Reimagining Australian Digital Healthcare
PERSON-CENTRED SEGMENTATION FOR A BETTER HEALTHCARE SYSTEM

How patient attitudes and behaviours reveal new perspectives on demographic segmentation in Australian healthcare
TOWARDS PERSON-CENTRED SEGMENTATION

This research investigates how person-centred segmentation of patients in the Australian healthcare system could improve outcomes, efficiency and patient satisfaction. It draws on a survey of over 2,000 Australians, and investigates issues such as healthcare engagement, organisational trust, independence, data-sharing and innovation, while also exploring how these issues are influenced by general attitudes to change, technology, privacy and socio-economic issues.

Talk to industry leaders and policy-makers about healthcare in Australia and it is not hard to reach consensus around the need to evolve the system, a general vision for the future, and the main drivers of change.1

When we change gears from policy to implementation – exactly how and when to make changes – it all becomes more complicated by the diversity of viewpoints. In this report, we argue that understanding the variations in patient behaviours and attitudes provides new insights in patient engagement and care. Patient attitudes do not simplify the problem – in fact, accepting the inherent complexity is part of the thesis – but it could make solving challenges more manageable, realistic and effective.
Heterogenous healthcare

Society is not homogenous – not in health, preferences, problems, behaviours or opportunities. The person-centred view of what influences and motivates patients provides an opportunity to develop more efficient, sustainable service delivery models, to improve public engagement with healthcare and perhaps even counter negative social determinants of health through more responsive and personalised initiatives that provide the care that patients need.

Zooming out, person-centred segmentation may also help healthcare providers, payers and policy-makers adapt more effectively to the most significant trends of the era – including both shifts in care models (e.g. towards consumer-directed, participatory care) and societal changes (e.g. expectations around personalisation and digital services).

Now more than ever, advances in data availability and real-time analytics can support this shift in focus towards the different healthcare and service needs of distinct groups. The question is, what exactly are these distinct groups?

This is a key question we explore in this report and by doing so, we hope to convince you of the value of person-centred segmentation and its potential to shape the future of Australian healthcare.
We have identified seven segments of interest for healthcare service delivery and policy formulation.

These segments were not identified with, or defined by, their relative health, location, age, gender, income or other demographic characteristics. Though this data has some value, it does not tell us how people think, feel or act. Instead, the segments are based on attitudes, feelings and abilities, which are key drivers of behaviours and preferences.

The research did not set out to create these seven groups, they emerged from an analysis of the survey respondents’ choices (explained below, under ‘Methods’).

We assigned each segment a “persona” identity with an avatar and name. This makes it easier to remember and relate to them. Indeed, thinking of them as individual healthcare consumers reminds us what person-centred segmentation is all about.

The personas emerged from analysis of attitudinal responses to many questions, including those specifically related to the future of healthcare. These questions covered a range of topics including:

• patient choice
• electronic medical records
• data-sharing
• remote care
• the role of GPs

We also asked the survey participants questions about general attitudes and abilities including:

• technology confidence
• openness to change
• socio-political views
• trust in institutions

This research is intended to launch and nurture discussion; it is not by any means intended as the final word on how to segment Australian society for healthcare delivery. There are natural limitations to our methods and reasonable assumptions in reporting our findings. There is more work to be done in exploring the intricacies of different population groups and validating our conclusions with other research methods and samples.

With these intentions in mind, please enjoy this rich and revealing view of more than 2,000 Australians from all regions and walks of life. At times, our personas show the error in common stereotypes, while at other times they reinforce them. Overall, the results reveal the fascinating complexity of attitudes Australians report about the future of healthcare. We hope that by highlighting these, we can contribute to the national discourse around the improved design of healthcare policies, services, technologies and funding models.
We begin by explaining our approach and introducing the seven personas.

We then explore the key themes of the survey in turn, showing how the seven personas differ on key issues and exploring the possible causes.

Along the way, we provide key insights from a selection of Australian health industry leaders who generously volunteered their time and thought leadership to support this research. We would especially like to acknowledge and thank the following:

**Scott Chapman**  
Chief Executive Officer,  
Royal Flying Doctor Service Victoria

**Professor Mark Harris**  
Executive Director,  
Centre for Primary Health Care and Equity, University of New South Wales

**Barry Sandison**  
Director (CEO),  
Australian Institute of Health and Welfare

**Tom Symondson**  
Chief Executive Officer,  
Victorian Healthcare Association
SECTION 1
Seven types of Australian patients

Methods

This research was conducted by Accenture and Longitude Research and is based on a survey of 2,020 Australians (including citizens and permanent residents). Each respondent completed a detailed online questionnaire comprising demographic and thematic sections, including questions designed to identify personality traits, general attitudes and abilities.

The sampling frame was based on quotas aligned to Australian Bureau of Statistics data to ensure proportional representation of the Australian population based on income, sex, location and age (excluding those under 18 years of age). The sample was then sourced from one of Australia’s largest general population panels. To qualify for the survey, all respondents must have visited a doctor, hospital or health treatment centre at least once per year over each of the past three years.

We used this sampling approach to make our findings generalisable to the whole, adult Australian population that consumes healthcare. Our findings are therefore not targeted to minority groups nor to those that do not use the health system.
From clusters to personas

The personas in this report emerged from a multivariate analysis of the responses provided to 45 statement-agreement questions from the survey. These are described in the diagram below.

We used a two-phase analysis process. Phase One was a factor analysis of all 45 variables with the aim of reducing these to a workable number of cohesive themes. This resulted in 10 factors, each representing a core theme.

### NUMBER OF STATEMENTS PER SURVEY QUESTION TOPIC

<table>
<thead>
<tr>
<th>Topic</th>
<th>Number of Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>General technology competence/attitudes</td>
<td>4</td>
</tr>
<tr>
<td>Socio-political stance</td>
<td>7</td>
</tr>
<tr>
<td>General data privacy</td>
<td>6</td>
</tr>
<tr>
<td>Primary data use</td>
<td>5</td>
</tr>
<tr>
<td>Medical record access</td>
<td>6</td>
</tr>
<tr>
<td>Healthcare efficiency and spending</td>
<td>5</td>
</tr>
<tr>
<td>Payments and funding models</td>
<td>5</td>
</tr>
<tr>
<td>Choice and decision-making</td>
<td>7</td>
</tr>
</tbody>
</table>

**TOTAL NUMBER OF STATEMENTS = 45**

### TEN FACTORS UNDERPINNING THE CLUSTER ANALYSIS

1. Costs
2. Primary health data-sharing
3. Technology attitude and aptitude
4. General privacy attitude and aptitude
5. GP engagement
6. Government spending
7. Active involvement
8. Politics and regulation
9. Access to data
10. Equality and openness to change
In Phase Two, each respondent was allocated a value (generally between -1 and 1) for each factor, representing the direction and strength of their alignment with a given factor. We then used a k-means clustering algorithm to group respondents based on their factor scores. The result is seven distinct clusters covering 86 percent of the sample population (or 1,747 respondents). The remaining 14 percent were not a good fit for any group. We treated this cluster as unknown for the purposes of this analysis, so that we could preserve the integrity of the main groups (rather than any forced classification of every single respondent). A future study could help to shed more light on the excluded group.
Introducing seven personas

Here we introduce our seven personas with a brief profile. More detailed profiles, along with charts showing further attributes, can be found in the appendix to this report.

The personas have been given two-part names. The first part describes one of the group’s most salient features. There is much more to each group than this, but it is a distinctive attribute by which we can remember them. The second part of the name is designed to function like a person’s first name, giving each of the groups a representative persona.

GROUP 1:
Age and gender: Younger; gender neutral
Signature trait: Most are workers or full-time parents/carers
Summary: Open to change and technology, but more reluctant to share data; for the majority, treatment and service choices are driven by financial costs

Busy Lizzy

GROUP 2:
Age and gender: Average age; more male
Signature trait: Most are socially conservative, not supportive of healthcare change
Summary: Disengaged over privacy issues; no financial/payment model concerns; little interest in consumer-directed care

OK Joe

GROUP 3:
Age and gender: Older; more male
Signature trait: Most are healthy seniors moving with the times
Summary: Highly confident with technology, open to change and alert to privacy issues but relatively relaxed about sharing information

Fit Fu
GROUP 4:
Age and gender: Older; gender neutral
Signature trait: Most are less healthy and have more financial issues
Summary: Traditionalist; less open to technology; concerned about privacy and reluctant to share information; financial concerns drive many choices

GROUP 5:
Age and gender: Younger; more female
Signature trait: Most are busy, healthy and quick to try new things
Summary: Open to technology and change; relaxed about data-sharing; strong desire for more consumer-directed care; financially constrained

GROUP 6:
Age and gender: Average age; more female
Signature trait: Most are very anxious about privacy but are still open to change
Summary: Confident with technology but not positive about technological substitutes; highly concerned about privacy; reluctant to share information

GROUP 7:
Age and gender: Older; gender neutral
Signature trait: Most do not like technology, self-service or anything new
Summary: Generally resistant to change, but relaxed about data-sharing and privacy; not interested in consumer-directed care; not financially driven
One of the most radical differentiators between the personas is in their attitudes to new technology and online services. Hip Pip (88 percent), Fit Fu (80 percent), Wary Mary (73 percent) and Busy Lizzy (72 percent) all report high confidence with new devices and digital services. The numbers are much lower for OK Joe (56 percent), Struggling Sam (42 percent) and, especially, Vintage Viv (19 percent).

Supporting this pattern, more than half of Struggling Sam’s persona (53 percent) and two-thirds of Vintage Viv’s persona (65 percent) find technology frustrating; only 7 percent of Hip Pip’s persona and 15 percent of Fit Fu’s are frustrated. In short, where there is higher confidence there is lower frustration.

If we look purely at demographic segmentation, we find that those under 40 are more confident (84 percent) than those over 60 (53 percent). This supports the stereotype of the tech-savvy youngster and the aging luddite, but that stereotype misses important nuances.

Take our two oldest personas: Fit Fu, with an average age of 59, and Vintage Viv, with an average age of 58. Just 19 percent of Vintage Viv’s persona are confident with new technology – the lowest score of all personas – but 80 percent of Fit Fu’s persona are confident, which is the second highest of the personas.

Similarly, though the gulf is not as wide, there is a significant difference in the confidence of the two youngest groups. Hip Pip stands out as the most tech savvy of all, but Busy Lizzy is only a little better than the overall average.

Clearly there is considerable variation in confidence within age groups and this is invisible with purely demographic segmentation. So why is this useful?

First, quite practically, it helps us to identify Hip Pip as the most likely to adopt new digital services and accept technological substitutes (e.g. a video call instead of a face-to-face appointment). We can target Hip Pip as the ideal pioneer to test new service models. On the other hand, we know that Vintage Viv is at the opposite extreme: they will be the least satisfied – and will need the most support – if a digital solution were made mandatory.

Person-centred segmentation also helps us to include Fit Fu in our plans by ensuring that digital services are properly designed to suit (or adapt to) older generations. This could be, for example, simply avoiding language, focus areas and visual design that obviously targets younger people, or in making sure digital services adequately cater for health issues and life situations that are typically more common in older populations.
Second, these findings reveal variables that we can start to reliably associate and this helps us to understand what drives behaviours and preferences. We know, for example, that those who are more open to change in our sample are the same groups that have higher technology confidence and lower frustration. This finding has been repeated in previous surveys we have undertaken where we asked the same question of Australian respondents.

This knowledge is powerful, because technology confidence – something we can determine without even asking, purely from usage patterns – indicates openness to other new things, and not necessarily just technology-driven services. For example, despite their similar age profiles, Hip Pip is more open than Busy Lizzy to both consumer-directed care and sharing information. While there are surely other factors at play, these correlations are consistent within our personas.

These insights can be pieced together, for example, to predict individual suitability and future usage patterns for new health services. As we will see, however, much of that also depends on individual attitudes to health data and privacy.

<table>
<thead>
<tr>
<th>TECHNOLOGY CONFIDENCE VERSUS FRUSTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIP PIP</td>
</tr>
<tr>
<td>88%</td>
</tr>
<tr>
<td>7%</td>
</tr>
<tr>
<td>FIT FU</td>
</tr>
<tr>
<td>60%</td>
</tr>
<tr>
<td>15%</td>
</tr>
<tr>
<td>WARY MARY</td>
</tr>
<tr>
<td>73%</td>
</tr>
<tr>
<td>23%</td>
</tr>
<tr>
<td>BUSY LIZZY</td>
</tr>
<tr>
<td>72%</td>
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<tr>
<td>24%</td>
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<tr>
<td>OVERALL</td>
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<tr>
<td>66%</td>
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<tr>
<td>32%</td>
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<tr>
<td>OK JOE</td>
</tr>
<tr>
<td>56%</td>
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<tr>
<td>23%</td>
</tr>
<tr>
<td>STRUGGLING SAM</td>
</tr>
<tr>
<td>42%</td>
</tr>
<tr>
<td>53%</td>
</tr>
<tr>
<td>VINTAGE VIV</td>
</tr>
<tr>
<td>19%</td>
</tr>
<tr>
<td>65%</td>
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</tbody>
</table>

I am a confident user of new technology and online services

I find technology frustrating
**AGE GROUPS**

<table>
<thead>
<tr>
<th>Category</th>
<th>Net: Under 40</th>
<th>Net: 40-59</th>
<th>Net: 60+</th>
</tr>
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<tbody>
<tr>
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<td>14%</td>
<td>25%</td>
<td>62%</td>
</tr>
<tr>
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<td>11%</td>
<td>39%</td>
<td>50%</td>
</tr>
<tr>
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<td>18%</td>
<td>39%</td>
<td>43%</td>
</tr>
<tr>
<td>OK JOE</td>
<td>32%</td>
<td>30%</td>
<td>38%</td>
</tr>
<tr>
<td>OVERALL</td>
<td>34%</td>
<td>33%</td>
<td>33%</td>
</tr>
<tr>
<td>WARY MARY</td>
<td>27%</td>
<td>43%</td>
<td>30%</td>
</tr>
<tr>
<td>HIP PIP</td>
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<td>24%</td>
</tr>
<tr>
<td>BUSY LIZZY</td>
<td>42%</td>
<td>40%</td>
<td>19%</td>
</tr>
</tbody>
</table>

**ATTITUDES TO CHANGE**

<table>
<thead>
<tr>
<th>Category</th>
<th>I am progressive; I have an instinct to embrace change</th>
<th>I am traditionalist; I have an instinct to keep things the way they are</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIP PIP</td>
<td>78%</td>
<td>12%</td>
</tr>
<tr>
<td>FIT FU</td>
<td>70%</td>
<td>30%</td>
</tr>
<tr>
<td>BUSY LIZZY</td>
<td>65%</td>
<td>36%</td>
</tr>
<tr>
<td>WARY MARY</td>
<td>59%</td>
<td>25%</td>
</tr>
<tr>
<td>OVERALL</td>
<td>57%</td>
<td>43%</td>
</tr>
<tr>
<td>OK JOE</td>
<td>32%</td>
<td>39%</td>
</tr>
<tr>
<td>STRUGGLING SAM</td>
<td>32%</td>
<td>64%</td>
</tr>
<tr>
<td>VINTAGE VIV</td>
<td>17%</td>
<td>62%</td>
</tr>
</tbody>
</table>
Trust is fundamental to any strong healthcare system. Not only do we put our faith in the advice and treatments we receive, but we also trust providers with some of our most sensitive personal information. That information is increasingly powerful. It has the potential to improve individual outcomes, population health and countless aspects of healthcare system performance.

In March 2017, the Productivity Commission submitted its final report to government following a large-scale inquiry into data availability and use in Australia. The report found that Australia is rapidly falling behind other countries (such as the UK and New Zealand) in its use of data. The health sector was singled out as an area that best exemplifies the opportunities that are being missed due to problems with barriers and trust in data use. The report quotes Medibank Private’s submission to the inquiry:

“If you go to three different institutions, over a period, each of those institutions holds its own data. So a universal patient record would make things a lot easier. I don’t think institutions hold data back necessarily. I just don’t think they have the means, methods, or the priority, perhaps, to have a common or shareable platform. It’s just the old way. You put it on paper and file it in a drawer.”

Scott Chapman, Chief Executive Officer, Royal Flying Doctor Service Victoria

The report recommends a major overhaul to data policy and legislation, including a new “comprehensive right” that gives patients more control over their data. This is a welcome development, not least since so many aspects of the future of healthcare – from self-monitoring devices to more preventative healthcare models – rely on greater, better and easier use of data.

So how do patients feel about these issues? And how can person-centred segmentation reveal opportunities and inform health data policies?

“The health sector is very good at generating and storing data. It is less effective at translating this data into useful information. It is poor at linking and sharing information between health professionals, where it could be used to improve health outcomes and system efficiency. Worst of all is the health sector’s ability and willingness to share data with consumers.”

Scott Chapman, Chief Executive Officer, Royal Flying Doctor Service Victoria
General privacy attitudes

We asked respondents several questions about privacy and data-sharing. At the overall sample level, there are three broad attitudes: those who are relaxed about data privacy and sharing data (39 percent), those who are not relaxed (36 percent), and those who are neither (25 percent).

This summary is only a fragment of the picture. Take, for example, Hip Pip and Vintage Viv. As we have seen, they could not be more different in terms of their ages, attitudes to change and appreciation of technology, yet they are the two most relaxed about privacy and sharing of information.

Why is this? Are there different reasons behind the same attitude? Our research suggests there are, and that the differences are important because they have a major bearing on how people will respond to future policies and services. We will return to this point below.

Keeping our focus on privacy attitudes for now, gender also appears to reveal little, with the most relaxed (Hip Pip) and the most anxious (Wary Mary) personas both having a strong female bias, while the two most male personas (Fit Fu and OK Joe) occupy opposite extremes in terms of caution and alertness around privacy.

<table>
<thead>
<tr>
<th>PRIVACY AND DATA-SHARING</th>
<th>I am very alert and cautious in managing the privacy of my personal data</th>
<th>I’m quite relaxed about data privacy - most often I have no problem sharing my information</th>
<th>I have read the data privacy policies for most of the services I use</th>
<th>I seek out and configure the privacy settings when I use online services, apps or other software on my computer, phone or tablet</th>
<th>I think traditional paper archives are more secure than electronic databases</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIT FU</td>
<td>90%</td>
<td>38%</td>
<td>56%</td>
<td>72%</td>
<td>32%</td>
</tr>
<tr>
<td>WARY MARY</td>
<td>85%</td>
<td>7%</td>
<td>52%</td>
<td>79%</td>
<td>54%</td>
</tr>
<tr>
<td>STRUGGLING SAM</td>
<td>83%</td>
<td>18%</td>
<td>39%</td>
<td>56%</td>
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</tr>
<tr>
<td>OVERALL</td>
<td>72%</td>
<td>39%</td>
<td>44%</td>
<td>57%</td>
<td>48%</td>
</tr>
<tr>
<td>BUSY LIZZY</td>
<td>69%</td>
<td>35%</td>
<td>43%</td>
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</tr>
<tr>
<td>HIP PIP</td>
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<td>48%</td>
<td>25%</td>
<td>51%</td>
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</tr>
<tr>
<td>VINTAGE VIV</td>
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<td>46%</td>
<td>21%</td>
<td>23%</td>
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<tr>
<td>OK JOE</td>
<td>45%</td>
<td>38%</td>
<td>24%</td>
<td>33%</td>
<td>38%</td>
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</tbody>
</table>
Vigilance versus secretiveness

Our research shows that we can learn more if we focus on the overlooked distinction between vigilance and secretiveness.

To see this, compare Fit Fu and Wary Mary. Fit Fu is the most alert and cautious in managing the privacy of personal data (90 percent). At the same time, this persona is not especially secretive, with an average proportion (38 percent) feeling relaxed about sharing information (24 percent are neutral and 38 percent are not relaxed). Wary Mary is as vigilant as Fit Fu, with 85 percent very alert and cautious in managing the privacy of personal data. However, very few in Wary Mary’s persona (7 percent) are relaxed about sharing their information - 78 percent disagreed with the statement, implying they are anything but relaxed (15 percent are neutral).

Both Fit Fu and Wary Mary manage their privacy more actively than most, with higher-than-average percentages reading data privacy policies and configuring the privacy settings of online services. Yet as we will see in many instances below, Wary Mary’s vigilance seems driven by mistrust or fear (in Section 5 we explore possible explanations for this). Fit Fu, by contrast, is very open to sharing data, so his vigilance may simply be driven by being aware of the real risks involved in sharing data.

This interpretation does not explain why Fit Fu is more relaxed. There are other factors at play. Personality traits or bad experiences, perhaps, which, all things being equal, predispose one persona to feeling relaxed where another would feel anxious. What we can say is that vigilance is not necessarily a result of secrecy, fear or lack of trust.

There are further factors that may test our assumptions. Struggling Sam for instance, is like Wary Mary in that she claims to be cautious about privacy and not relaxed about sharing data but she is not as secretive as Wary Mary. Struggling Sam is also less vigilant than both Wary Mary and Fit Fu, being considerably less likely to have read data privacy policies or configured the privacy settings of online services. So, like Struggling Sam, some of us worry about privacy but share our data anyway and fail do the things we should do to protect ourselves. This highlights the variability of human nature; not always logical but sometimes still consistent enough to be useful.
So far, we’ve looked at how patients think and act in relation to general privacy issues. What about health information specifically? What do our groups think about the privacy and use of their medical records?

As the Productivity Commission report highlights, healthcare providers operate in silos for the most part, and the lack of information transfer between providers negatively affects care quality and efficiency. It also concludes that “patient access to their own medical history (wherever they are, instantly) would not only improve professionals’ knowledge of their patients’ medical condition and reduce the number of diagnostic tests, but enable the ready and secure sharing of health information to other healthcare providers.”

This is, of course, already a government priority – illustrated by the decision to expand the national “My Health Record” system to all Australians on the basis that more patients and providers will benefit from the system.

Nevertheless, digital health continues to spark debate – much of it around privacy and security. For example, access controls, consent models, use of data by third parties and the threat of security breaches need to be considered alongside usability, adoption, and health outcome benefits. It’s complicated, and sometimes, policy simply does not keep pace with the speed of digital innovation.

“Obviously, there are precautions that must be taken when data sets are brought together and the potential for re-identification must be properly managed. However, while concerns may get raised, what might not be considered is the fact that the general public themselves may not have major worries. With the correct oversight and controls, access to de-identified data for research or service improvement can support the delivery of public services.”

Barry Sandison, Director, Australian Institute of Health and Welfare
The survey helps us to understand more about how patients really feel about these issues. First, Australians overwhelmingly (89 percent) want to access everything that is in their medical records, and they want to see everything their GP can see (also 89 percent).

Not all Australians feel that there is a lot wrong with the way things are. While a strong majority in the Wary Mary (76 percent) and Struggling Sam (69 percent) personas feel they do not have enough control over their health-related data, just 16 percent of Vintage Viv’s persona and 28 percent of both Fit Fu’s and OK Joe’s personas are concerned about a lack of control of their health records.

What is interesting is that Fit Fu is the only persona where the majority (60 percent) say they understand how their GP practice shares and protects their digital information. While OK Joe shares Fit Fu’s relative satisfaction with the control they have, less than one in five (18 percent) understands their GP’s data protection measures. OK Joe is also the least alert and cautious in managing the privacy of personal data (45 percent), while Fit Fu, as we have seen, is the most alert (90 percent).

So, what’s going on here? Those in Fit Fu’s persona appear to be well informed and vigilant, but not anxious about privacy. They do not perceive a need for greater control – perhaps because they already feel in control, or because they perceive no need for greater control if they are informed.

OK Joe, on the other hand, is either not interested, or does not care much about, privacy issues – which makes this another example of very different attitudes driving the same opinions or behaviours.

What is revealing is that those in Fit Fu’s persona have the most collaborative relationship with their GPs: 88 percent say their GP encourages them to be involved in decision-making, compared with 44 percent of those in OK Joe’s persona.

It is interesting to note that being disengaged from privacy issues does not make OK Joe any more likely to share information; if anything, the opposite is true. The conclusion appears to be that uncertainty (whether driven by insufficient information or anything else) tends to make people decide the safest choice is not to share their health records.
Encouragingly though, Australian patients in our survey are overwhelmingly in favour of treating practitioners having access to their full medical records: 80 percent would share their full medical record with any clinician that treats them. Four in every five (81 percent) also believe that their data shared with one doctor should be automatically accessible to any other doctor that treats them.

But Wary Mary stands out for a strongly atypical reluctance to share information or cede control to practitioners. Just 30 percent would share their full medical records with any treating clinician, compared with about 90 percent of those in Struggling Sam, Vintage Viv, Fit Fu and Hip Pip’s personas. Similarly, just 31 percent in Wary Mary’s persona agree that information shared with one doctor (e.g. a GP or surgeon) should be automatically accessible to other treating doctors, compared with 90 percent or higher for the same four groups.

So how do you design services and policies to cater for both OK Joe, who seems to care too little, and Wary Mary, who seems to care too much, while also satisfying everyone in between? This research suggests the answer lies in tailoring multiple, person-centred approaches that suit relatively homogenous sets of patient attitudes and aptitudes.

Not forgetting, either, that people’s views change. It is quite possible that a new diagnosis, a hacked computer or even a news article could turn an OK Joe into a Wary Mary. We need to give consumers the tools they need to easily change their minds – to “un-share” and “re-hide” their information. As we will see, trust depends quite crucially on feeling in control.
I would share my full medical record with any clinician that treats me.

Paramedics and doctors should automatically have access to my full medical record if I am unconscious and in need of emergency treatment.

If I was admitted to hospital, I would be happy for any doctor, nurse or treating practitioner there to have access to my full medical record.

I would share my full medical record with my pharmacist if it would save me a routine GP appointment.

When I share information with one doctor (e.g. my or surgeon) it should be automatically accessible to any other doctor who treats me.

### ACCESS TO MEDICAL RECORDS

<table>
<thead>
<tr>
<th>Patients</th>
<th>People should be able to access everything on their own medical records</th>
<th>I should be able to see/access all the information about me that my GP sees on their computer</th>
<th>People should be able to remove information from their medical records</th>
<th>There are items on my medical record that I would prefer to delete forever</th>
<th>I understand how the information on my GP's computer is shared and protected</th>
<th>I do not have enough control over my health related data</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIP PIP</td>
<td>100%</td>
<td>98%</td>
<td>34%</td>
<td>16%</td>
<td>21%</td>
<td>69%</td>
</tr>
<tr>
<td>FIT FU</td>
<td>98%</td>
<td>99%</td>
<td>26%</td>
<td>13%</td>
<td>31%</td>
<td>51%</td>
</tr>
<tr>
<td>VINTAGE VIV</td>
<td>96%</td>
<td>96%</td>
<td>20%</td>
<td>6%</td>
<td>60%</td>
<td>28%</td>
</tr>
<tr>
<td>BUSY LIZZY</td>
<td>95%</td>
<td>97%</td>
<td>51%</td>
<td>30%</td>
<td>21%</td>
<td>76%</td>
</tr>
<tr>
<td>OK JOE</td>
<td>89%</td>
<td>89%</td>
<td>35%</td>
<td>23%</td>
<td>42%</td>
<td>48%</td>
</tr>
<tr>
<td>VARY MARY</td>
<td>84%</td>
<td>83%</td>
<td>12%</td>
<td>6%</td>
<td>36%</td>
<td>16%</td>
</tr>
<tr>
<td>OVERALL</td>
<td>89%</td>
<td>89%</td>
<td>35%</td>
<td>23%</td>
<td>42%</td>
<td>48%</td>
</tr>
<tr>
<td>WARY MARY</td>
<td>84%</td>
<td>83%</td>
<td>12%</td>
<td>6%</td>
<td>36%</td>
<td>16%</td>
</tr>
<tr>
<td>WARY MARY</td>
<td>75%</td>
<td>74%</td>
<td>34%</td>
<td>23%</td>
<td>47%</td>
<td>39%</td>
</tr>
<tr>
<td>OK JOE</td>
<td>71%</td>
<td>70%</td>
<td>21%</td>
<td>14%</td>
<td>18%</td>
<td>28%</td>
</tr>
</tbody>
</table>
The reality is that patients feel differently when you ask them about the privacy of various types of information, about sharing for various purposes and about sharing with various organisations. This is one of many reasons why digital health policy and service design are so complex.

When we accept this complexity and ask more subtle questions, we find some specific and reliable conclusions about health system consumers.

For example, we asked respondents to rate 20 different data types (including health and non-health information) on a scale that indicated their views on the privacy or sensitivity of each. We found, of course, that there are big differences between data types. For example, much lower privacy ratings are given to allergies than to blood test results.

We also found that people tend to be uniformly more, or less, secretive overall. In other words, some personas consistently rate all data types as more private than other personas. So a persona with a higher-than average privacy rating for allergies is very likely to have a higher-than-average rating for blood tests (or any other data type).

This makes their average score across all data types a reasonable proxy for their overall level of secretiveness. This “secrecy score” is an average of 20 data types (including both health and non-health related information) based on the percentage that gave “private” or “very private” ratings to each data type.

Using this analysis, as you might now expect, Wary Mary is the most secretive by far, with a secrecy score of 68 percent. Busy Lizzy (47 percent), Struggling Sam (48 percent) and Hip Pip (45 percent) follow the overall average (48 percent), while Fit Fu (40 percent), Vintage Viv (40 percent) and OK Joe (37 percent) are a little more open than average.

“There are very legitimate privacy concerns for a range of reasons – this is difficult territory and these are big issues. We need to be confronting them now and we need to be building systems that allow us to use information but also have some degree of security and confidence. We’re going to need a lot of government leadership on this, as well as leadership from the private sector.”

Professor Mark Harris, Executive Director, Centre for Primary Health Care and Equity, University of New South Wales

SECTION 5
The trust spectrum
Why is Mary wary?

Time poor clinicians, who understand the need to quickly share clinical data to provide high quality care, are put in a compromising position by Wary Mary’s reluctance to share. They know that once a patient is critically ill it is often too late to access important health information stuck in a different system. Clinicians may find it too slow, or too hard, to explain the detrimental consequences of ‘secretive’ decisions to patients like Wary Mary. Reticence to share crucial health information definitely has an impact on morbidity and mortality.

So why is Wary Mary so secretive? It is tempting to think that perhaps those in her persona have the most stigmatised or embarrassing issues on their medical records or maybe they are withholding conditions from their life insurer. More research is needed to explore her persona.

We have some evidence to support the stigma hypothesis. Wary Mary’s is the only persona where a large proportion (51 percent) favour the idea that people should be able to remove information from their medical records, and the persona has the highest proportion (30 percent) stating that there are items on their own medical records that they would prefer to delete forever.

While this likely explains part of it, it does not explain why Wary Mary also has significantly higher secretiveness scores across all the non-health data types we asked about. For example, those in the Wary Mary persona rate intelligence test results 20 percentage points above the average, current location 18 points above, income 18 points higher, and home address 17 points above average. Wary Mary likes to keep all her information private.

It is plausible that many in Wary Mary’s persona have nothing to hide. After all, while it is high compared with others, only 30 percent would permanently delete something from their record. The reasons appear to go deeper. The data suggests that those in Wary Mary’s persona simply have more anxious, private personalities. Should we not then give more thought to designing policies and services that are suited to these deep traits, alongside those that cater for the disengaged OK Joes, the confident Fit Fus and the enthusiastic Hip Pips?

An approach built on person-centred segmentation would provide tailored communication and engagement approaches for individuals based on their self-reported persona. This would potentially create closer engagement between patients and health professionals, as well as improved health outcomes.
Another way in which the personas are internally consistent is the way they rank various organisations, based on their confidence in their data security capabilities.

Overall, 89 percent of Australians are confident that their GPs will keep their data secure and protect it from unauthorised access – even though only 42 percent say they understand how information on a GP’s computer is shared and protected. Public and private hospitals (75 percent) and state (68 percent) and federal (67 percent) health departments are also strongly trusted.

There is dramatically lower trust in global tech giants (33 percent), health-app providers (29 percent) and supermarkets (27 percent).

But while the ranking is consistent, the degree of confidence differs significantly between the personas, with Hip Pip and Fit Fu the most trusting overall, and Struggling Sam and Wary Mary the least trusting.

Given this strong trust, Fit Fu and Hip Pip are understandably the most likely to anonymously share information for secondary uses, such as health department performance monitoring, various types of research (e.g. academic, insurance or pharmaceutical), or to use digital health services (e.g. artificial intelligence-driven health advisors or monitors). However, as we will see in the next section, different personas do not have the same needs when it comes to healthcare services.

“People trust the health system, but we need to be a little bit cautious about getting too carried away with that. People give Woolworths an awful lot of information every time they swipe their loyalty card, or will give a lot of information to save a couple of dollars at the petrol pump or use a free app. But there is a lot of trust there and we need to be very careful about that. GPs, in particular, need to be very careful about protecting trust, because patients will be upset if they ever feel their health information is being traded away.”

Professor Mark Harris, Executive Director, Centre for Primary Health Care and Equity, University of New South Wales
OVERALL LEVEL OF SECRECY (AND SELECTED DATA TYPES)

Secrecy score
Sexual health issues (i.e. diagnoses and treatments)
Mental health issues (i.e. diagnoses and treatments)
Genetic data (e.g. genome sequencing results)
Age, height and weight
Allergies

DESIRE TO DELETE ITEMS FROM MEDICAL RECORDS

<table>
<thead>
<tr>
<th>Name</th>
<th>Secrecy</th>
<th>Sexual Health</th>
<th>Mental Health</th>
<th>Genetic Data</th>
<th>Age, Height</th>
<th>Allergies</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARY MARY</td>
<td>51%</td>
<td>30%</td>
<td>23%</td>
<td>12%</td>
<td>45%</td>
<td>2%</td>
</tr>
<tr>
<td>BUSY LIZZY</td>
<td>34%</td>
<td>30%</td>
<td>23%</td>
<td>10%</td>
<td>45%</td>
<td>4%</td>
</tr>
<tr>
<td>STRUGGLING SAM</td>
<td>34%</td>
<td>16%</td>
<td>20%</td>
<td>6%</td>
<td>45%</td>
<td>1%</td>
</tr>
<tr>
<td>HIP PIP</td>
<td>26%</td>
<td>13%</td>
<td>20%</td>
<td>6%</td>
<td>45%</td>
<td>1%</td>
</tr>
<tr>
<td>OK JOE</td>
<td>21%</td>
<td>14%</td>
<td>20%</td>
<td>6%</td>
<td>45%</td>
<td>1%</td>
</tr>
<tr>
<td>FIT FU</td>
<td>20%</td>
<td>6%</td>
<td>20%</td>
<td>6%</td>
<td>45%</td>
<td>1%</td>
</tr>
<tr>
<td>VINTAGE VIV</td>
<td>12%</td>
<td>6%</td>
<td>20%</td>
<td>6%</td>
<td>45%</td>
<td>1%</td>
</tr>
</tbody>
</table>

People should be able to remove information from their medical records
There are items on my medical record that I would prefer to delete forever
## CONFIDENCE IN DATA PROTECTION
(Net Highly Confident and Somewhat Confident)

<table>
<thead>
<tr>
<th></th>
<th>LIZZY</th>
<th>JOE</th>
<th>FU</th>
<th>SAM</th>
<th>PIP</th>
<th>MARY</th>
<th>VIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your GP</td>
<td>90%</td>
<td>84%</td>
<td>98%</td>
<td>87%</td>
<td>95%</td>
<td>75%</td>
<td>95%</td>
</tr>
<tr>
<td>A local public hospital</td>
<td>76%</td>
<td>69%</td>
<td>85%</td>
<td>65%</td>
<td>84%</td>
<td>62%</td>
<td>78%</td>
</tr>
<tr>
<td>A private hospital (or other private healthcare provider)</td>
<td>77%</td>
<td>69%</td>
<td>85%</td>
<td>70%</td>
<td>82%</td>
<td>57%</td>
<td>72%</td>
</tr>
<tr>
<td>State Government health department</td>
<td>69%</td>
<td>64%</td>
<td>79%</td>
<td>55%</td>
<td>79%</td>
<td>49%</td>
<td>66%</td>
</tr>
<tr>
<td>The Australian Tax Office (ATO)</td>
<td>69%</td>
<td>64%</td>
<td>76%</td>
<td>56%</td>
<td>74%</td>
<td>51%</td>
<td>69%</td>
</tr>
<tr>
<td>Federal Government health department</td>
<td>67%</td>
<td>67%</td>
<td>77%</td>
<td>55%</td>
<td>75%</td>
<td>47%</td>
<td>67%</td>
</tr>
<tr>
<td>Your health insurance company</td>
<td>70%</td>
<td>55%</td>
<td>70%</td>
<td>52%</td>
<td>70%</td>
<td>41%</td>
<td>56%</td>
</tr>
<tr>
<td>(e.g. Bupa, Medibank, HCF, etc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banks (e.g. Westpac, ANZ, etc)</td>
<td>56%</td>
<td>55%</td>
<td>64%</td>
<td>40%</td>
<td>57%</td>
<td>41%</td>
<td>47%</td>
</tr>
<tr>
<td>Your employer</td>
<td>63%</td>
<td>51%</td>
<td>47%</td>
<td>35%</td>
<td>54%</td>
<td>34%</td>
<td>35%</td>
</tr>
<tr>
<td>Global technology giants</td>
<td>38%</td>
<td>30%</td>
<td>29%</td>
<td>16%</td>
<td>37%</td>
<td>17%</td>
<td>19%</td>
</tr>
<tr>
<td>(e.g. Google, Apple, Microsoft, etc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software companies behind popular health apps from the Apple App Store or Google Play Store</td>
<td>37%</td>
<td>27%</td>
<td>24%</td>
<td>12%</td>
<td>31%</td>
<td>14%</td>
<td>14%</td>
</tr>
<tr>
<td>Supermarket chains (e.g. Coles, Woolworths, etc)</td>
<td>31%</td>
<td>25%</td>
<td>24%</td>
<td>10%</td>
<td>21%</td>
<td>9%</td>
<td>17%</td>
</tr>
</tbody>
</table>

Lower relative to other personas
Average relative to other personas
Higher relative to other personas
### WILLINGNESS TO SHARE ANONYMOUSLY FOR SECONDARY PURPOSES (AVERAGE FOR 19 DATA TYPES)

<table>
<thead>
<tr>
<th>Role</th>
<th>HIP PIP</th>
<th>FIT FU</th>
<th>VINTAGE VIV</th>
<th>OVERALL</th>
<th>STRUGGLING SAM</th>
<th>OK JOE</th>
<th>BUSY LIZZY</th>
<th>WARY MARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>State and Federal Government health departments for performance monitoring of healthcare services</td>
<td>57%</td>
<td>49%</td>
<td>42%</td>
<td>31%</td>
<td>38%</td>
<td>31%</td>
<td>22%</td>
<td>45%</td>
</tr>
<tr>
<td>Universities, and other academic organisations, for research purposes</td>
<td>42%</td>
<td>47%</td>
<td>33%</td>
<td>31%</td>
<td>34%</td>
<td>27%</td>
<td>29%</td>
<td>26%</td>
</tr>
<tr>
<td>Pharmaceutical companies for research into new drugs</td>
<td>31%</td>
<td>31%</td>
<td>25%</td>
<td>25%</td>
<td>21%</td>
<td>26%</td>
<td>23%</td>
<td>16%</td>
</tr>
<tr>
<td>Insurance companies for analysis of healthcare trends and costs</td>
<td>28%</td>
<td>27%</td>
<td>21%</td>
<td>22%</td>
<td>21%</td>
<td>21%</td>
<td>22%</td>
<td>13%</td>
</tr>
<tr>
<td>Private companies for the development of new products and services</td>
<td>32%</td>
<td>25%</td>
<td>20%</td>
<td>20%</td>
<td>22%</td>
<td>23%</td>
<td>22%</td>
<td>12%</td>
</tr>
<tr>
<td>A popular, top-rated mobile app to provide you with personalised healthcare advice using artificial intelligence</td>
<td>25%</td>
<td></td>
<td>14%</td>
<td>18%</td>
<td>17%</td>
<td>17%</td>
<td>19%</td>
<td>9%</td>
</tr>
<tr>
<td>A popular, top-rated mobile app to provide you with live fitness tracking and health indicators (e.g. linked to a wristband or smartwatch)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Most Australian patients we surveyed (81 percent) report confidence in asking doctors about tests, treatments, medications and costs. Seven in 10 trust themselves to take charge of their own health (69 percent) and feel comfortable deciding what kind of clinician to see (68 percent), while 65 percent are comfortable choosing between different treatment options.

Could this indicate that society is ready for more choice and control in healthcare? If so, this would be positive for models like Health Care Homes, for example, which is set to be trialled by up to 65,000 people over the next two years.

Just because people have the confidence they need to manage their own health does not necessarily mean they want to. For example, low proportions in Vintage Viv and OK Joe’s personas want to be more actively involved in planning and implementing healthcare needs and neither group is strongly interested in their GPs taking on a bigger care coordination role. Hip Pip and Wary Mary, want to be more actively involved in planning and implementing healthcare needs, but Wary Mary is not as interested in GPs taking on a bigger care coordination role.

At the end of the previous section we saw that Hip Pip and Fit Fu are the most likely to share information for secondary purposes. That is not all they have in common. We have seen how, despite being the oldest and youngest personas, they are the two most open to change and the most technologically confident. Hip Pip is busier than Fit Fu – with more parents and office workers, compared with Fit Fu’s higher numbers of grandparents and frequent travellers – and this makes a key difference.

Scott Chapman, Chief Executive Officer, Royal Flying Doctor Service Victoria

“In terms of giving patients greater choice, there is a concern about the education level informing the choice of the consumer as to the best way to invest. Hence, you’ve got all these brokerage and consumer advocate models springing up and being promoted to act on behalf of those who are not capable of making the choices.”

Scott Chapman, Chief Executive Officer, Royal Flying Doctor Service Victoria
This difference in their ability to make time for appointments appears to affect the types of services they are interested in. For instance, a strong majority of Hip Pip’s persona (68 percent) would be happy to monitor their own symptoms and vital signs at home, in place of some trips to their doctor or treatment centre. Fit Fu is less willing (56 percent), despite being enthusiastic about using health monitoring devices that automatically send information to a treating doctor (67 percent).

A key difference between our questions about those two services is that the first is couched as a substitute for a doctor’s appointment, while the second asks more about the automatic sending of information (something both Hip Pip and Fit Fu are quite comfortable with).

So, while Fit Fu is open to new technology and services, the persona still values (and has time for) a face-to-face medical consultation. However, being able to avoid an appointment appears beneficial for Hip Pip, and those respondents therefore have a strong inclination to use innovations that deliver this.

Finally, while Busy Lizzy has a similar profile to Hip Pip (in terms of age, being busy, having young children and working full time), they are less enthusiastic about taking charge of their own health, less technology confident, and less interested in being actively involved in planning and implementing healthcare needs.

So despite appearing superficially similar to Hip Pip, Busy Lizzy (56 percent) – like Fit Fu – does not show the same enthusiasm Hip Pip has for monitoring their own health in place of some trips to their doctor or treatment centre. Importantly though, Busy Lizzy (less confident with health and technology) and Fit Fu (more time for face-to-face appointments) seem to have different reasons for this. Clearly, if we want to identify and target early adopters, we need to consider multiple variables simultaneously.

“We’re still very much at the early adopter stage. It is difficult to envisage a time in the near future where personal monitoring devices will be mainstream in public health services. In 10 or 15 years, it will be second nature. That said, there are enough people in the community who are desperate for this kind of thing. Some people say the government should develop these technologies; I tend to think that the private sector are better at it, so they should do it. But let the public health system engage in it, or incentivise them to engage in it.”

Tom Symondson, Chief Executive Officer, Victorian Healthcare Association
### GP Attitudes and Involvement in Decision-Making

<table>
<thead>
<tr>
<th>Statement</th>
<th>HIP PIP</th>
<th>WARY MARY</th>
<th>STRUGGLING SAM</th>
<th>OVERALL</th>
<th>BUSY LIZZY</th>
<th>FIT FU</th>
<th>VINTAGE VIV</th>
<th>OK JOE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I want to be more actively involved in planning and implementing my healthcare needs</td>
<td>79%</td>
<td>75%</td>
<td>70%</td>
<td>63%</td>
<td>61%</td>
<td>55%</td>
<td>40%</td>
<td>31%</td>
</tr>
<tr>
<td>I would like my GP to take on a bigger role as a central hub and manager of all my healthcare needs and treatments</td>
<td>54%</td>
<td>31%</td>
<td>60%</td>
<td>50%</td>
<td>51%</td>
<td>38%</td>
<td>32%</td>
<td>28%</td>
</tr>
<tr>
<td>Doctors should encourage patients to research their health conditions</td>
<td>51%</td>
<td>47%</td>
<td>38%</td>
<td>47%</td>
<td>43%</td>
<td>45%</td>
<td>29%</td>
<td>32%</td>
</tr>
<tr>
<td>My GP encourages me to be involved in decision-making about my healthcare needs</td>
<td>70%</td>
<td>57%</td>
<td>52%</td>
<td>67%</td>
<td>60%</td>
<td>88%</td>
<td>70%</td>
<td>44%</td>
</tr>
<tr>
<td>I feel my GP would prefer it if I asked fewer questions</td>
<td>19%</td>
<td>22%</td>
<td>29%</td>
<td>26%</td>
<td>29%</td>
<td>4%</td>
<td>4%</td>
<td>16%</td>
</tr>
<tr>
<td>I feel my GP would prefer me not to read up about medical conditions on the internet</td>
<td>45%</td>
<td>44%</td>
<td>54%</td>
<td>45%</td>
<td>48%</td>
<td>26%</td>
<td>31%</td>
<td>30%</td>
</tr>
</tbody>
</table>

### I Feel Positive About Technology Replacing Traditional Healthcare Services

<table>
<thead>
<tr>
<th>GP Group</th>
<th>Agree (net)</th>
<th>Disagree (net)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIP PIP</td>
<td>44%</td>
<td>28%</td>
</tr>
<tr>
<td>BUSY LIZZY</td>
<td>36%</td>
<td>21%</td>
</tr>
<tr>
<td>OVERALL</td>
<td>35%</td>
<td>31%</td>
</tr>
<tr>
<td>FIT FU</td>
<td>33%</td>
<td>33%</td>
</tr>
<tr>
<td>OK JOE</td>
<td>24%</td>
<td>25%</td>
</tr>
<tr>
<td>WARY MARY</td>
<td>20%</td>
<td>46%</td>
</tr>
<tr>
<td>STRUGGLING SAM</td>
<td>17%</td>
<td>51%</td>
</tr>
<tr>
<td>VINTAGE VIV</td>
<td>10%</td>
<td>53%</td>
</tr>
</tbody>
</table>
I would like more self-service, self-assessment and self-monitoring options that allow me to do more by myself within the healthcare system

I routinely look up information about my health or medical conditions on the internet

I would be happy to monitor my own health symptoms and vital signs at home, in place of some trips to my doctor or other treatment centre

I would be happy to use health monitoring devices that automatically send information to my treating doctor

**HEALTHCARE SELF-RELIANCE/INDEPENDENCE**

<table>
<thead>
<tr>
<th></th>
<th>I am confident about asking doctors and providers about tests, treatment options, medications and costs</th>
<th>I independently find new ways to manage my symptoms and conditions</th>
<th>I trust myself to take charge of my own health</th>
<th>I feel comfortable deciding between different healthcare treatment options</th>
<th>I feel comfortable deciding on the type of clinician I need to see</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIP PIP</td>
<td>96%</td>
<td>37%</td>
<td>80%</td>
<td>77%</td>
<td>76%</td>
</tr>
<tr>
<td>BUSY LIZZY</td>
<td>86%</td>
<td>46%</td>
<td>72%</td>
<td>66%</td>
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SECTION 7
Using digital services

We suggested earlier that one of the benefits of attitude-based segmentation was that it could help us to predict public responses to new services and policies. We road-tested this in our survey by exploring how likely respondents are to use (or continuing using) 11 specific tools and services.

Many of these are services that involve new technology and/or support greater consumer-driven healthcare. What we see is that, on average, Wary Mary, Vintage Viv and OK Joe are the least likely to use new services. But our earlier analysis suggests that they may have very different reasons for this:

• Vintage Viv has low technology confidence and does not like new things.

• Wary Mary is both technology confident and relatively progressive, but she is fearful about data privacy and security.

• OK Joe appears to have few privacy concerns, but his persona is probably just not interested in health issues.

Again, different attitudes are driving the same behaviour – in this case, a low likelihood to adopt new services. Why is that important? Because if we want to design services to suit these personas, or if we want to influence their behaviour, we need to take fundamentally different approaches. While Vintage Viv may need support to use digital services, Wary Mary needs to feel reassured about (and in control of) personal data. Respondents in OK Joe’s persona, meanwhile, may need to be inspired to care about and take charge of their health.

We know that those with the least information about their health, have the worst health literacy and the worst health outcomes. Now we have some strong clues as to which personas are most likely to change their behaviour if they are engaged with a person-centred approach.

“Overcoming geographic barriers has defined our services for 90 years. Yet you could be in the middle of Perth at an age care facility needing to see a specialist; the specialist is not going to come to you and you can’t get to the specialist. You might as well be in the middle of Australia. You still have that barrier. To me, telehealth is the way to overcome that.”

Scott Chapman, Chief Executive Officer, Royal Flying Doctor Service Victoria
What is said versus what is done

When it comes to providers, services that are delivered by private healthcare organisations are less likely, overall, to be used than those provided by the federal/state government (although most services would still attract the majority of respondents). However, respondents are significantly less likely again to use services provided by global technology companies. This pattern repeats across the board for all 11 tools and services we investigated.

Most respondents claim they use, or would be likely to use, an electronic health record (75 percent) and a service that provides temporary access to their full medical record (68 percent), if provided by federal/state government. For both services, Hip Pip, Fit Fu, Busy Lizzy and Struggling Sam are the most enthusiastic, with Vintage Viv, OK Joe and Wary Mary the least enthusiastic.

A 2016 evaluation of the Participation Trials of the My Health Record had similar findings. Most individuals wanted a My Health Record but interestingly, they also said they wouldn’t have actively registered for one themselves. Besides a need for an opt out approach, the report identified the importance of awareness and education and to encourage people to use the system.

Overall, this survey should be encouraging for people and organisations across the health ecosystem. The findings support targeted, person-centred, segmented approaches to digital adoption strategies – indicating that these may reveal better ways to engage patients and providers alike, as well as how to best prioritise digital investments. More fine-grained understanding of the different barriers and benefits that drive behaviours can strengthen use cases and may ultimately lead to better health outcomes.

### TECHNOLOGY TO MEASURE YOUR FITNESS AND HEALTH IMPROVEMENT

<table>
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<td>VINTAGE VIV</td>
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AN ARTIFICIAL INTELLIGENCE SERVICE THAT PROVIDES PERSONALISED ADVICE BASED ON YOUR REAL HEALTH RECORD

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VIDEO CALLS FROM HOME WITH DOCTORS, NURSES AND OTHER HEALTH PROVIDERS

<table>
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### Online Medical Appointment Scheduling

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<tr>
<td>Vintage Viv</td>
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</table>

- Purple: If provided by Federal/State Health Department
- Light Blue: If provided by a private healthcare provider (e.g. a private hospital)
- Green: If provided by Apple, Google, Microsoft or similar

### An Electronic Record Containing Your Complete Medical History

<table>
<thead>
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</table>

- Purple: If provided by Federal/State Health Department
- Light Blue: If provided by a private healthcare provider (e.g. a private hospital)
- Green: If provided by Apple, Google, Microsoft or similar
A service allowing you to provide temporary access to your full medical record (e.g. by issuing a password that expires in 24 hours)

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<th>Name</th>
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Attitudinal surveys are not new; however they are uncommon in digital healthcare research. The seven personas we have identified appear to be generalisable to the Australian population. Where this holds true in practice, there could be powerful implications for providers, payers and policy-makers alike. We hope to have shown the value of segmentation focused on key attitudes and drivers of behaviours. Not only can these approaches enhance efficiency, outcomes and patient satisfaction, they could also unlock powerful predictions about which patient groups are likely to consume which services.

The following recommendations are based on this persona research and our perspectives on the findings:

1. The health system needs to evolve to meet the needs of specific types of consumers. Smarter use of digital health technology will play a crucial role in making the system more efficient and effective for those ready to engage with it.

2. Sustained engagement with digital health services may depend on a person-centred, behaviourally-segmented approach to evolving and promoting the service in ways that are tailored to match the features of each segment.

3. Less fragmented communication of personal health information across transitions of care could have a positive impact on re-admission rates, hospital acquired complications and avoidable medical harm, and many Australians are willing to share their full health records with all their treating clinicians.

4. Improving the transparency and simplicity of privacy and security policies, along with proactive health security literacy, may reassure specific personas about data sharing to the point that they are more likely to access and share their e-health records.

5. Health authorities must regard the public’s trust as a precious advantage – the public’s faith offers a licence to government to make better use of health data; this could be accelerated, while the public’s trust is respected and protected.

6. Most new digital services will need (at least initially) to exist in parallel with traditional services, not substitute them, in order for digital health services to be more widely adopted by the general population.

With a finer-grained understanding of the barriers and benefits perceived by consumers, health providers and payers will ultimately deliver truly personalised services, and policymakers will be able to cater for the full diversity of attitudes and needs in Australian society.
In the May 2017 budget, the Federal Government allocated another $10bn to health spending. At the same time, the cost of drugs, surgery and private health insurance continue to rise faster than the consumer price index. Most respondents to our survey (81 percent) want the government to do more to reduce the cost of private health insurance, while 77 percent favour increased government spending to reduce out-of-pocket expenses (73 percent). This was particularly the case with Struggling Sam, with percentages of 94 and 89 respectively.

Efficiency through technology

Our survey also suggests that patients feel public funds should also be used more effectively: 67 percent overall believe the health system is inefficient and wasteful. Again, it is Struggling Sam – the most financially sensitive – that feels the strongest about wasted resources (83 percent).

So rather than just spending more, our health system needs to evolve faster. The introduction of electronic health records and health information exchanges are an important part of this, enabling patients to manage their health better, reducing waste and increasing collaboration and efficiency. Health innovators, such as mobile app developers, will also play an important role in accelerating new models of care.

Engagement is also crucial. While nine out of ten Australians we surveyed want to access everything on their medical records, this does not mean the same proportion will be interested in managing their health information. For instance, there are major differences in how much patients feel the need to control their health data. It is likely that those who strongly want greater control (e.g. Wary Mary and Struggling Sam) will look for different features from an electronic health record (or other digital service) compared to those who do not (e.g. Vintage Viv, OK Joe or Fit Fu).

We saw several times in this report that different attitudes and beliefs can drive the same behaviour. For instance, it would be wrong to assume that people are not using any digital service because they do not like technology. Although this is the case for some (e.g. Vintage Viv), it was not the case for Wary Mary who was more concerned about privacy, nor for OK Joe, who showed little interest in health matters in general. What this suggests is that we need to focus on multiple variables at once as a single variable (e.g. attitude to technology, or any simple demographic) is often too weak alone to help us understand and predict interest in digital health services.
While we need to give patients choices about access and privacy settings we also need to make information accessible to those time-poor clinicians trying to deliver better health outcomes.

Typically, GPs keep their data, hospitals keep their data, and never the twain shall meet. Most acknowledge that this has led to poor collaboration, poorer patient outcomes and a culture that puts volume and process metrics ahead of patient outcomes.

It is encouraging to see that those we surveyed are overwhelmingly in favour of treating practitioners having access to their full medical records, as well as allowing their data to automatically be shared between treating doctors.

At the same time, we need to understand the needs of those who are reluctant to share information or allow automatic sharing between practitioners (e.g. Wary Mary). A tentative conclusion we can take from OK Joe is that being disengaged from privacy issues may not make people any more likely to share information. In fact, we concluded that the opposite could be true, i.e. that with little information or certainty, people will often choose reticence as the safest option.

As the Productivity Commission report showed, access to de-identified data by researchers is slow, costly and dysfunctional. Clearly, most of the progress in this area relies, not on patients, but on creating better frameworks and systems. However, our research shows that patients trust health organisations – especially public services – with their personal data far more than other organisations, including the world’s leading technology companies. Urgent action is therefore needed to securely unlock access to healthcare data (by authorised, trusted individuals for reasonable purposes) with the potential to reduce avoidable patient harm and improve population health outcomes. Continuing not to do so, could be viewed as negligent.

“I echo what the information commissioner has said, that you shouldn’t always blame privacy legislation – quite often it’s the misunderstandings of people, or it’s people who don’t want to make data available, and they use the privacy and related legislation as an excuse.”

Barry Sandison, Director, Australian Institute of Health and Welfare
Services should adapt to patients

It is a challenge to design services and policies for all Australians using a personalised approach. This report has looked at how we might create multiple, focussed approaches that suit homogenous personas of patient attitudes and aptitudes. At the same time, we have shown that doing so involves increasing the sophistication of segmentation techniques.

An important example is the traditional assumption that older patients avoid new technology. In recent years, our own research, and other studies, have shown this to be incorrect.13 However, this research reveals a more granular picture, identifying both the persona that drives the stereotype (Vintage Viv) and a large set of highly tech-confident seniors (Fit Fu). Encouragingly, our sample suggests there are more Fit Fus (15 percent) in the population than Vintage Vivos (9 percent), but while digital services for older patients should be increased, we cannot expect Vintage Viv to welcome them.

We also found that those with time-constrained lives (and a positive attitude to technology) strongly valued the idea of a digital service that helps them avoid a traditional medical appointment. But many of those without time constraints (whether positive about technology, or not) still prefer a traditional, face-to-face appointment. Just as those with time to read may prefer a paperback over a Kindle.

“Today, you expect to be able to transact with health services in your own time, and easily. But historically, we are very difficult to deal with. We’ve made a complicated system. That’s our fault, not the consumer’s fault, but they carry all the pain. From the trust point of view, it’s great to know that the public trusts health services. But for me the greater imperative is, if we’re going to maintain trust, and we’re going to help people easily manage their whole health status rather than struggle to just manage episodes, we need to implement technologies that can help achieve this.”

Tom Symondson, Chief Executive Officer, Victorian Healthcare Association
The moral of the data

One of the most important lessons from this research is about data analytics itself. Demographic analysis, no matter how granular, cannot pick out Wary Mary’s anxiety, OK Joe’s disengagement, Fit Fu’s confidence or Pip’s enthusiasm.

The multivariate techniques we have used in this research allow us to identify important clusters of patients with similar needs, beliefs and drivers. However, it does not end there. It is also possible to generate simplified algorithms that make future segmentation quicker and easier.

For example, our set of 45 questions (which underpin the personas) could be narrowed down to a streamlined set of “golden questions” – a small set of variables that can correctly allocate an individual to a defined persona with high accuracy. This could take the form of an interactive quiz of 10 questions, which could assign a persona to a patient in seconds. From here, an in-depth understanding of those defined personas allows providers and payers to adapt services and predict attitudes and behaviours for individual patients.

As we noted at the outset, a person-centred approach involves embracing the complexity inherent in improving our healthcare system. While smarter segmentation will not simplify important, intricate details, it carves problems at natural points – transforming mammoth, intractable complexity into logical, human sub-sets.

This key step from one-size approaches towards greater personalisation is crucial to harnessing the full potential of digital healthcare. While more complex in design, operating a health system for person-centred, attitudinally-defined segments could ultimately be more manageable, efficient and effective.
APPENDIX
Full cluster profiles

GROUP 1:
Age and gender: Younger; gender neutral
Signature trait: Most are workers or full-time parents/carers
Summary: Open to change and technology, but more reluctant to share data; the majority have treatment and service choices driven by financial costs
Defining features:
• High technology confidence; average on technological substitutes for healthcare services
• More progressive; left-leaning
• Average concern over privacy issues; more reluctance over sharing information
• Majority have treatment and service choices driven by financial costs
• Average support for increased government spending to improve quality and reduce out-of-pocket expenses, and for wanting government action on private health insurance costs
• Average proportion want to be more actively involved in planning and implementing healthcare needs
GROUP 2:

**Age and gender:** Average age; more male

**Signature trait:** Most are socially conservative, not supportive of healthcare change

**Summary:** Disengaged from privacy issues; no financial/payment-model concerns; little interest in consumer-directed care

**Defining features:**
- Lower technology confidence; lower proportion is positive about technological substitutes for healthcare services
- Not strongly traditionalist, but few progressives; right-leaning on social issues
- Disengaged on privacy issues; relatively relaxed on sharing information
- Not financially driven, not concerned about payment uncertainty/complexity
- Strongly against increased government spending to improve quality and reduce out-of-pocket expenses; little support for government action on private health insurance costs
- Very low proportion want to be more actively involved in planning and implementing healthcare needs

GROUP 3:

**Age and gender:** Older; more male

**Signature trait:** Most are healthy seniors moving with the times

**Summary:** Highly confident with technology; open to change; alert to privacy issues but relatively relaxed about sharing information

**Defining features:**
- Very high technology confidence; average on technological substitutes for healthcare services
- More progressive; centre-left
- Alert to privacy issues, but relatively relaxed about sharing information
- Not financially driven; not concerned about payment uncertainty/complexity
- Average support for increased government spending to improve quality and reduce out-of-pocket expenses, and for wanting government action on private health insurance costs
- Average proportion want to be more actively involved in planning and implementing healthcare needs
GROUP 4:
Age and gender: Older; gender neutral
Signature trait: Most are less healthy and have more financial issues
Summary: Traditionalist; less open to technology; concerned about privacy and reluctant to share information; financial concerns drive many choices
Defining features:
• Lower technology confidence; lower proportion positive about technological substitutes for healthcare services
• More traditionalist; very few progressives; right-leaning
• Concerned about privacy issues; reluctant to share information
• Financial concerns drive many treatment and service choices; very concerned about payment uncertainty and complexity
• Strongly supportive of increased government spending to improve quality and reduce out-of-pocket expenses, and for wanting government action on private health insurance costs
• Average proportion want to be more actively involved in planning and implementing healthcare needs

GROUP 5:
Age and gender: Younger; more female
Signature trait: Most are busy, healthy and quick to try new things
Summary: Open to technology and change; relaxed about data-sharing; strong desire for more consumer-directed care; financially constrained
Defining features:
• Very high technology confidence; most positive about technological substitutes for healthcare services
• Strongly progressive; very few traditionalists; strongly left-leaning
• Relaxed about data-sharing and privacy
• Financial concerns drive many treatment and service choices; concerned about cost uncertainty
• Average support for increased government spending to improve quality and reduce out-of-pocket expenses, and for wanting government action on private health insurance costs
• High proportion want to be more actively involved in planning and implementing healthcare needs
GROUP 6:
Age and gender: Average age; more female
Signature trait: Most are very anxious about privacy, but still open to change
Summary: Confident with technology, but not positive about technological substitutes; highly concerned about privacy; reluctant to share information
Defining features:
• High technology confidence; lower proportion positive about technological substitutes for healthcare services
• More progressive; left-leaning
• Concerned over privacy issues; reluctant to share information
• Majority have treatment and service choices driven by financial costs
• Average support for increased government spending to improve quality and reduce out-of-pocket expenses, and for wanting government action on private health insurance costs
• High proportion want to be more actively involved in planning and implementing healthcare needs

GROUP 7:
Age and gender: Older; gender neutral
Signature trait: Most do not like technology, self-service or anything new
Summary: Generally resistant to change, but relaxed about data-sharing and privacy; not interested in consumer-directed care; not financially driven
Defining features:
• Very low technology confidence; very few are positive about technological substitutes for healthcare services
• More traditionalist; centre-right
• Relaxed about data-sharing and privacy
• Not financially driven; not concerned about payment uncertainty/complexity
• Average support for increased government spending to improve quality and reduce out-of-pocket expenses, and for wanting government action on private health insurance costs
• Very low proportion want to be more actively involved in planning and implementing healthcare needs
LOCATION

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<tr>
<td>HIP PIP</td>
<td>61%</td>
<td>29%</td>
<td>10%</td>
</tr>
<tr>
<td>BUSY LIZZY</td>
<td>60%</td>
<td>29%</td>
<td>11%</td>
</tr>
<tr>
<td>OVERALL</td>
<td>59%</td>
<td>30%</td>
<td>11%</td>
</tr>
<tr>
<td>VINTAGE VIV</td>
<td>54%</td>
<td>32%</td>
<td>13%</td>
</tr>
<tr>
<td>FIT FU</td>
<td>54%</td>
<td>29%</td>
<td>17%</td>
</tr>
<tr>
<td>STRUGGLING SAM</td>
<td>51%</td>
<td>36%</td>
<td>13%</td>
</tr>
</tbody>
</table>

FREQUENCY OF VISITS TO DOCTOR, HOSPITAL OR CLINIC

- **BUSY LIZZY**
  - Every week: 22%
  - Every two weeks: 37%
  - Once a month: 46%

- **OK JOE**
  - Every week: 21%
  - Every two weeks: 28%
  - Once a month: 35%

- **FIT FU**
  - Every week: 20%
  - Every two weeks: 29%
  - Twice a year: 41%

- **STRUGGLING SAM**
  - Every week: 19%
  - Every two weeks: 45%
  - Twice a year: 19%

- **HIP PIP**
  - Every week: 23%
  - Every two weeks: 18%
  - Once a month: 46%

- **WARY MARY**
  - Every week: 21%
  - Every two weeks: 41%
  - Once a month: 18%

- **VINTAGE VIV**
  - Every week: 18%
  - Every two weeks: 28%
  - Twice a year: 43%
### HEALTH INSURANCE

<table>
<thead>
<tr>
<th>Name</th>
<th>Yes (%)</th>
<th>No (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIT FU</td>
<td>61%</td>
<td>39%</td>
</tr>
<tr>
<td>BUSY LIZZY</td>
<td>60%</td>
<td>40%</td>
</tr>
<tr>
<td>OVERALL</td>
<td>59%</td>
<td>41%</td>
</tr>
<tr>
<td>HIP PIP</td>
<td>57%</td>
<td>43%</td>
</tr>
<tr>
<td>VINTAGE VIV</td>
<td>56%</td>
<td>44%</td>
</tr>
<tr>
<td>WARY MARY</td>
<td>54%</td>
<td>46%</td>
</tr>
<tr>
<td>STRUGGLING SAM</td>
<td>54%</td>
<td>46%</td>
</tr>
<tr>
<td>OK JOE</td>
<td>52%</td>
<td>48%</td>
</tr>
</tbody>
</table>

### SELF-ASSESSED HEALTH

<table>
<thead>
<tr>
<th>Name</th>
<th>Net: Better health (%)</th>
<th>Net: Moderate to very bad health (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIT FU</td>
<td>71%</td>
<td>29%</td>
</tr>
<tr>
<td>HIP PIP</td>
<td>65%</td>
<td>35%</td>
</tr>
<tr>
<td>OVERALL</td>
<td>60%</td>
<td>40%</td>
</tr>
<tr>
<td>OK JOE</td>
<td>59%</td>
<td>41%</td>
</tr>
<tr>
<td>BUSY LIZZY</td>
<td>57%</td>
<td>43%</td>
</tr>
<tr>
<td>WARY MARY</td>
<td>54%</td>
<td>46%</td>
</tr>
<tr>
<td>VINTAGE VIV</td>
<td>53%</td>
<td>47%</td>
</tr>
<tr>
<td>STRUGGLING SAM</td>
<td>48%</td>
<td>52%</td>
</tr>
</tbody>
</table>
## GENERAL ATTRIBUTES

<table>
<thead>
<tr>
<th>Attribute</th>
<th>LIZZY</th>
<th>JOE</th>
<th>FU</th>
<th>SAM</th>
<th>PIP</th>
<th>MARY</th>
<th>VIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise regularly</td>
<td>43%</td>
<td>38%</td>
<td>53%</td>
<td>40%</td>
<td>51%</td>
<td>43%</td>
<td>34%</td>
</tr>
<tr>
<td>Grandparent</td>
<td>21%</td>
<td>32%</td>
<td>44%</td>
<td>36%</td>
<td>24%</td>
<td>24%</td>
<td>43%</td>
</tr>
<tr>
<td>Regular drinker</td>
<td>23%</td>
<td>23%</td>
<td>32%</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
<td>26%</td>
</tr>
<tr>
<td>Extremely busy life</td>
<td>25%</td>
<td>18%</td>
<td>22%</td>
<td>21%</td>
<td>33%</td>
<td>22%</td>
<td>11%</td>
</tr>
<tr>
<td>Office worker (i.e. sitting at a desk most of the time)</td>
<td>24%</td>
<td>21%</td>
<td>14%</td>
<td>22%</td>
<td>30%</td>
<td>31%</td>
<td>12%</td>
</tr>
<tr>
<td>Frequent traveller</td>
<td>16%</td>
<td>18%</td>
<td>23%</td>
<td>15%</td>
<td>15%</td>
<td>11%</td>
<td>14%</td>
</tr>
<tr>
<td>Regular smoker</td>
<td>16%</td>
<td>10%</td>
<td>13%</td>
<td>14%</td>
<td>13%</td>
<td>19%</td>
<td>13%</td>
</tr>
<tr>
<td>Parent of school-going child/children (primary or secondary school)</td>
<td>18%</td>
<td>13%</td>
<td>11%</td>
<td>16%</td>
<td>21%</td>
<td>12%</td>
<td>12%</td>
</tr>
<tr>
<td>Stressful job</td>
<td>18%</td>
<td>8%</td>
<td>8%</td>
<td>13%</td>
<td>14%</td>
<td>20%</td>
<td>6%</td>
</tr>
<tr>
<td>Primary earner for dependent family members</td>
<td>13%</td>
<td>10%</td>
<td>10%</td>
<td>11%</td>
<td>15%</td>
<td>14%</td>
<td>5%</td>
</tr>
<tr>
<td>Business owner / self-employed</td>
<td>8%</td>
<td>11%</td>
<td>10%</td>
<td>9%</td>
<td>6%</td>
<td>10%</td>
<td>9%</td>
</tr>
<tr>
<td>Carer (i.e. look after an adult, including health and/or daily living needs)</td>
<td>9%</td>
<td>3%</td>
<td>9%</td>
<td>9%</td>
<td>7%</td>
<td>13%</td>
<td>7%</td>
</tr>
<tr>
<td>Parent of young child/children (under four years of age)</td>
<td>10%</td>
<td>8%</td>
<td>5%</td>
<td>7%</td>
<td>12%</td>
<td>9%</td>
<td>4%</td>
</tr>
<tr>
<td>None applicable</td>
<td>6%</td>
<td>11%</td>
<td>6%</td>
<td>12%</td>
<td>7%</td>
<td>8%</td>
<td>14%</td>
</tr>
<tr>
<td>Tradesperson, factory or field worker (i.e. some physical exertion at work)</td>
<td>8%</td>
<td>7%</td>
<td>6%</td>
<td>9%</td>
<td>4%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>First language other than English</td>
<td>10%</td>
<td>5%</td>
<td>5%</td>
<td>3%</td>
<td>7%</td>
<td>8%</td>
<td>1%</td>
</tr>
<tr>
<td>Aboriginal or Torres Strait Islander ancestry</td>
<td>2%</td>
<td>0%</td>
<td>2%</td>
<td>0%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>
REFERENCES

1. For instance, there is ample support for home-based and community care to support more efficient use of costly hospital services. Most are enthusiastic about the prospects for greater use of data and digital systems, whether it be for more reliable diagnosis, to counter negative socioeconomic impacts, to support precision medicine or to build more efficient service models. And there is even considerable agreement around the need for smarter collaboration between clinicians, with the patient at the centre of everything, and the treatment outcome as the primary measure of performance.

2. Multivariate analytics involves the simultaneous analysis of more than one variable. It requires greater expertise and more powerful tools than the univariate (one variable) and bivariate (two variables) analysis typically used to interpret survey results. While there is great value in univariate and bivariate approaches, multivariate techniques (in this case, factor and cluster analysis) are superior for explorative work that tries to identify groups with similar needs, attitudes and behaviours.

3. You can learn more about this technique here: http://stanford.edu/~cpiech/cs221/handouts/kmeans.html

4. Please note: not all charts presented sum to 100% due to the exclusion (in some cases) of “don’t know”, not applicable” or “neutral” responses.
ABOUT ACCENTURE

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