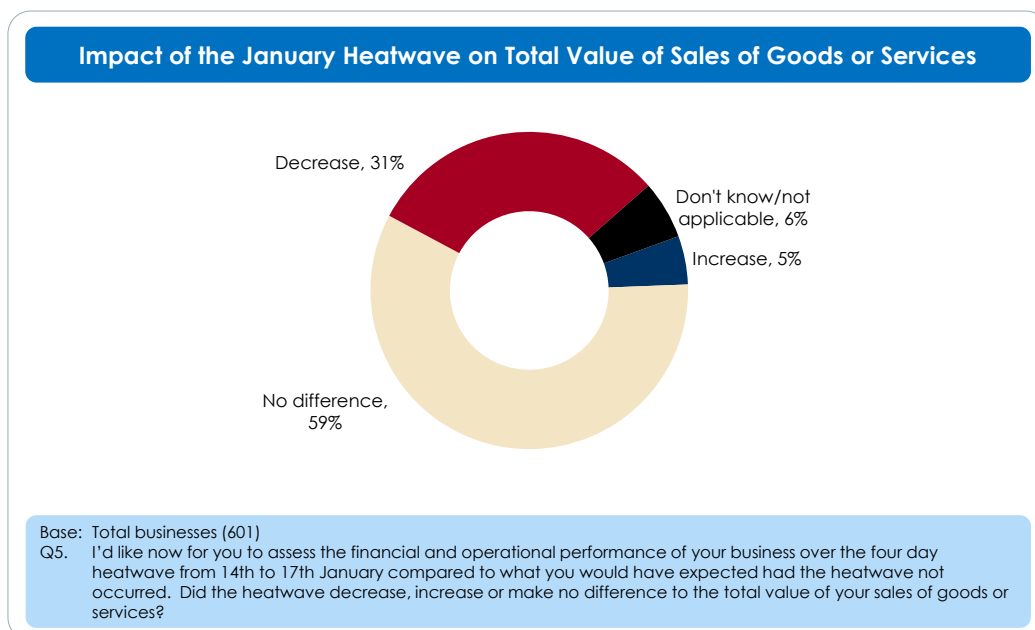
- The reliability of their workforce in terms of working hours and productivity (40%);
- The efficiency of their organisation's operations and processes (38%);
- The level of demand for their products and services (37%);
- The health and safety of their workforce (36%);
- The management time taken up by the heatwave issue (32%); and
- The operational performance of any equipment (32%).

One in fourteen businesses (7%) specifically mention that their air conditioning failed over the January heatwave.

Four in ten businesses recalled taking specifications or measures to help cope or adapt to the January heatwave. The most common actions taken to cope or adapt to the January heatwave were...

- Earlier start or finishing times (7% of total sample);
- Purchase of cold beverages and food (6%);
- Purchase of fans (5%); and
- Purchase of icy poles/ice creams (5%).

Almost a third of businesses in the Melbourne municipality reported a perceived negative impact of the January heatwave on **the value of their sales of goods or services**.



Negative impact on demand, sales value and profitability is particularly pronounced in the *Retail Trade* and *Accommodation, Food & Beverage* sectors (as well as in recently formed businesses).

Based on respondents' estimates of the impact of the January heatwave on their businesses, the study reveals an average **revenue decline of 9.7%** over the four day heatwave period (compared to what businesses would normally expect for this period). This decline is felt greatest among the *Retail Trade* sector which suffered an estimated decline of 21.9% in revenue.

In comparison, profitability is estimated to have declined 10.3% in the heatwave period.

The decline equates to an estimated **loss in revenue of \$37M** across the businesses in the Melbourne municipality.

## The Detailed Report

## Introduction

"By 2030 Melbourne is expected to likely be significantly affected by warmer temperatures and heatwaves, lower rainfall, intense storm events and flash flooding (CSIRO 2007). To minimise or avoid the effects of these impending impacts, effective and prompt adaptation is imperative..."

...While some climatic changes are an ongoing concern, four potential extreme event scenarios for Melbourne were identified that together embody the range of climate change risks for the municipality. These are...

- Reduced rainfall and drought;
- Extreme heatwave and bushfire;
- Intense rainfall and wind storm; and
- Sea level rise."

City of Melbourne Climate Change Adaption Strategy – June 2009

The January 2014 heatwave is an example of the kind of event Melbourne is expected to experience more frequently in the future. In order to understand, predict and prepare for the financial and operation impacts experienced by **businesses** as a result of heatwave events, City of Melbourne wished to gain an understanding of the impacts of such events when they happen.

City of Melbourne appointed Sweeney Research to undertake statistically significant social research to identify the financial and business impacts heatwaves have on the Melbourne business community. The research focusses on the impact of the heatwave from **14 to 17 January 2014** on Melbourne businesses. The findings from the research are extrapolated across the entire business community in the municipality of Melbourne.

### Existing Research

An Internet search for prior research that has been conducted in Australia or overseas uncovered an absence of research that focusses on the impact of heatwaves on business. The vast majority of available research relates to the impact of flood events and the health impacts of heatwaves on personal health.

In developing the approach and survey instrument for this research, the documents that were most informative include the following...

1. *'Climate Ready' BACLIAT: Business Areas Climate Impacts Assessment Tool – Environment Agency, UK (available from [www.environment-agency.gov.uk/research](http://www.environment-agency.gov.uk/research))*

This document provides a series of potential impacts on businesses in terms of markets, process, logistics, people, premises and finance (pp 12).

2. *'Protecting Human Health and Safety during Severe and Extreme Heat Events – A National Framework' – PriceWaterhouseCoopers, November 2011 (available from [www.pwc.com.au/industry/government/assets](http://www.pwc.com.au/industry/government/assets))*

This document identifies industry sectors that may suffer specific impacts during severe heat events (pp 19).

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3. *'Heatwaves: Hotter, Longer, More Often' – Climate Council of Australia, 2014 (available from [www.climatecouncil.org.au](http://www.climatecouncil.org.au))*

This document provides background around Australia's climate change, heatwave prevalence trends, characteristics and future projections. There is some discussion around impacts on individuals and businesses.

## Research Methodology

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### Research Approach

The research involved the conduct of 601 telephone interviews with businesses located in the Melbourne municipality. All of the interviews were conducted by trained interviewers at the Sweeney Research telephone facility in South Melbourne using Computer Assisted Telephone Interviewing (CATI).

### Sample Frame

The sample was sourced from 2014 Australia-on-Disc which is based on White Pages business listings. As a result only businesses without a White Pages listing would be excluded from the sample frame.

Random sampling was employed to ensure that the survey results could be extrapolated to the entire business population in the Melbourne municipality.

### Respondent Eligibility

Interviews were conducted with business owners or operators or their equivalent.

### Fieldwork Timing

Interviewing was completed between 20 February and 7 March 2014, approximately 4-7 weeks after the January heatwave (14-17 January). This lag between the heatwave that is the focus of the study and the interviewing may impact the precision of the survey results provided by respondents.

### Survey Questions

The survey was developed in conjunction with City of Melbourne.

All of the survey responses are based on the **estimates** and **perceptions** provided by the business owners/operators. Where financial terms such as revenue, demand and profitability are asked about, no explanation was provided of these terms as they are commonly used business indicators. 'Don't know' and 'not applicable' options were provided.

### Response Rate

The response rate for the survey was 24.16%. This is based on...

*No. of successful interviews (601)*

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*No. of successful interviews plus No. of refusals (1,887)*

### Validation

Monitoring of interviewing by trained supervisors involved listening into 75% of the interview coverage for 5% of the interviews. A key outcome of this supervision is feedback for interviewers that ensures improved consistency, accuracy, quality and efficiency in fieldwork completion.



## Sample Structure

The final sample profile achieved is shown below. This sample distribution is close to the known distribution of establishments from the 2012 Census of Land Use and Employment (CLUE) which means that we can be confident that a representative sample has been achieved.

Sample Structure				
	Employees			Total #
	0-4 #	5-19 #	20 Plus #	
Carlton	21	14	1	36
Docklands	14	9	3	26
East Melbourne	13	9	9	31
Kensington	3	5	2	10
Melbourne CBD	135	120	53	308
North Melbourne	27	18	9	54
Parkville	3	2	3	8
Port Melbourne	22	18	9	49
South Yarra	17	14	11	42
Southbank	6	9	6	21
West Melbourne	5	10	1	16
<b>TOTAL</b>	<b>266</b>	<b>228</b>	<b>107</b>	<b>601</b>
<b>Percentage of Sample</b>	<b>44%</b>	<b>38%</b>	<b>18%</b>	<b>100%</b>

## Confidence and Margin of Error

The margin of error relates to statistical expectations of sampling error given the sample and population size. The margin of error means that if a similar sample were to be surveyed, in 95 out of 100 cases the results would be within the maximum margin of error; i.e. if the survey reports 50% of businesses are impacted in a particular way and the margin of error is  $\pm 5\%$ , repeat samples would provide a result in the range of 45% to 55% in 95% of cases.

For the total sample of 601 respondents the maximum margin of error at the 95% confidence interval is  $\pm 4.0$  percentage points (for a research finding of 50%).

## Significance

Significant subgroup differences and patterns in the data are highlighted in the report (at the 95% confidence level).

## Data Analysis

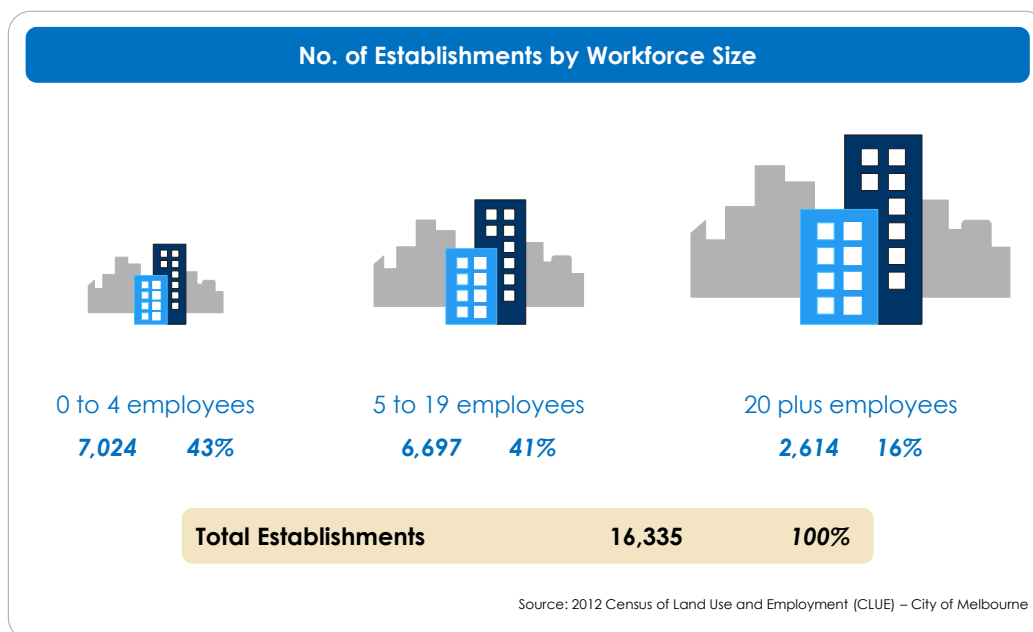
The report includes subgroup analysis by several business firmographics...

- Number of employees
- Annual turnover
- Industry sector
- Business longevity.

For Industry Sector Analysis, the sectors that had sufficient data for separate reporting have been included, with other smaller sectors combined in the 'other' category. Detailed breakdown of the number of interviews conducted within each industry sector is included in Appendix 2.

## Data Extrapolation

Where data extrapolation is provided in this report to the entire business population in the Melbourne municipality, this has used a tiered weighting scheme whereby the research findings of businesses employing a certain number of employees have been projected to the total number of businesses in the Melbourne municipality of the same size. The tiers used are businesses with 0-4 employees, 5-19 employees and 20 plus employees. The total number of businesses in each of these ranges has been taken from the City of Melbourne's 2012 CLUE which reports 16,335 establishments in the Melbourne municipality.



## The Research Findings

## 1. Level of Concern About Heatwaves

## Perceived Concern About Future Heatwaves

### Introduction

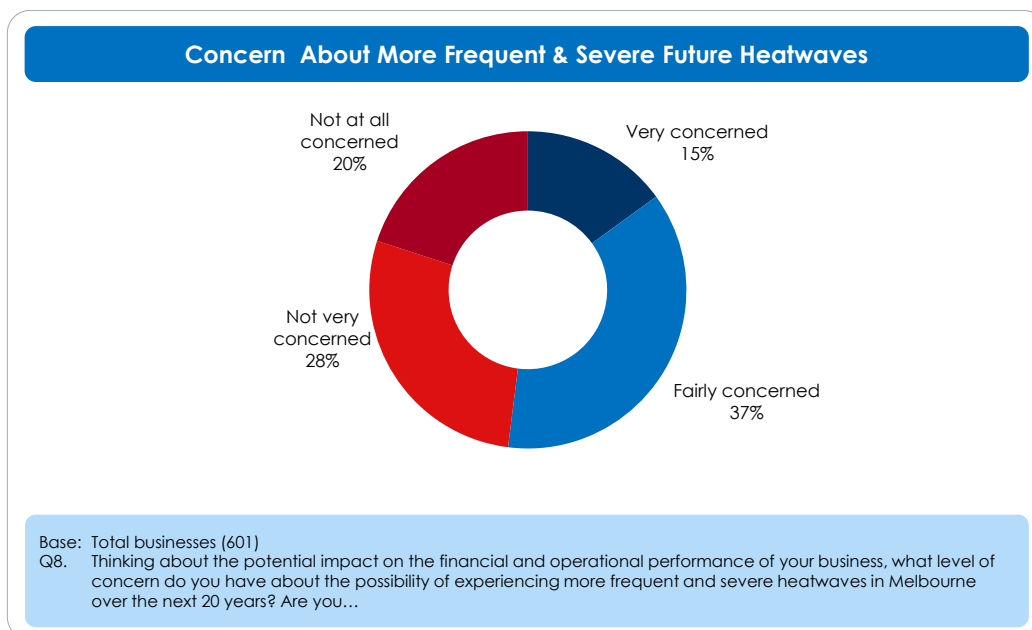
To assess the level of concern that businesses attach to an increase in the frequency and severity of heatwaves over the next 20 years, respondents to the survey were asked...

- Their perceived level of concern about the financial and operational performance of their businesses as a result of more frequent and severe heatwaves; and
- The likely impact of more frequent and severe heatwaves vis-à-vis two other potential issues...
  - More limited availability of adequately skilled labour
  - Rising costs of essential services.

These two questions provide a gauge of the significance of this issue in the minds of business owners/operators located in the Melbourne municipality.

### Overall Concern About Potential Impact of Future Heatwaves

Half of businesses in the Melbourne municipality (52%) are *very* or *fairly* concerned about the potential impact on their businesses of more frequent and severe heatwaves over the next 20 years.

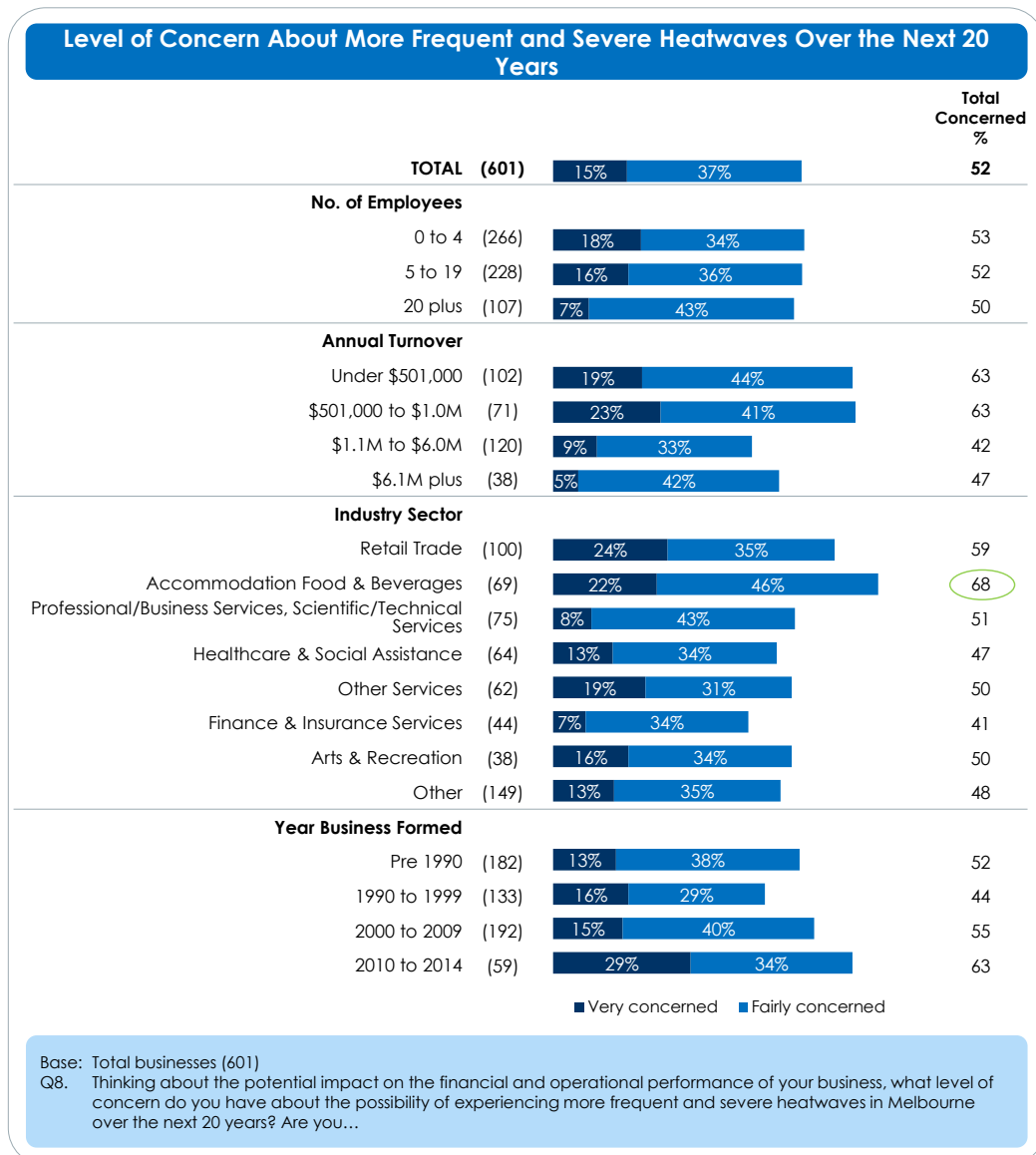


The chart overleaf provides subgroup analysis of the level of concern.

## Concern About Potential Impact of Future Heatwaves in Detail

Business types that exhibit the greatest level of concern about the future outlook for their business as a result of more frequent and severe heatwaves include...

- *Accommodation, Food & Beverage* businesses; and
- Businesses with less than \$1.0M annual turnover.

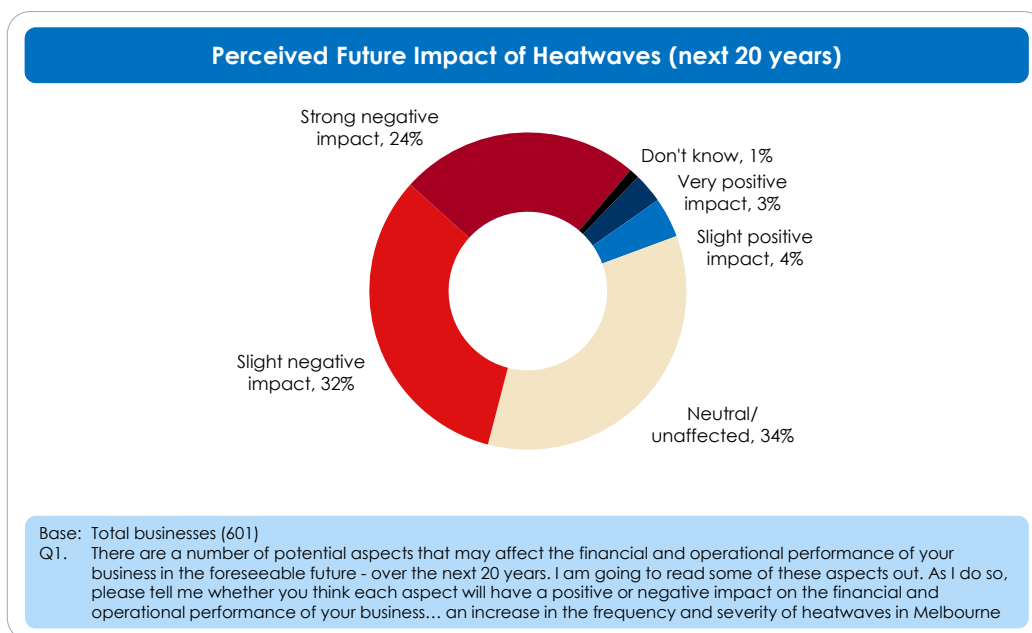


## Perceived Future Impact of Heatwaves

### Perceived Overall Future Impact of Heatwaves

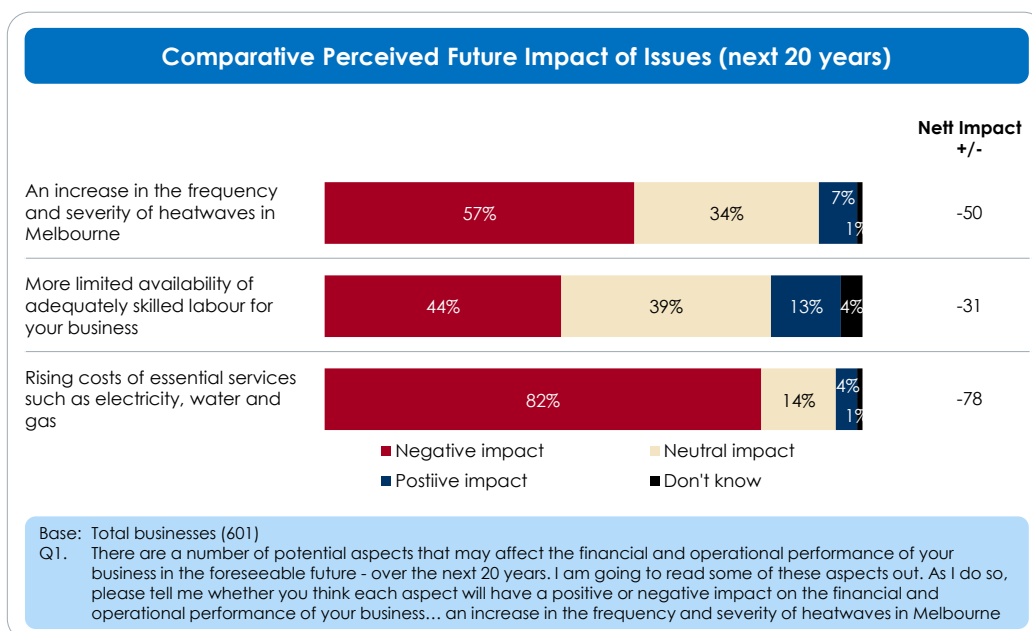
The threat of an increase to the frequency and severity of heatwaves in Melbourne is on the radar of many businesses in the Melbourne municipality.

Six in ten (57%) report an expected **negative impact** on their business in the next 20 years versus just 7% who believe their business will be positively affected. Only a third (34%) believe their business will be **unaffected** by increases in the frequency and severity of heatwaves.



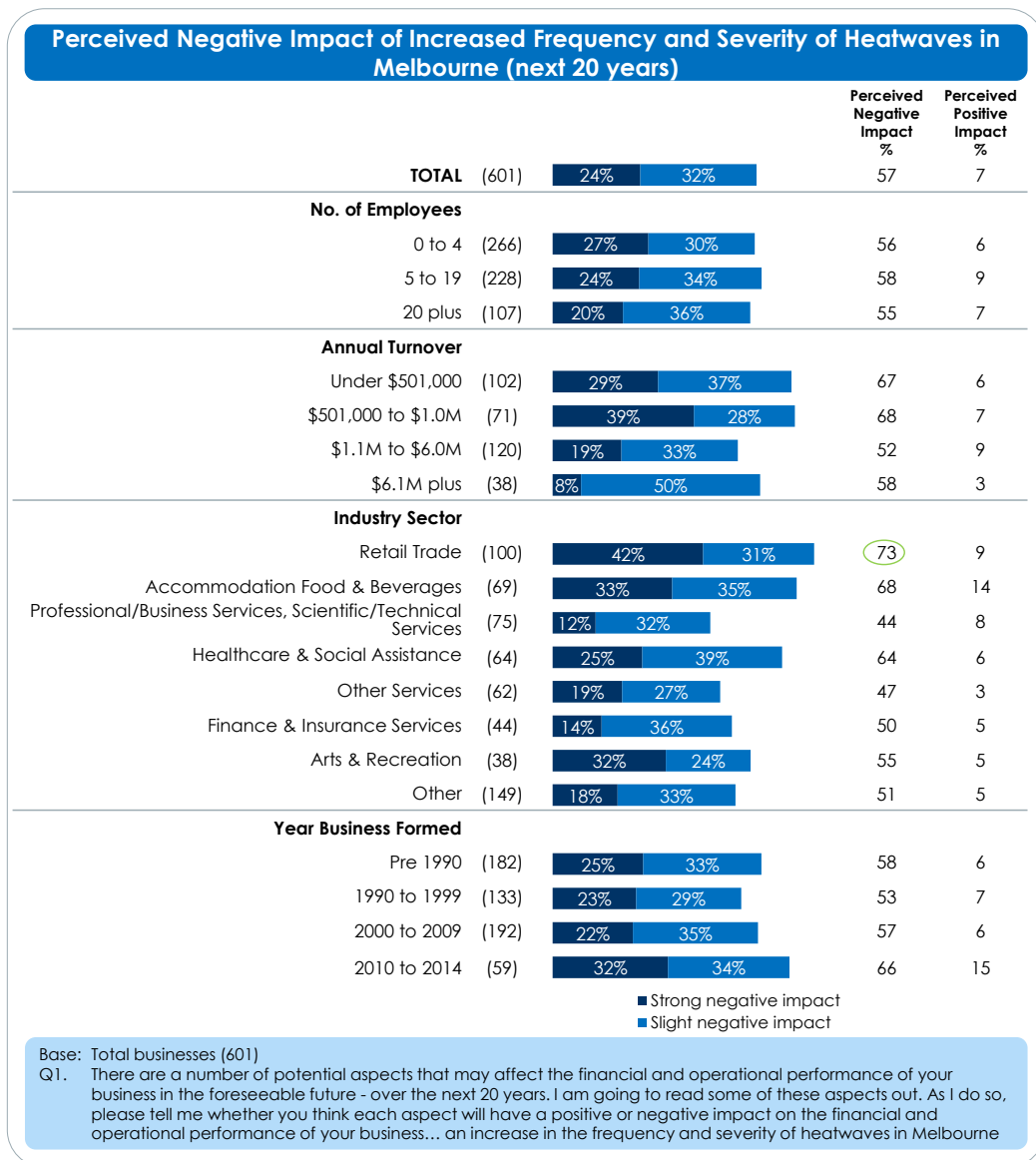
### Relative Perceived Future Impact Compared to Other Issues

Relative to rising utility costs, the potential harmful impact of heatwaves is a less prominent concern to businesses. However, it is ranked ahead of possible labour shortages as a potential negative impact for businesses over the next 20 years.



## Perceived Overall Future Impact of Heatwaves in Detail

Retail trade businesses exhibit the greatest level of concern about the potential negative impact of the increase and severity of heatwaves (73% expect a negative impact on their businesses).





## 2. Business Impacts of the January Heatwave

## Impacts of the January Heatwave on Business

### Introduction

Survey respondents were asked to think about the specific four day period between **Tuesday, 14<sup>th</sup> January and Friday, 17<sup>th</sup> January 2014** when Melbourne experienced a heatwave and the temperature exceeded 40<sup>o</sup>C on each of these days. Subsequently, respondents were asked the impact of this heatwave period on specific aspects of their business. The list of potential impacts was developed based on a review of existing related research sources and careful consideration by the research team. Respondents were asked to assess each of the potential impacts on a 5-point scale...

- Strong negative impact
- Slight negative impact
- Neutral/unaffected
- Slight positive impact
- Very positive impact.

### Overall Impacts of the January Heatwave

The majority of businesses report negative impacts (strong or slight) in terms of the three aspects...

- The operational costs of air-conditioning and other cooling equipment (62%);
- The level of comfort for their workforce (59%); and
- The motivation and morale of their workforce (59%).

Between three and four in ten report negative impacts of the heatwave on their business in terms of...

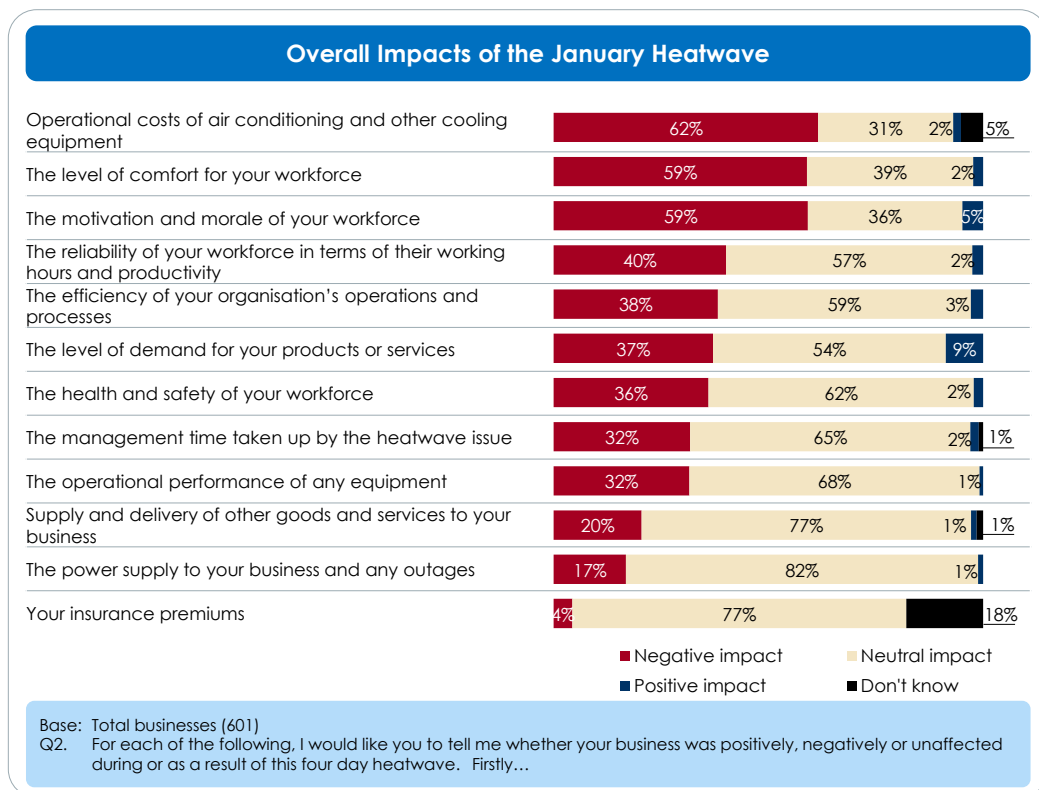
- The reliability of their workforce in terms of working hours and productivity (40%);
- The efficiency of their organisation's operations and processes (38%);
- The level of demand for their products and services (37%);
- The health and safety of their workforce (36%);
- The management time taken up by the heatwave issue (32%); and
- The operational performance of any equipment (32%).

The negative impact on **demand for businesses' products and services** reported by 36% of businesses is partly offset by the 9% who enjoyed increased demand for their products and services. However, this is still a 4:1 ratio of businesses that were negatively affected.

One in five businesses (20%) had issues with the supply of goods and services for their businesses during the heatwave and one in six (17%) suffered power interruptions/outages.

Only 4% felt their insurance premiums were negatively impacted.

The chart overleaf presents the overall impacts of the January heatwave, with detailed subgroup analysis in the pages that follow.

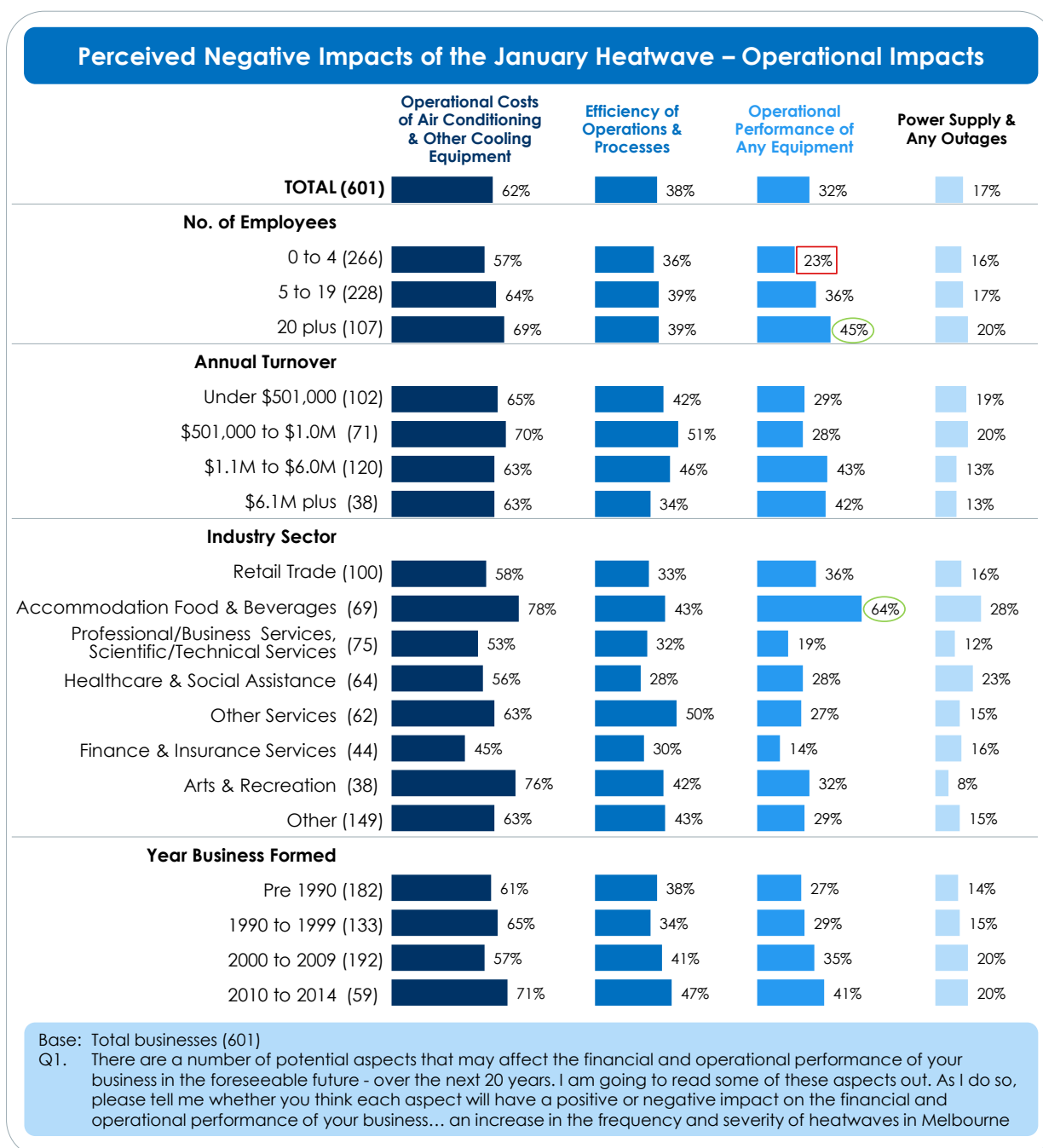


Detailed subgroup analysis is provided for each of these aspects in the pages that follow.

## Operational Negative Impacts of the January Heatwave

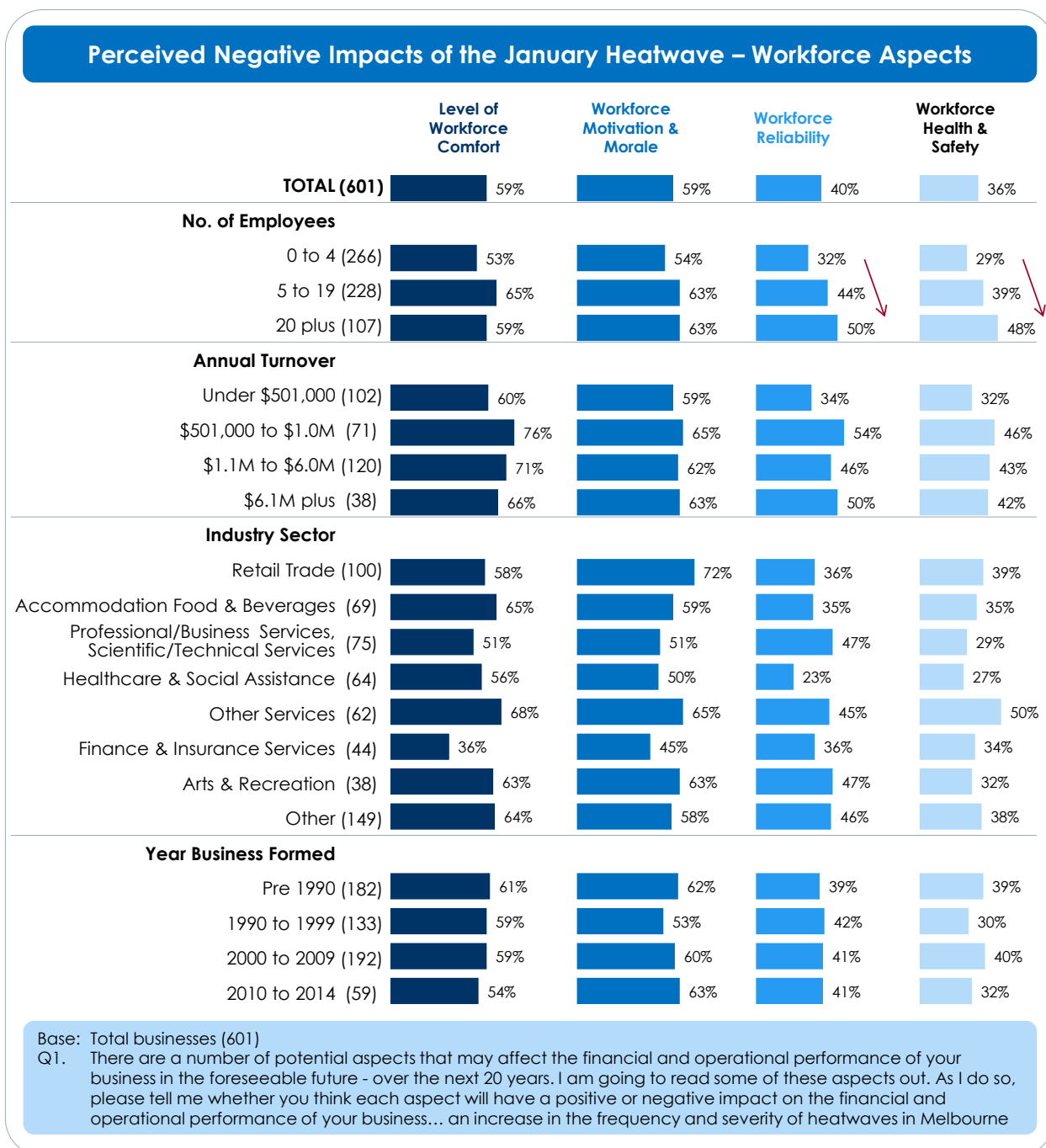
Heightened operational costs of air conditioning and other cooling equipment are particularly felt by *Accommodation, Food & Beverage* businesses, 54% of which reported a *strong negative impact* (and 78% in total negatively affected).

Negative impact on equipment performance is also a more common issue for the *Accommodation, Food & Beverage* sector and among *larger businesses* than other types of businesses.



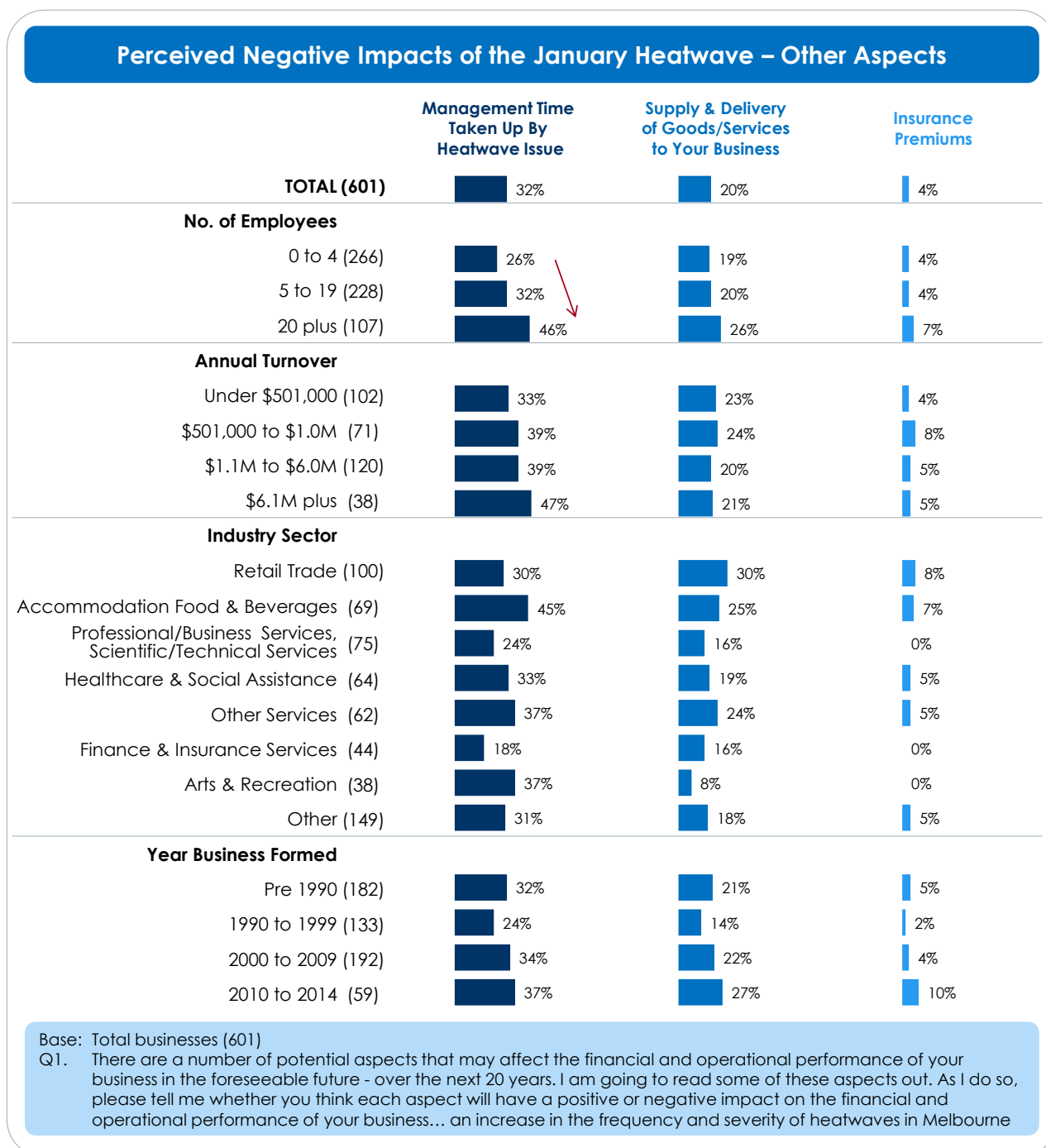
## Workforce Negative Impacts of the January Heatwave in Detail

Negative workforce impacts of the January heatwave are reported across all types of businesses. Businesses with *larger workforces* are more likely to experience negative effects on their workforce reliability and workforce health and safety.



## Other Negative Impacts of the January Heatwave in Detail

Businesses with *larger workforces* are more likely to report management time being absorbed by the heatwave issue.



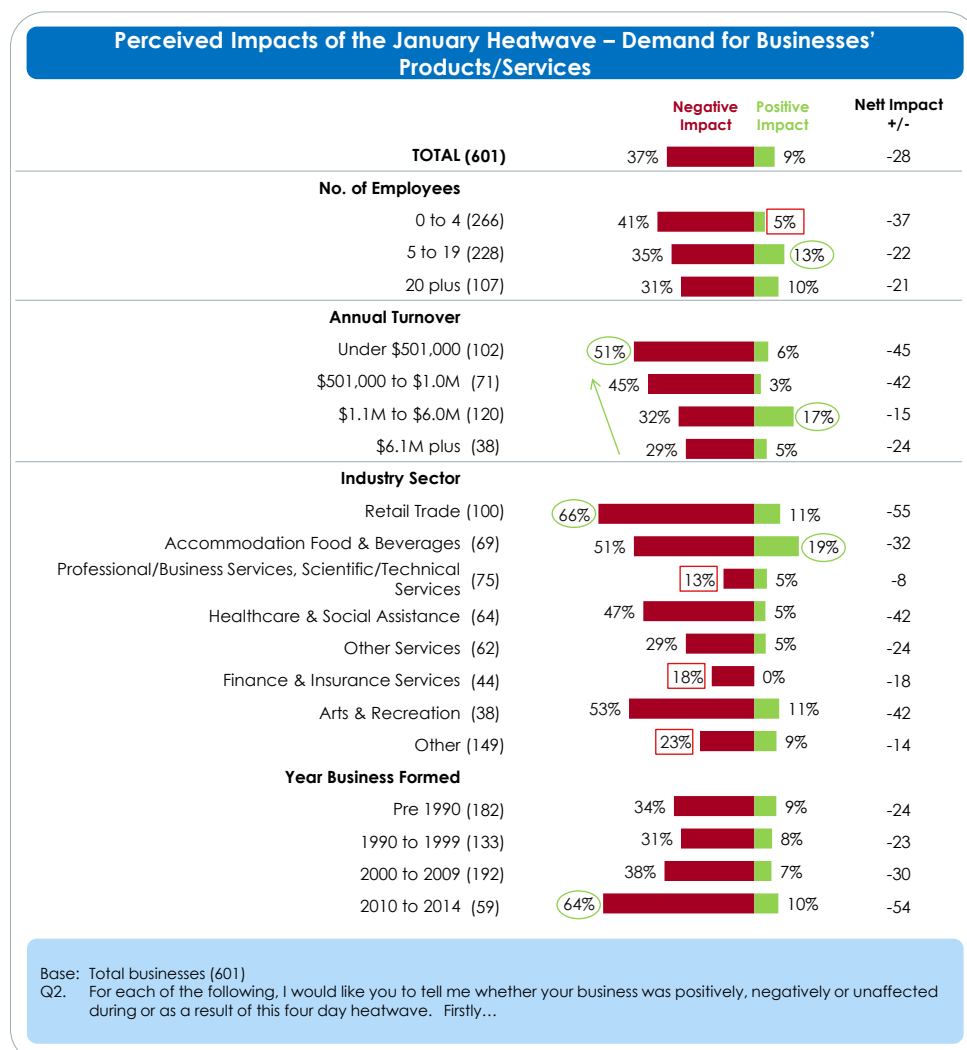
## Demand for Businesses' Products/Services During the January Heatwave – in Detail

There is considerable variability in the impact of the January heatwave on the demand for businesses' products and services...

- *Lower turnover businesses* are more likely to suffer reduced demand for their products and services; and
- *Retail businesses and recently opened businesses* are harshly hit by decreased demand from their customers.

The above subgroups are inter-related – retail businesses typically have more limited turnover and a relatively high proportion have been recently formed. With the dependence of the sector on high pedestrian footfall, it is of little surprise that their businesses are particularly affected during the heatwave when the city has reduced visitor numbers.

On the positive side, one in five *Accommodation, Food & Beverage* businesses (19%) report a positive impact on demand for their products/services during the January heatwave (probably due to additional consumption of cold beverages, ice creams, icy poles and the like).

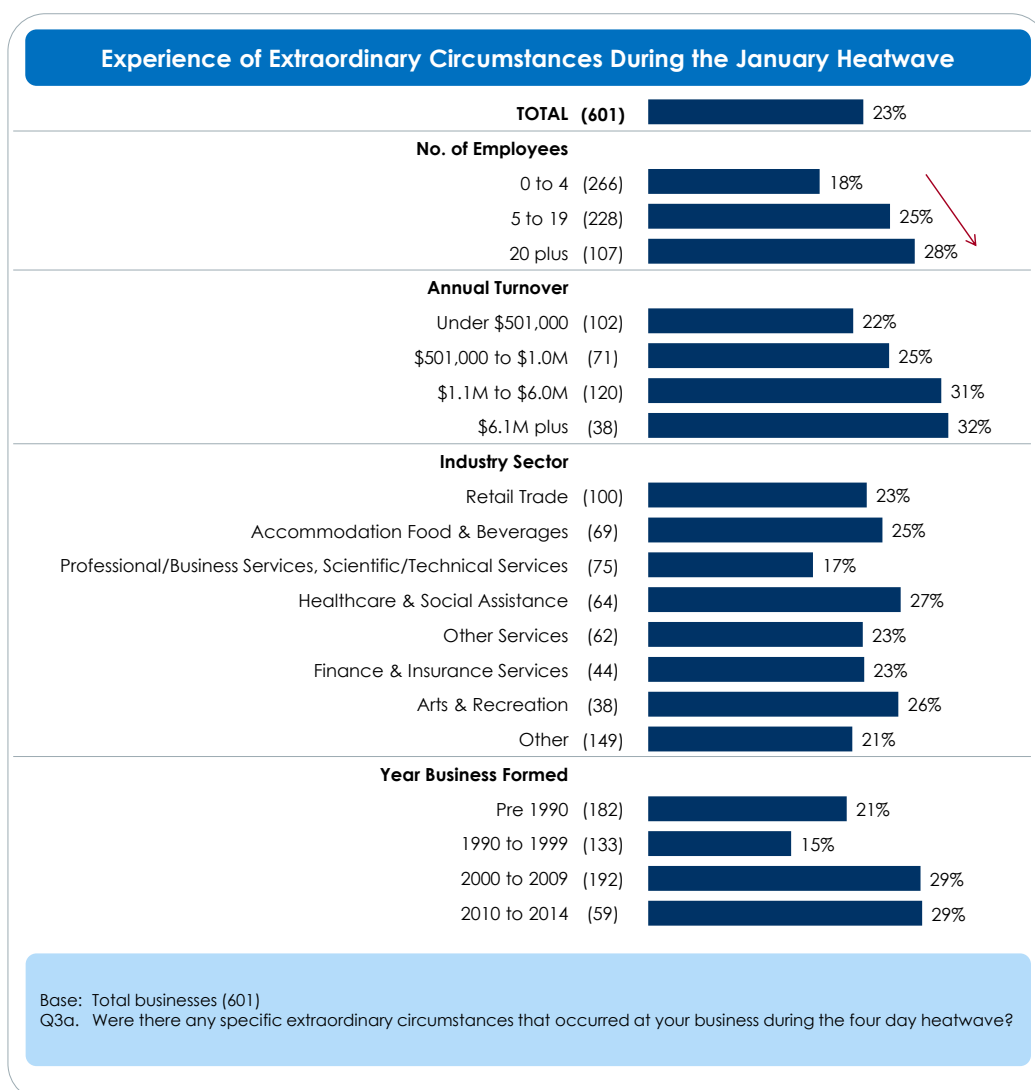


# Extraordinary Circumstances Experienced by Businesses During the January Heatwave

## Experience of Extraordinary Circumstances

Respondents were asked whether they experienced any circumstances that **they would consider** extraordinary during the four day heatwave. This question elicited some responses that were beyond the prompted list of potential impacts asked specifically about in the previous section.

Overall, one in four businesses (23%) report experiencing extraordinary circumstances during the four day heatwave. Businesses with *larger workforces* are **most** likely to have experienced such circumstances.

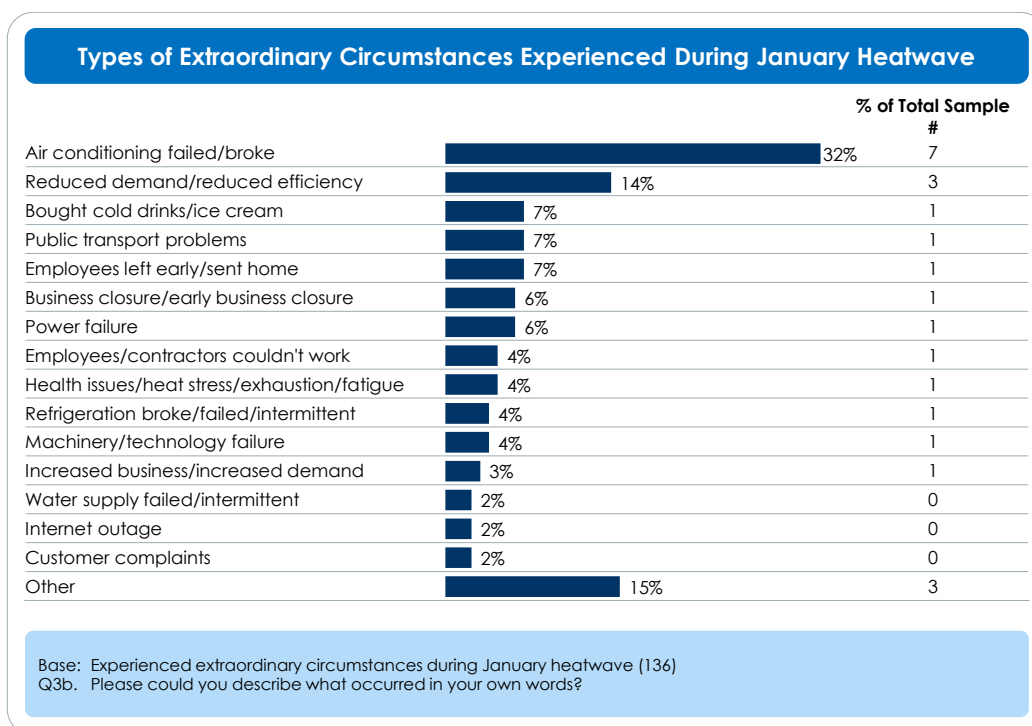




## Types of Extraordinary Circumstances Experienced

The types of extraordinary circumstances that were raised **spontaneously** are headed by...

- Air conditioning failure (experienced by 7% of the total sample)
- Reduced demand or reduced efficiency in their businesses (3% of total sample).



It should be noted that these percentages are not comparable to the data obtained from the previous section when respondents were prompted about potential specific impacts.

There is a great deal of variability in the issues experienced by business sector...

- *Retailers* are more likely to mention reduced demand/efficiency of their businesses (10% of all retail businesses);
- 7% of *Accommodation, Food & Beverage sector* businesses had issues with refrigeration equipment; and
- 6% of *Healthcare & Social Assistance* organisations report power failure and 5% internet outages during the heatwave.

### 3. Impact of the January Heatwave on Financial and Operational Performance Indicators

# Impact of January Heatwave on Financial and Operational Performance Indicators

## Introduction

Respondents were asked how (if at all) their business' performance was affected over the January heatwave. Five financial and operational indicators were asked about and the scale used for assessment is a 3-point scale...

- An increase
- A decrease
- No difference.

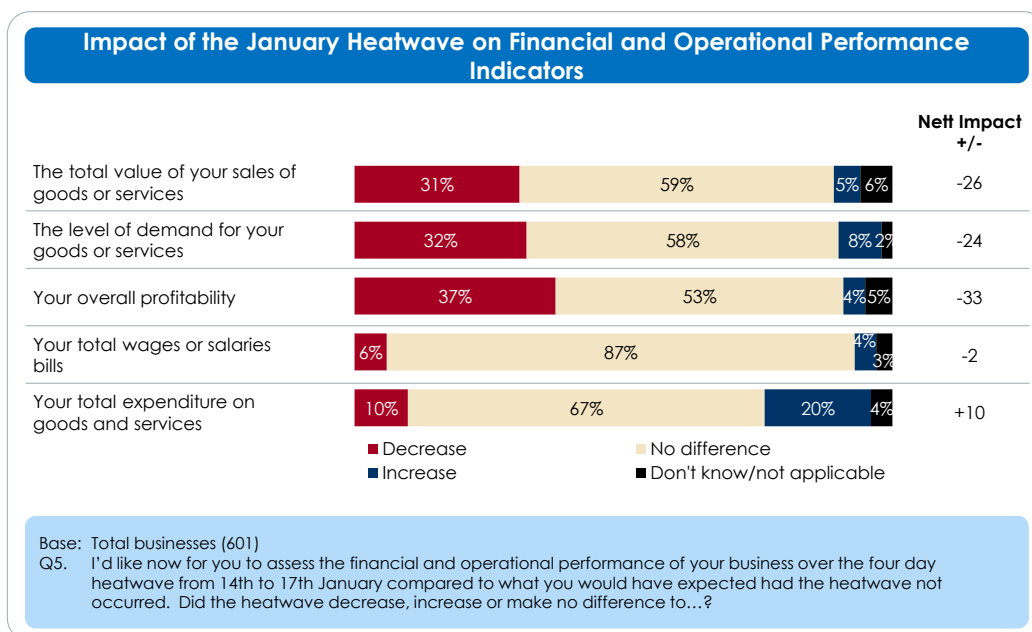
For each indicator, there was a proportion who could not answer the questions or for whom the indicator is not relevant (e.g. if their business does not employ any staff, the wage bill is not relevant; if their business does not sell products/services, the total value of these is not relevant).

## Summary of Impact on Financial and Operational Performance Indicators

At the headline level, between three and four in ten businesses report a negative impact of the January heatwave on the demand for their services (32% negatively impacted), the value of their sales (31%) and/or their profitability (37%).

For each of these aspects, there is a small proportion of businesses who were positively impacted during the January heatwave. In terms of customer demand, the proportion negatively impacted is four times the proportion positively affected.

Around one in five businesses report increased expenditure on goods and services during the heatwave (twice the level that decreased their expenditure).

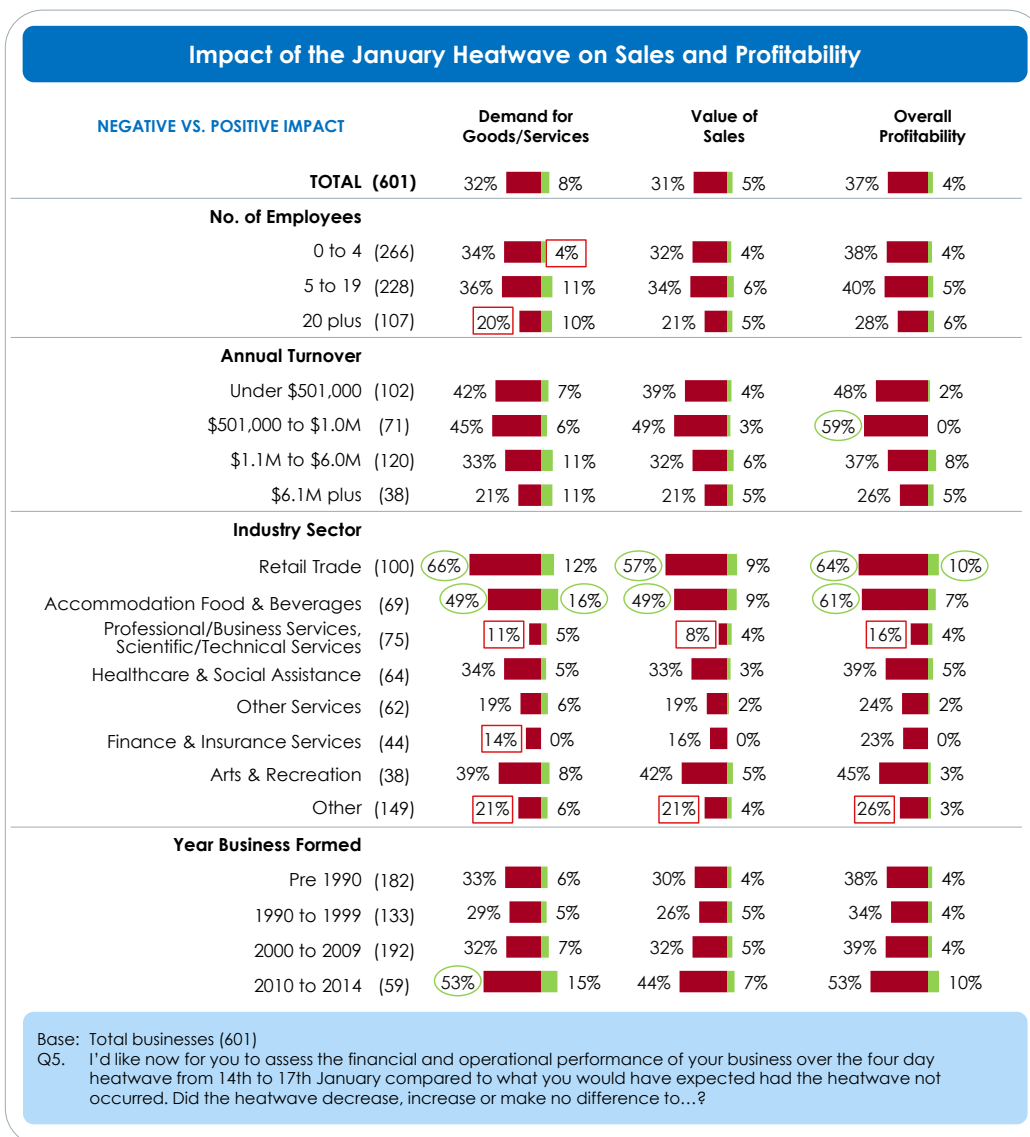


Detailed subgroup analysis of these impacts are shown in the pages that follow.

## Impact of the January Heatwave on Sales and Profitability

Negative impact on demand, sales value and profitability is particularly pronounced in the *Retail Trade* and *Accommodation, Food & Beverage* sectors (as well as in recently formed businesses).

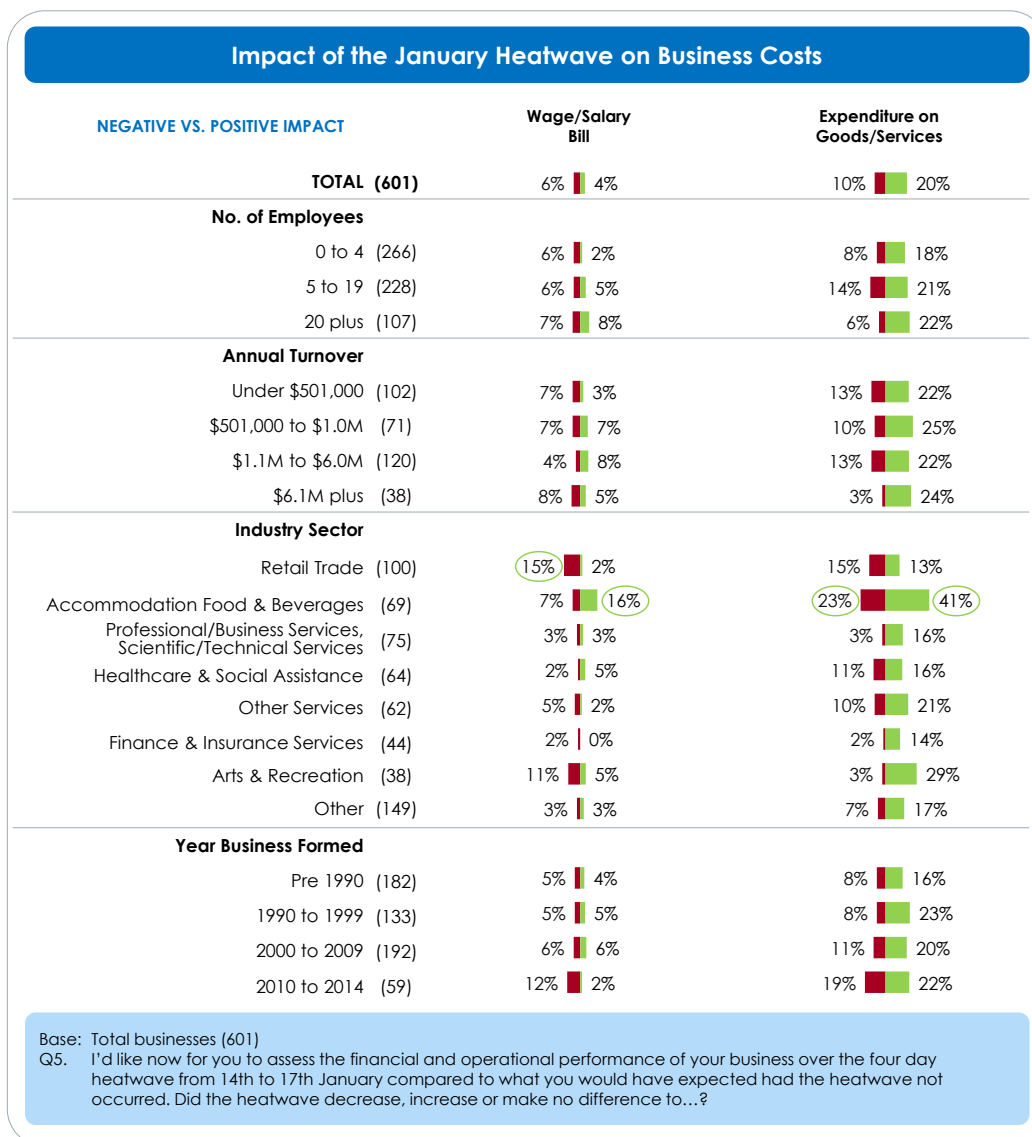
While the financial aspects of the *Accommodation, Food & Beverage* sector are negatively impacted overall, there is a proportion of the sector that report a positive impact of the heatwave, especially in terms of demand for their products and services.



## Impact of the January Heatwave on Business Costs in Detail

The salary costs of 15% of *Retail Trade* businesses were reduced during the heatwave, while 16% of *Accommodation, Food & Beverage* businesses increased their wage bill.

Expenditure on goods and services for their businesses increased for four in ten *Accommodation, Food & Beverage* businesses, but decreased among a quarter (23%) of businesses in this sector.



# Perceived Change in Sales Value During the January Heatwave

## Introduction

On two of the performance indicators, the survey established **the extent** of any change that was experienced during the January heatwave.

Firstly, results are provided in terms of the perceived change in **sales value** as a result of the January heatwave and projected estimates are calculated of the overall impact on the sales value of all businesses in the Melbourne municipality.

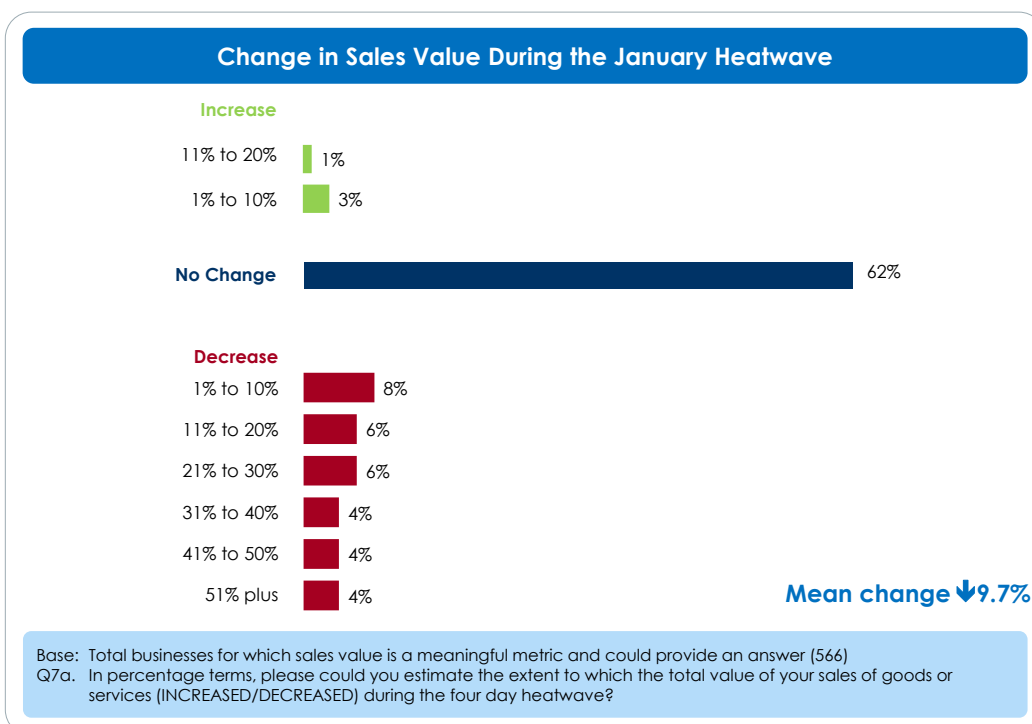
The second aspect for which the survey establishes the **extent** of any change that was experienced during the January heatwave is **profitability**.

## Overall Percentage Change in Sales Value

Change in sales value is calculated below for the 94% of businesses for which sales value is a meaningful indicator and that that could provide an answer.

The analysis reveals an average decline of 9.7% across businesses' value of sales during the January heatwave.

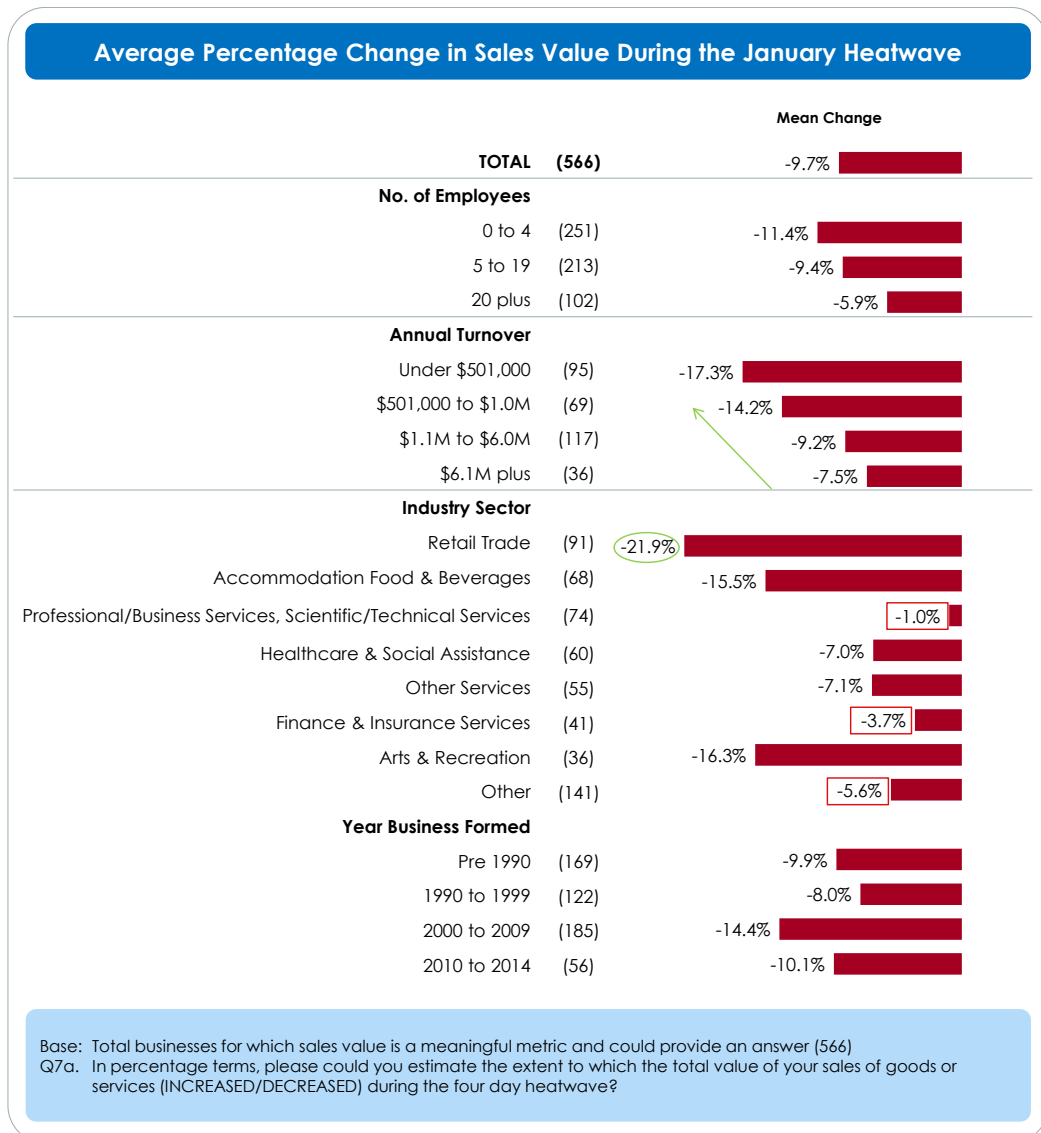
One in eight businesses (12%) suffered reduction in sales of more than 30% (i.e. 31%+) compared with their usual expectation for the four day period.



## Percentage Change in Sales Value During the January Heatwave – in Detail

The revenue of *Retail Trade businesses* declined by an average of 21.9% over the heatwave period making the sector the hardest hit.

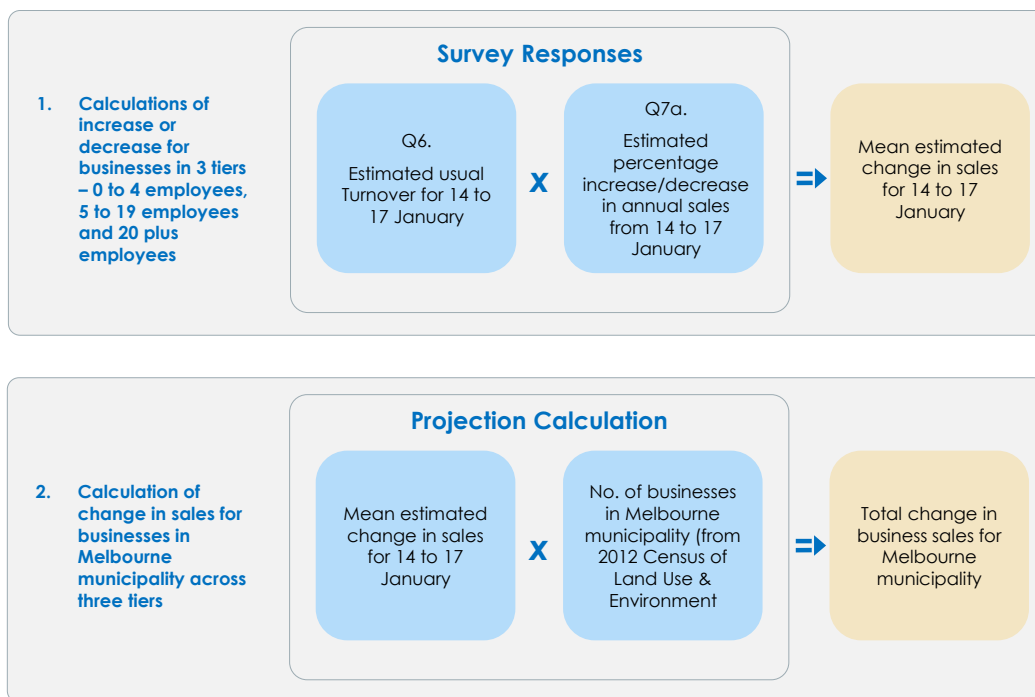
Businesses with *lower turnover* typically suffered larger declines in revenue during the heatwave.



# Modelling of Revenue Impact of the January Heatwave

## Modelling Approach

In order to establish projections for the impact of the January heatwave on sales of goods and services by businesses within the Melbourne municipality, the following approach was employed...



As shown the calculation of the sales impact is stratified by business size to provide a more accurate estimate.

The accuracy of the projected revenue impact is dependent to a large extent on the accuracy of the estimates provided by survey respondents to the impact of the heatwave on their sales over the heatwave period that occurred four to six weeks prior to the interviewing.

Also, only around three in ten businesses (28%) were able to provide estimates of their normal revenue over the four day period. This is an additional source of potential inaccuracy in the projected revenue impact.



## Projected Impact of the January Heatwave on Revenue of Businesses in the Melbourne Municipality

The four day January heatwave resulted in an estimated loss of revenue of \$37M across businesses in the Melbourne municipality.

Revenue Impact Modelling of January Heatwave					
	Normal Turnover for 4 Day Period	% Change in Revenue %	Average Revenue Reduction \$	No. of Businesses in Melbourne Municipality #	Total Revenue Impact of 4 Day Heatwave \$M
0 to 4 employees	\$10,699	-11.4%	-\$1,220	7,024	-\$8.57M
5 to 19 employees	\$30,684	-9.4%	-\$2,884	6,697	-\$19.31M
20 plus employees	\$59,687	-5.9%	-\$3,522	2,614	-\$9.21M
<b>Total impact of heatwave on businesses in Melbourne municipality</b>				<b>16,335</b>	<b>-\$37.09M</b>

Q6. What would you ordinarily expect the turnover to have been at the establishment over the four day period from 14th to 17th January, had the heatwave not occurred?

Q7a. In percentage terms, please could you estimate the extent to which the total value of your sales of goods or services (INCREASED/DECREASED) during the four day heatwave?

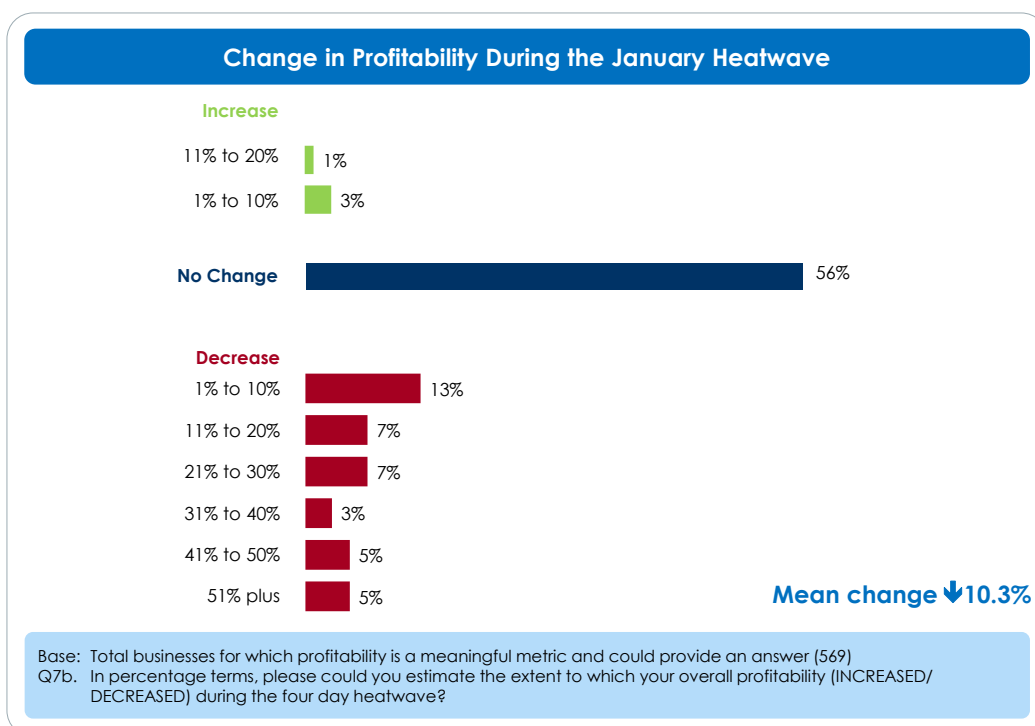
## Perceived Change in Profitability During the January Heatwave

### Overall Percentage Change in Profitability

The change in profitability is calculated for the businesses for which this is a meaningful metric and that could provide an answer.

The analysis reveals an average decline in profitability of 10.3% across businesses during the January heatwave.

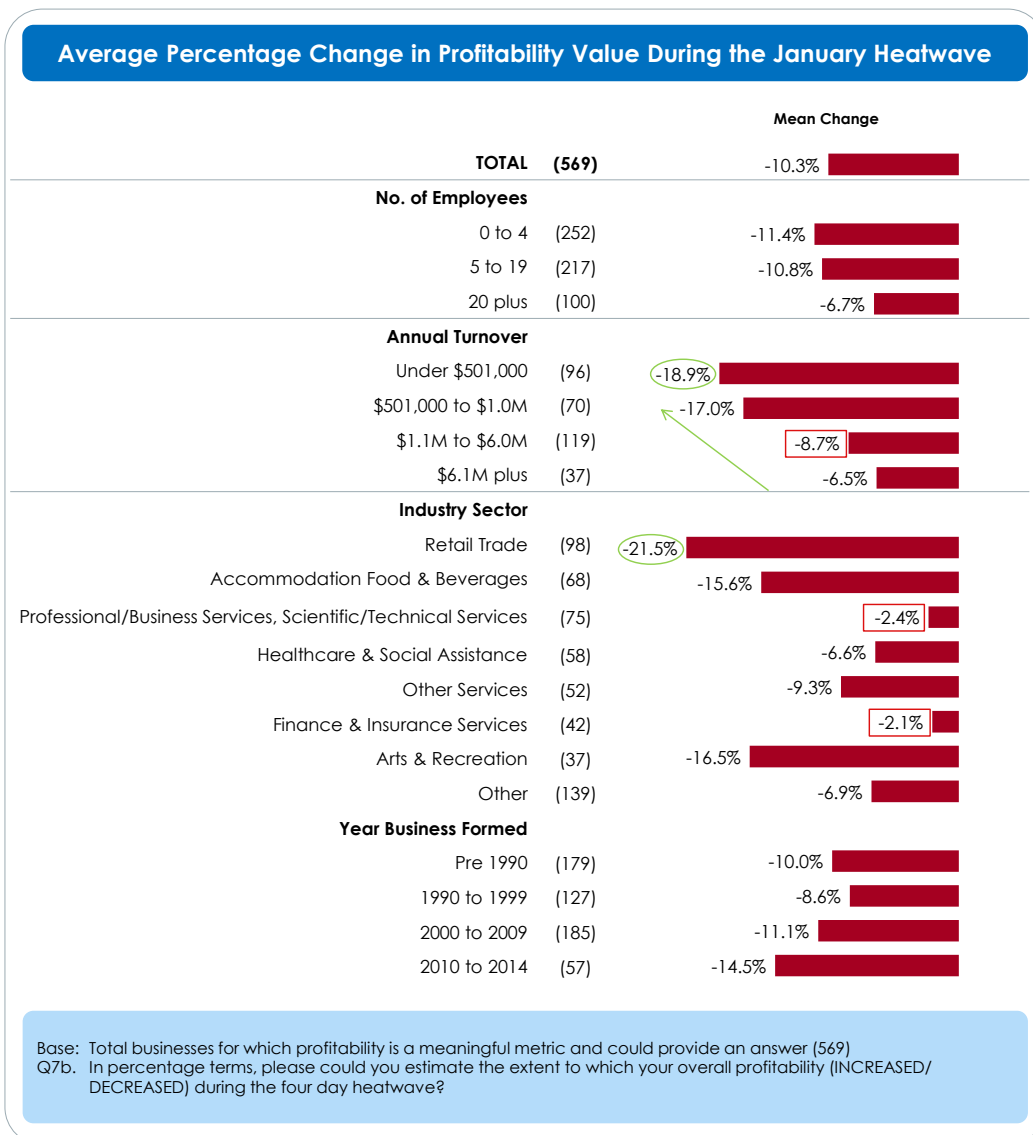
One in eight businesses (13%) suffered reduced profitability of more than 30% (i.e. 31%+) compared with their usual expectations for the four day period.



## Percentage Change in Profitability During the January Heatwave

The profitability of *Retail Trade* businesses fell 21.5% on average during the January heatwave, making it the hardest hit sector.

The profitability of businesses with *lower turnover* were more likely to be negatively impacted.

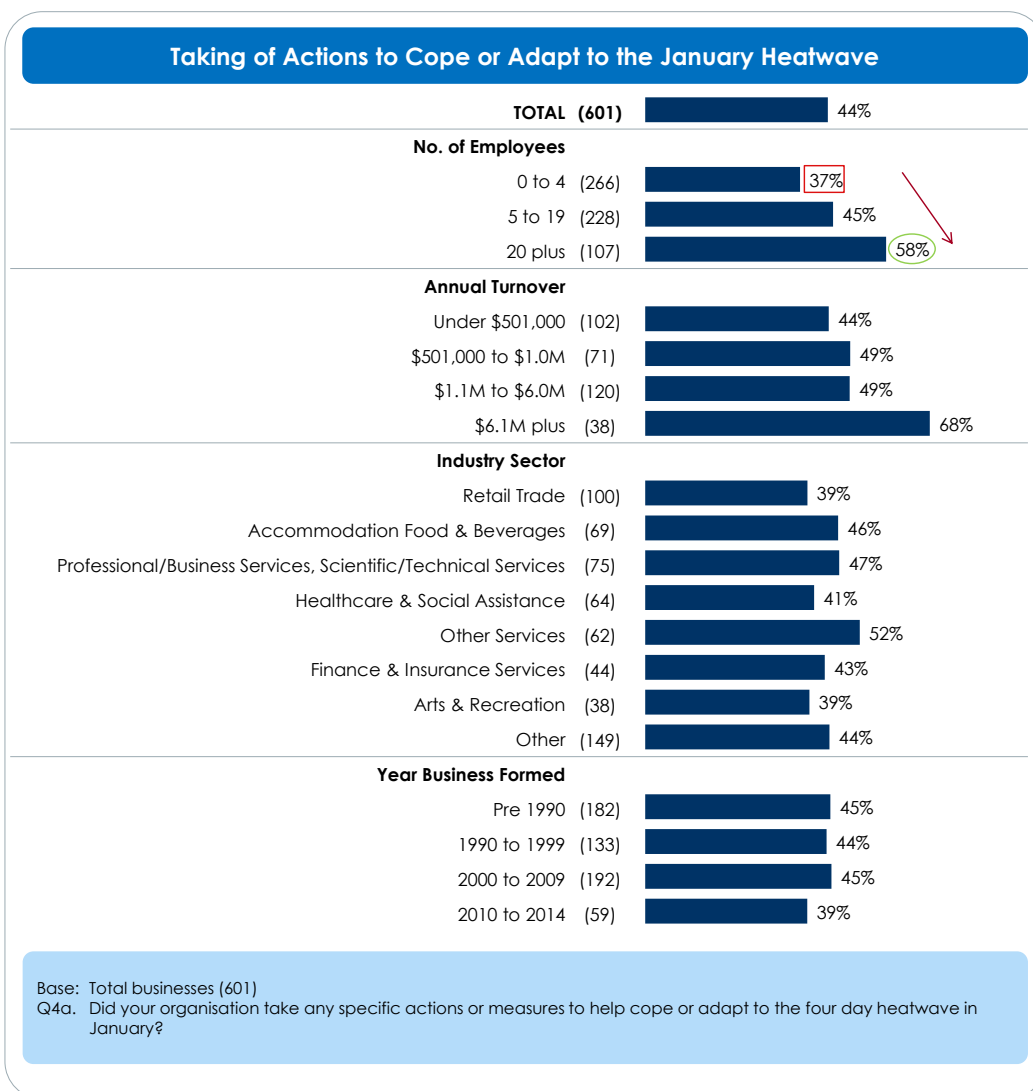


## 4. Actions Taken by Businesses to Cope or Adapt

# Specific Actions Taken to Cope or Adapt to the January Heatwave

## Taking of Actions to Cope or Adapt to the January Heatwave

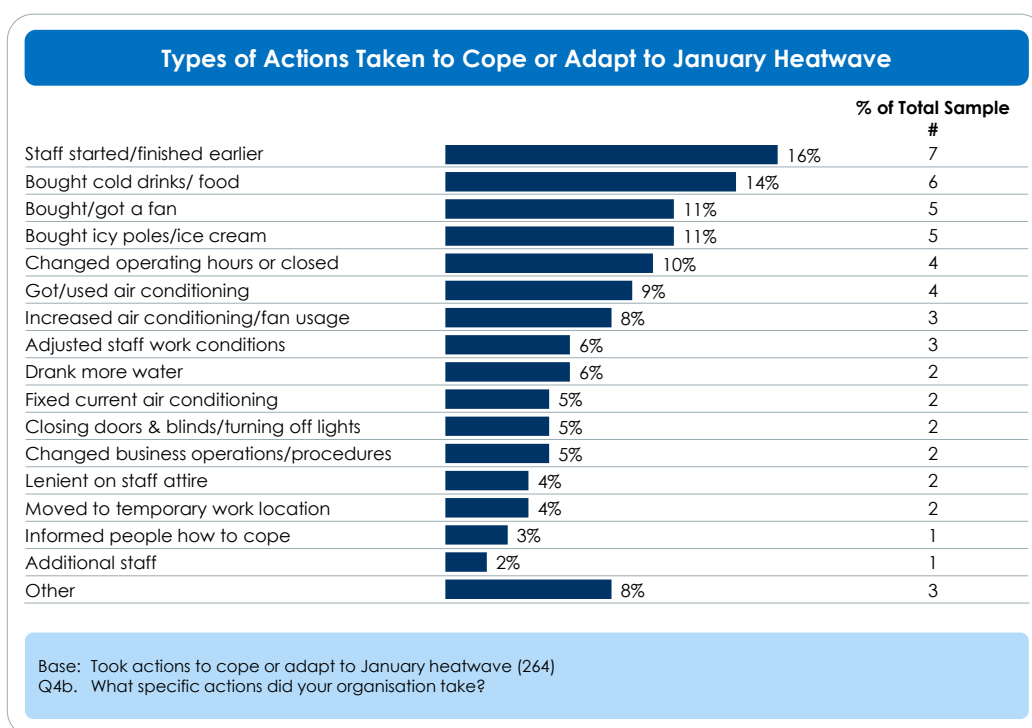
Four in ten businesses recalled taking specifications or measures to help cope or adapt to the January heatwave. Businesses with *larger workforces* are more likely to have taken such measures.



## Types of Actions Taken to Cope or Adapt to the January Heatwave

Based on the coding of the spontaneous responses, the most common actions taken to cope or adapt to the January heatwave mentioned were...

- Earlier start or finishing times (7% of total sample);
- Purchase of cold beverages and food (6%);
- Purchase of fans (5%); and
- Purchase of icy poles/ice creams (5%).



Eight percent of businesses with \$6.1M plus turnover mentioned taking on additional staff over the heatwave period.

## APPENDIX 1: Full Distribution of Select Question Survey Responses

PERCEIVED FUTURE IMPACT OF HEATWAVE (NEXT 20 YEARS)								
	Strong Negative Impact %	Slight Negative Impact %	Neutral/ Un-affected %	Slight Positive Impact %	Very Positive Impact %	Don't Know %	Total Negative Impact %	Total Positive Impact %
An increase in the frequency and severity of heat waves in Melbourne	24	32	34	4	3	1	57	7
More limited availability of adequately skilled labour for your business	24	20	39	8	4	4	44	13
Rising costs of essential services such as electricity, water and gas	42	40	14	2	2	1	82	4
Base: Total businesses (601) Q1. There are a number of potential aspects that may affect the financial and operational performance of your business in the foreseeable future - over the next 20 years. I am going to read some of these aspects out. As I do so, please tell me whether you think each aspect will have a positive or negative impact on the financial and operational performance of your business... an increase in the frequency and severity of heatwaves in Melbourne								

IMPACTS OF THE JANUARY HEATWAVE ON BUSINESSES								
	Strong Negative Impact %	Slight Negative Impact %	Neutral/ Un-affected %	Slight Positive Impact %	Very Positive Impact %	Don't Know %	Total Negative Impact %	Total Positive Impact %
Operational costs of air conditioning and other cooling equipment	29	33	31	1	1	5	62	2
The level of comfort for your workforce	27	32	39	1	2	0	59	2
The motivation and morale of your workforce	19	40	36	3	1	0	59	5
The reliability of your workforce in terms of their working hours and productivity	11	29	57	1	1	0	40	2
The efficiency of your organisation's operations and processes	12	26	59	2	1	0	38	3
The level of demand for your products or services	19	17	54	4	4	0	37	9
The health and safety of your workforce	11	25	62	1	1	0	36	2
The management time taken up by the heatwave issue	9	22	65	1	0	1	32	2
The operational performance of any equipment	16	15	68	0	0	0	32	1
Supply and delivery of other goods and services to your business	5	15	77	1	0	1	20	1
The power supply to your business and any outages	9	8	82	0	1	0	17	1
Your insurance premiums	2	2	77	0	0	18	4	0
Base: Total businesses (601) Q2. For each of the following, I would like you to tell me whether your business was positively, negatively or unaffected during or as a result of this four day heatwave. Firstly...								



## APPENDIX 2: Sample Profile

ANZIC CODE		
	Sample Size (601) #	% of Sample (100) %
A. Agriculture, forestry & fishing	0	1
B. Mining	0	0
C. Manufacturing	3	16
D. Electricity, gas, water & waste services	0	2
E. Construction	4	26
F. Wholesale trade	3	19
G. Retail trade	17	100
H. Accommodation, food & beverage services	11	69
I. Transport, postal & warehousing	1	9
J. Information, media & telecommunications	4	22
K. Finance & insurance services	7	44
L. Rental, hiring & real estate services	2	11
M. Professional/business services, scientific & technical services	12	75
N. Administrative & support services	3	17
O. Public administration & safety	1	6
P. Education & training	3	20
Q. Healthcare & social assistance	11	64
R. Arts & recreation	6	38
S. Other services	10	62

TOURISM RELATED BUSINESSES		
	Sample Size (601) #	% of Sample (100) %
Primarily a tourism business	5	29
Connected to the tourism industry (as a secondary activity)	20	119
Not at all related to tourism	75	453

NO. OF EMPLOYEES		
	Sample Size (601) #	% of Sample (100) %
0	2	12
1 to 4	42	254
5 to 9	22	132
10 to 19	16	96
20 to 49	12	72
50 to 99	3	18
100 to 199	1	9
200 to 499	1	4
500 or more	1	4

ANNUAL TURNOVER		
	Sample Size (331) #	% of Sample (100) %
Under \$10,000	1	3
\$10,000 to \$30,000	2	5
\$31,000 to \$50,000	2	5
\$51,000 to \$100,000	5	15
\$101,000 to \$500,000	21	71
\$501,000 to \$1 million	22	74
\$1.1 million to \$2 million	19	63
\$2.1 million to \$6 million	17	57
\$6.1 million to \$10 million	3	11
\$11 million to \$20 million	3	11
Over \$20 million	5	16

Note: 331 answered question

YEAR COMMENCED BUSINESS OPERATION		
	Sample Size (574) #	% of Sample (100) %
Pre-1950	6	32
1950-1959	2	13
1960-1969	3	18
1970-1979	6	33
1980-1989	15	86
1990-1999	23	133
2000-2009	33	192
2010-2014	10	59

Note: 574 answered question

RESPONDENT DEMOGRAPHICS		
	Sample Size (601) #	% of Sample (100) %
<b>Gender</b>		
Male	53	317
Female	47	284
<b>Age</b>		
Under 21	0	2
21 to 30	17	102
31 to 40	22	134
41 to 45	11	64
46 to 50	12	75
51 to 60	24	142
Over 60	14	82
<b>Born in Australia</b>		
Yes	74	443
No	26	158

## APPENDIX 3: The Survey Instrument

# 2014 Heatwave Business Impact Survey

Study No.	23910
Client	City of Melbourne
Version	Version 3 – 17 <sup>th</sup> February 2014
Research Consultant	Lewis Jones

## INTRODUCTION

Good morning/afternoon/evening, I am (FIRST NAME) calling from Sweeney Research.

We are conducting a short survey on behalf of City of Melbourne about some of the challenges faced by businesses in the Melbourne municipality. We would really welcome your participation and it only takes 10 minutes.

### **REASSURE AS NECESSARY:**

- Your answers are treated confidentially and only used for the purpose of the research study.
- Your business details were obtained from (SOURCE).
- A wide range of business owners and operators in the Melbourne municipality have been selected for the research.

**SCREENING**

QS1. Are you the owner or operator of that business? <b>SINGLE RESPONSE</b> <b>DO NOT READ OUT</b>	Yes	1
	No <b>Ask to speak to owner/operator</b>	2

QS2a. What is the nature of your business? **(WRITE IN AND SELECT ANZSIC CODE)**

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QS2b. <b>RECORD ANZSIC DIVISION CODE</b>	<b>CODE ANZSIC DIVISION:</b>	
	A (Agriculture; Forestry & Fishing)	01
	B (Mining)	02
	C (Manufacturing)	03
	D (Electricity, Gas, Water & Waste Services)	04
	<b>E (Construction)</b>	<b>05</b>
	F (Wholesale Trade)	06
	<b>G (Retail Trade)</b>	<b>07</b>
	<b>H (Accommodation, Food &amp; Beverage Services)</b>	<b>08</b>
	I (Transport, Postal & Warehousing)	09
	J (Information, Media & Telecommunications)	10
	K (Finance & Insurance services)	11
	L (Rental, Hiring and Real Estate services)	12
	M (Professional/Business services, Scientific & Technical services)	13
	N (Administrative & Support services)	14
	<b>O (Public Administration &amp; Safety)</b>	<b>15</b>
P (Education & Training)	16	
<b>Q (Healthcare &amp; Social Assistance)</b>	<b>17</b>	
R (Arts & Recreation)	18	
S (Other Services)	19	

QS3. How many employees do you have at those premises? <b>SINGLE RESPONSE</b> <b>READ OUT</b>	0	1
	1 to 4	2
	5 to 9	3
	10 to 19	4
	20 to 49	5
	50 to 99	6
	100 to 199	7
	200 to 499	8
	500 or more	9

**RECORD LOCATION FROM SAMPLE OR ASK...**

QS4a. Where are those premises located?	Carlton	01
	Docklands	02
	East Melbourne	03
	Kensington	04
	Melbourne CBD (3000)	05
	North Melbourne	06
	Parkville	07
	Port Melbourne	08
	South Yarra	09
	Southbank	10
	West Melbourne	11
	Other ( <i>Terminates Survey</i> )	12

**RECORD POSTCODE OR ASK...**

QS4b. <del>And what is the postcode (Auto Coded)</del>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
--------------------------------------------------------	----------------------	----------------------	----------------------	----------------------

**CHECK QUOTAS, IF FAILURE SAY...**

**We need to reach a wide cross-section of businesses. We have talked to a number of businesses similar to yours, so on this occasion, we do not have any further questions for you, but thank you for talking with me today.**

## MAIN SURVEY

Q1. There are a number of potential aspects that may affect the financial and operational performance of your business in the foreseeable future - over the next 20 years.

I am going to read some of these aspects out. As I do so, please tell me whether you think each aspect will have a positive or negative impact on the financial and operational performance of your business.

**IF POSITIVE OR NEGATIVE IMPACT ASK...** Is that a strong or slight (positive/negative) impact?

**READ OUT. RANDOM ORDER**

	Strong negative impact	Slight negative impact	Neutral/ Unaffected	Slight positive impact	Very positive impact	Don't know
1. An increase in the frequency and severity of heat waves in Melbourne	1	2	3	4	5	6
2. More limited availability of adequately skilled labour for your business	1	2	3	4	5	6
3. Rising costs of essential services such as electricity, water and gas	1	2	3	4	5	6

Q2. I would like you to think about a very specific period of time. Please think back to the four days between Tuesday, 14<sup>th</sup> January to Friday, 17<sup>th</sup> January 2014. Melbourne experienced a four day heatwave when temperatures exceeded 40°C on each of these days.

Melbourne has experienced other hot days since that time, but I just want you to think about this four day heatwave in January.

For each of the following, I would like you to tell me whether your business was positively, negatively or unaffected during or as a result of this four day heatwave.

Firstly... **READ OUT. RANDOM ORDER**

	Strong negative impact	Slight negative impact	Neutral/ Unaffected	Slight positive impact	Very positive impact	Don't know
1. The power supply to your business and any outages	1	2	3	4	5	6
2. The operational performance of any equipment	1	2	3	4	5	6
3. Supply and delivery of other goods and services to your business	1	2	3	4	5	6
4. Your insurance premiums	1	2	3	4	5	6
5. The level of demand for your products or services	1	2	3	4	5	6
6. The efficiency of your organisation's operations and processes	1	2	3	4	5	6
7. The health and safety of your workforce	1	2	3	4	5	6
8. The level of comfort for your workforce	1	2	3	4	5	6
9. The motivation and morale of your workforce						
10. The reliability of your workforce in terms of their working hours and productivity	1	2	3	4	5	6
11. The management time taken up by the heatwave issue	1	2	3	4	5	6
12. Operational costs of air conditioning and other cooling equipment	1	2	3	4	5	6

Q3a. Were there any specific extraordinary circumstances that occurred at your business during the four day heatwave?

	<u>Yes</u>	<b>Continue</b>	1
	<u>No</u>	<b>Go to Q4a.</b>	2

**SINGLE RESPONSE**

Q3b. Please could you describe what occurred in your own words? **DO NOT PROMPT. RECORD VERBATIM.**

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Q4a. Did your organisation take any specific actions or measures to help cope or adapt to the four day heatwave in January?

	<u>Yes</u>	<b>Continue</b>	1
	<u>No</u>	<b>Go to Q5</b>	2

**SINGLE RESPONSE**

Q4b. What specific actions did your organisation take? **DO NOT PROMPT. PROBE:** Any others? **RECORD VERBATIM.**

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Q5. I'd like now for you to assess the financial and operational performance of your business over the four day heatwave from 14<sup>th</sup> to 17<sup>th</sup> January compared to what you would have expected had the heatwave not occurred.

Did the heatwave decrease, increase or make no difference to...?

**READ OUT. RANDOM ORDER**

	Decrease	No difference	Increase	Don't know	Not applicable
1. The total value of your sales of goods or services	1	2	3	4	5
2. The level of demand for your goods or services	1	2	3	4	5
3. Your overall profitability	1	2	3	4	5
4. Your total wages or salaries bills	1	2	3	4	5
5. Your total expenditure on goods and services	1	2	3	4	5

Q6. What would you ordinarily expect the turnover to have been at the establishment over the four day period from 14<sup>th</sup> to 17<sup>th</sup> January, had the heatwave not occurred?

\$



**ASK Q7a. IF SALES INCREASED/DECREASED...**

<p>Q7a. In percentage terms, please could you estimate the extent to which the total value of your sales of goods or services (INCREASED/DECREASED) during the four day heatwave?</p>	<table border="1" style="width: 100%; height: 30px;"> <tr> <td style="width: 33%;"></td> <td style="width: 33%;"></td> <td style="width: 33%;"></td> </tr> </table>				<p>%</p>

**ASK Q7b. IF OVERALL PROFITABILITY INCREASED/DECREASED**

<p>Q7b. In percentage terms, please could you estimate the extent to which your overall profitability (INCREASED/DECREASED) during the four day heatwave?</p>	<table border="1" style="width: 100%; height: 30px;"> <tr> <td style="width: 33%;"></td> <td style="width: 33%;"></td> <td style="width: 33%;"></td> </tr> </table>				<p>%</p>

<p>Q8. Thinking about the potential impact on the financial and operational performance of your business, what level of concern do you have about the possibility of experiencing more frequent and severe heatwaves in Melbourne over the next 20 years? Are you...</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-bottom: 1px solid black; padding-bottom: 5px;">Very concerned</td> <td style="text-align: right; border-bottom: 1px solid black; padding-bottom: 5px;">1</td> </tr> <tr> <td style="border-bottom: 1px solid black; padding-bottom: 5px;">Fairly concerned</td> <td style="text-align: right; border-bottom: 1px solid black; padding-bottom: 5px;">2</td> </tr> <tr> <td style="border-bottom: 1px solid black; padding-bottom: 5px;">Not very concerned</td> <td style="text-align: right; border-bottom: 1px solid black; padding-bottom: 5px;">3</td> </tr> <tr> <td style="border-bottom: 1px solid black; padding-bottom: 5px;">Not at all concerned</td> <td style="text-align: right; border-bottom: 1px solid black; padding-bottom: 5px;">4</td> </tr> </table>	Very concerned	1	Fairly concerned	2	Not very concerned	3	Not at all concerned	4
Very concerned	1								
Fairly concerned	2								
Not very concerned	3								
Not at all concerned	4								
<p><b>READ OUT SINGLE RESPONSE</b></p>									

## CLASSIFICATION

Q9. In which year did this business start operating?

Q10. Roughly, what is the total annual turnover at that business establishment? Based on last year's figures, was it...	<u>Under \$10,000</u>	01
	<u>\$10,000 to \$30,999</u>	02
	<u>\$31,000 to \$50,999</u>	03
	<u>\$51,000 to \$100,999</u>	04
	<u>\$101,000 to \$500,999</u>	05
	<u>\$501,000 to \$1 million</u>	06
	<u>\$1.1 million to \$2 million</u>	07
	<u>\$2.1 million to \$6 million</u>	08
	<u>\$6.1 million to \$10 million</u>	09
	<u>\$10.1 million to \$20 million</u>	10
	<u>Over \$20 million</u>	11
	<u>(Refused/Don't know)</u>	12

Q11. Is your business....?	<u>Primarily a tourism business</u>	1
	<u>Connected to the tourism industry (as a secondary activity)</u>	2
	<u>Not at all related to tourism</u>	3

Q12. <b>RECORD GENDER</b>	<u>Male</u>	1
	<u>Female</u>	2

Q13. And could you tell me into which of the following age groups you fall? <b>(Read out)</b>	<u>Under 21</u>	1
	<u>21 to 30</u>	2
	<u>31 to 40</u>	3
	<u>41 to 45</u>	4
	<u>46 to 50</u>	5
	<u>51 to 60</u>	6
	<u>Over 60</u>	7

Q14. And were you born in Australia?	<u>Yes</u>	1
	<u>No</u>	2

Q15a. City of Melbourne would like to map some of the responses to this survey – would you be happy to have your survey responses mapped against the location of your business?	<u>Yes</u>	<b>Continue</b>	1
	<u>No</u>	<b>Go To End</b>	2

Q15b. And finally, what is the street address of that business please? **NOTE: POSTCODE ALREADY RECORDED**

Address Line 1:

Address Line 2:

**End of interview.**

Thank you. That is the end of the interview. Once again my name is (... ..) from Sweeney Research. Should you need to contact us again please call us on 1800 35 77 39.

The study has been conducted on behalf of City of Melbourne.

As part of quality control procedures, someone from our project team may wish to re-contact you to ask a couple of questions, validating the information we have collected.

As a market research company, we comply with the requirements of the Privacy Act. The information you have provided will be used only for market research purposes.

Would you like me to give you any more details about how we comply?

**If yes then say:**

As I mentioned we may contact you to verify some of the information you gave us. Once we have completed our validation and processing of information, please be assured that your name and contact details will be removed from your responses to this survey. After that time, we will no longer be able to identify the responses provided by you. However for the period of time that your name and contact details remain with your survey responses, which will be approximately (one month) you can contact us to request access to your information and/or ask us to delete some or all of your information.

Once again, thank you for your time. My name is ..... and I'm calling from Sweeney Research. If you have any queries, you can call the Australian Market & Social Research Society's Survey Line on 1300 364 830 (for the cost of a local call).

**If no:**

Thank and close.

Date of interview:	
Respondent's name:	
Phone number:	
Address (if applicable):	
"I certify that this is a true, accurate and complete interview, conducted in accordance with international standards (ISO 20252) and the AMSRS Code of Professional Behaviour (ICC/ESOMAR). I will not disclose to any other person the content of this questionnaire or any other information relating to this project."	
Signed:	Interviewer: