RETENTION OF ENGINEERING AND TECHNICAL PROFESSIONALS IN A STATE PUBLIC TRANSPORT ORGANISATION

Abstract

High levels of infrastructure requirements in Australasia have placed considerable pressure on organisations to attract and retain engineering and technical professionals. This study reports on the efforts of a state public transport organisation to analyse their human capital risk and gather data to inform the development of retention strategies for its engineering and professional staff, including project managers. A survey of 1212 engineering and technical professional staff revealed that a multi-faceted approach to retention strategies, that differentiates the needs of new graduates, experienced staff and 'baby boomers', is required. Survey respondents (N=679) identified a range of incentives, including training and development, enhanced career opportunities, recognition for good work, appropriate remuneration and good leadership.

Effective HRM aims to have the right number of human assets, with the right skills, in the right location, at the right time to deliver and grow the business (Dibble 1999; Frank 2004; Frank et al. 2004; Ogilvie 2006; Smither 2003; Weber 2005). It follows that developing a retention strategy is fundamental to good human resource management and aligns closely with realising organisational strategy (Cappelli 2003; Wright & Snell 1998). Gathering data on organisational capabilities and turnover is fundamental, as is strategic alignment of HR with organisational direction (Waldman & Arora 2004). Supervisor training, reward systems, performance appraisal, employer branding, progressive HR practices, and culture change commonly figure in retention strategies. Moderating influences, such as industry type, location, sector and local demographics dictate the need to develop tailored interventions that include the use of traditional remedies as well as purpose-built solutions. There has been an awareness of the potential impact of the exit of baby-boomer professionals for at least a decade (Amaram 2005; Jamrog 2004; Smither 2003). However, retention issues are important for all groups within the organisation. Experienced professionals are in high demand and public sector organisations are less able to compete on the basis of salary and benefits. Those remaining in the organisation are working harder, with organisational realignment strategies focusing on freeing professionals from administrative duties to concentrate on their specialities. A consequence of this is that this group is less able to devote time to new career professionals, who are seeking varied work experience and professional development. It follows, then, that there is a need to identify retention influencers for new, middle and late life career professionals to inform multi-faceted retention strategies.

Contrary to popular opinion, money is not the principle reason that people leave their job. Kaye and Jordan-Evans (2000. p.29) say that 'Nine out of ten managers think people stay or go because of money. We know that is not the case … what they want most are challenging, meaningful work, good bosses, and opportunities for learning and development.' The authors cite a 1999 Hay Group study which surveyed over 500,000 employees across 300 companies and found that 'of 50 retention factors, pay was the least important' (p.30). This is good news for the public sector which, once having recruited a professional should have a reasonable chance of retaining that professional provided the particular needs of the professional are successfully addressed on an ongoing basis.

This paper reports on the efforts of an Australian state transport organisation to identify the needs and work interests of their engineering and technical professionals, including project managers, with a view to developing organisation-specific retention strategies. There are a significant number of baby-boomer professionals intending to leave the organisation within the next five years and their exit could have a serious impact on the organisation's ability to deliver its services. When this is combined with the expressed intention to leave of younger professionals the organisation must consider a range of strategies that is both multi-faceted and tailored to the whole spectrum of engineering and technical professionals.

METHOD

The study was conducted in a state government organisation, responsible for the construction and maintenance of roads and bridges. A retention survey was sent out to 1212 of the organisation's engineering and technology professionals including approximately 200 people in project management. A total of 679 surveys were returned for a response rate of 56%. There were 597 (88.8%) males and 75 (11.2%) females in the surveys returned. Age was collected in bands (under 21, 21-30, 31-40, 41-50, 51-60, over 60). Age ranged from under 21 to over 60 years, with approximately 25% being 51 years of age or over. The majority of respondents (96.6%) were permanent full-time employees and the mean tenure was 4.6 years. Locations of employment included metropolitan and regional centres. Respondent's education included 112 with a certificate, 85 with an associate diploma, 20 with a diploma, 335 with a degree, 28 with a master's degree, 4 with a PhD, and 33 others.

The survey collected data on demographics, reasons for joining the organisation, intentions to stay/leave, impressions of career plateau, incentives to stay/leave and preparedness to return to the organisation at a future time. Survey items were rated from 1 to 5, with 1 = 'very unimportant' to 5 = 'very important'

RESULTS

Why they joined the organisation

The responses to items under 'How important were the following reasons for you joining the organisation?' appear below in Figure 1.

Figure 1 Reason for joining the organisation
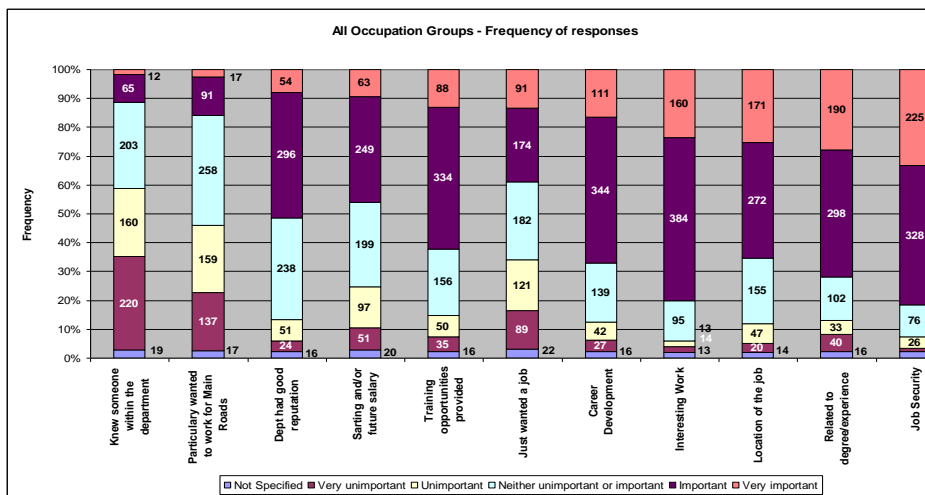
The top three reasons respondents gave for joining the organisation were job security, interesting work and work related to their degree/experience. Table 1 separates the reasons for joining the organisation by age cohort.

Table 1   Reasons for joining the organisation – 'important' and 'very important' by age (N = 679)

Reasons for joining	<21		21 - 30		31- 40		41 - 50		51 - 60		Over 60	
Work related to degree or experience	4	100%	120	86.3%	123	69.1%	129	72.1%	94	61.5%	14	82.4%
Interesting work	3	75%	123	88.5%	137	77%	141	78.8%	122	79.7%	14	82.3%
Location of the job	3	75%	75	54%	122	68.6%	131	73.2%	99	64.7%	11	64.7%
Department has a good reputation	3	75%	86	61.8%	85	47.7%	92	51.4%	71	46.4%	9	52.9%
Job security	3	75%	112	80.6%	153	86%	145	81.1%	124	81%	12	70.5%
Just wanted a job	0	0%	57	41.1%	67	37.6%	70	39.1%	63	41.1%	6	35.3%
Knew someone working in the organisation	0	0%	22	15.8%	23	12.9%	20	11.1%	11	72%	0	0%
Particularly want to work for the organisation	0	0%	28	12.3%	22)	12.3%	29	16.2%	22	14.4%	3	17.6%
Starting and/or future salary	1	25%	73	51.6%	83	46.6%	92	51.4%	55	35.9%	7	41.2%
Training opportunities provided	3	75%	111	79%	124	69.7%	104	58.1%	71	46.4%	6	35.2%
Career development	4	100%	114	82%	131	73.6%	111	62.1%	85	55.6%	8	47%

The relationship between the degree and work appears to decline with age. Interesting work was rated as import/very important across all ages. The percentage of those regarding job location as important increased in the 31-40 year age group. Reputation was particularly important to younger employees and job security figured highly across all ages. Less than 50% of respondents, overall, rated 'Just wanted a job', wanting to work for the organisation and starting salary as important or very important. Training opportunities and career development were rated as important or very important for the age groups < 21, 21-30 and 31-40.

Career Plateau

A total of 489 (72%) of respondents said 'no' to the question 'Do you consider that you have already reached the full extent of your career opportunities within the organisation?' The breakdown by occupation was: Project management 54 (87%), Civil engineering 153 (82%) Planning and design 163 (72%) Structural Engineering 13 (54%) Spatial sciences 56 (73%) Town planning 11 (82%) and Transport modelling and network design 8 (87%).

Examination of responses by age shows that those answering 'yes' (N = 179) to having reached the extent of their career in the organisation was: 21-30 = 16 (8.94%), 31-40 = 32 (17.88%), 41-50 = 49 (27.37%), 51-60 = 71 (39.67%), over 60 = 11 (6.15%).

Respondent's intention to leave the organisation in the next five years

A review of intention to leave by age is shown below in Figure 2.

**Figure 2** Intention to leave in the next five years (by age profile)
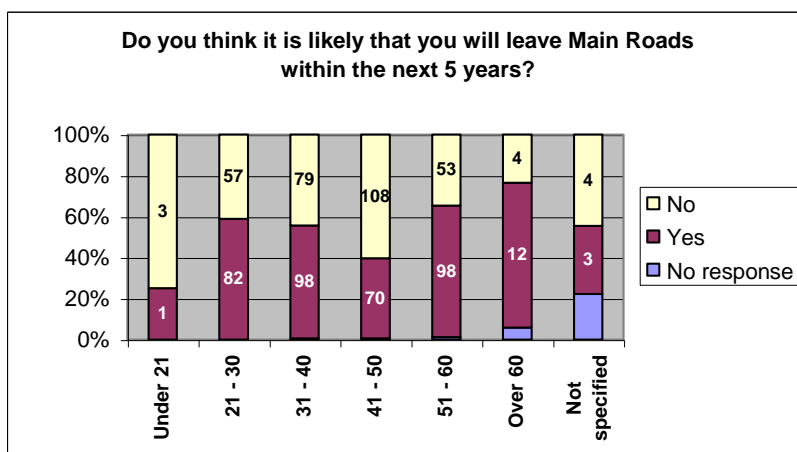
Responses to the question of 'Do you think it is likely that you will leave the organisation within the next five years?' were 54% 'yes', 45% 'no' and 1% did not answer. The age breakdown shown above revealed high intention to leave across a broad range of age cohorts.

Contributing factors to decision to leave

Figure 3 reports influences affecting the employee's decision to leave the organisation.

Figure 3   Influences affecting respondent's decision to leave the organisation
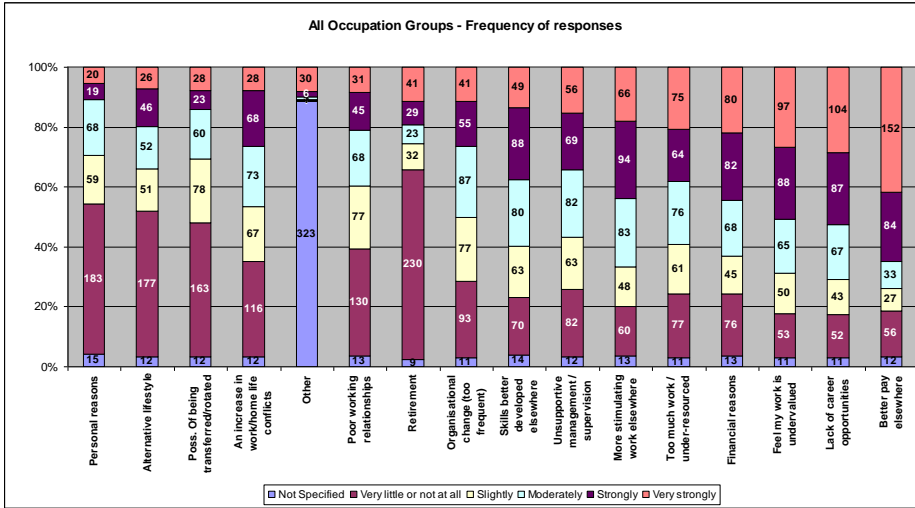
The top three items influencing respondent's decision to leave were 'Better pay elsewhere'; 'Lack of career opportunities' and 'Feel my work is undervalued'. A review of the above items by age is shown below in Table 2.

Table2   Influences on leaving by age

Influencers by age	Under 21		21 – 30		31- 40		41 – 50		51 – 60		Over 60	
Personal reasons	0	0%	6	4.3%	16	9%	7	3.9%	7	4.6%	2	11.8%
Alternative lifestyle	0	0%	10	7.2%	13	7.3%	11	6.2%	36	23.5%	4	23.6%
Transfer/rotation possibility	1	25%	16	11.5%	15	8.5%	10	5.6%	7	4.6%	3	17.6%
Work/home life conflicts	0	0%	16	11.5%	33	18.6%	21	11.7%	25	16.3%	2	11.8%
Poor working relationships	0	0%	21	15.1%	22	12.3%	17	9.5%	17	11.1%	3	17.6%
Retirement	0	0%	0	0%	0	0%	11	6.2%	51	33.3%	11	64.7%
Org change too frequent	0	0%	19	11.7%	28	15.7%	17	9.5%	32	21%	2	11.8%
Skills better developed elsewhere	1	25%	49	35.3%	39	27.5%	25	13.9%	15	9.8%	2	11.8%
Unsupportive management	0	0%	31	22.3%	36	20.2%	28	15.6%	31	20.2%	4	23.5%

Mores stimulating work elsewhere	1	25%	57	41%	50	28.1%	30	16.8%	22	14.4%	2	11.8%
Too much work/under resourced	0	0%	19	13.7%	45	25.3%	37	21.7%	38	24.8%	1	5.9%
Financial reasons	1	25%	39	28%	48	27%	42	23.5%	25	16.4%	4	23.5%
Feel my work is undervalued	0	0%	38	27.3%	57	32%	42	23.4%	45	39.4%	4	23.5%
Lack of career opportunities	1	25%	51	36.7%	54	30.3%	44	24.6%	40	26.2%	3	17.7%
Better pay elsewhere	1	25%	64	46.1%	76	42.7%	55	30.7%	36	23.5%	4	23.5%

Personal reasons, alternative lifestyle, too frequent change and feeling that their work was undervalued featured highly in the 51+ year age group. Work/home life was important to the 31-40 and 51-60 year age group. Pay, career opportunities, stimulating work and skills development were all rated highly by the under-40 age groups.

Factors identified by respondents as incentives to stay

To the question 'What impact, if any, would the following factors have in encouraging you to stay with the organisation longer?' appear below in Figure 4.

Figure 4   Factors encouraging respondents to remain with the organisation
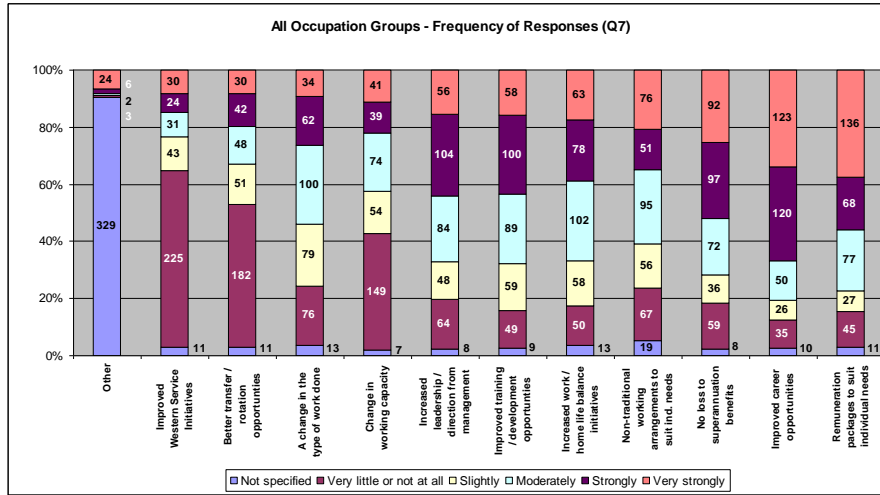
The top three responses, on factors influencing remaining with the organisation, were 'Improved career opportunities'; 'remuneration packages to suit individual needs', and 'No loss of superannuation benefits'. Leadership and training also rated highly. Incentives to stay, by age, are shown below in Table3.

Table 3   Incentives to stay in the organisation longer, by age (those leaving N = 364)

Incentives to stay - by age	Under 21		21 – 30		31- 40		41 – 50		51 – 60		Over 60	
Improved Western Service initiatives	0	0%	21	15.1%	11	6.2%	13	7.3%	9	5.9%	1	5.9%
Better rotation/transfer opportunities	0	0%	26	19.7%	21	11.8%	15	8.4%	9	5.9%	2	11.8%
Change in the type of work done	0	0%	37	26.6%	31	17.5%	16	8.9%	15	9.8%	2	11.8%
Change in working capacity	0	0%	8	5.7%	15	8.5%	15	8.4%	39	25.5%	7	41.2%
Increased leadership/direction Mgt	0	0%	45	32.4%	44	24.7%	34	19%	34	22.3%	7	41.1%
Improved training/development Opp.	1	25%	57	41%	50	28.1%	29	16.2%	20	13.1%	3	17.7%
Increased work/home life balance	0	0%	31	22.3%	45	25.2%	27	15.1%	36	23.6%	5	29.4%
Non-traditional working	1	25%	18	13%	34	19.1%	34	19%	33	21.6%	7	41.2%

arrangements												
No loss to superannuation benefits	1	25%	42	30.2%	52	29.2%	32	17.9%	60	39.2%	9	53%
Improved career opportunities	1	25%	71	51.1%	76	42.6%	48	26.8%	46	30.1%	5	29.4%
Individualised remuneration package	1	25%	46	33%	62	34.8%	53	29.6%	38	24.8%	5	29.4%

Rotation and transfer conditions rated most highly in the 21-30 year age group. Work variety, improved leadership, career opportunities, individualised remuneration packaging and training and development were rated most highly by 21 to 40 years age groupings. Work life balance and non-traditional working arrangements were important to the 31-40 and over 60 age groupings. No loss of superannuation benefits was rated highly by the age groupings from 51 years and older.

Transfer of corporate knowledge

Employees were asked 'How sure are you that the corporate knowledge you possess will be passed on to your colleagues before you leave the department?' The responses were rated from 1 = 'very unsure' to 5 = 'very sure'. Figure 5 displays respondents' ratings.

Figure 5   Ratings of likelihood of corporate knowledge transfer
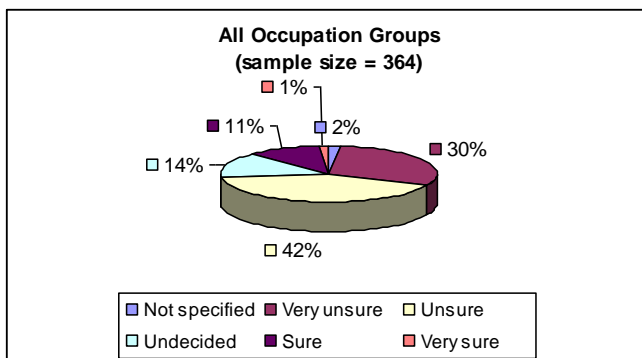
A total of 364 persons responded to the question of whether they believed their corporate knowledge would be passed on. This represents about 54% of respondents and this is consistent with the number of those indicating an intention to leave the organisation. A total of 86% indicated that they were 'undecided', 'unsure' or 'very unsure' that their corporate knowledge would be passed on to their colleagues prior to leaving.

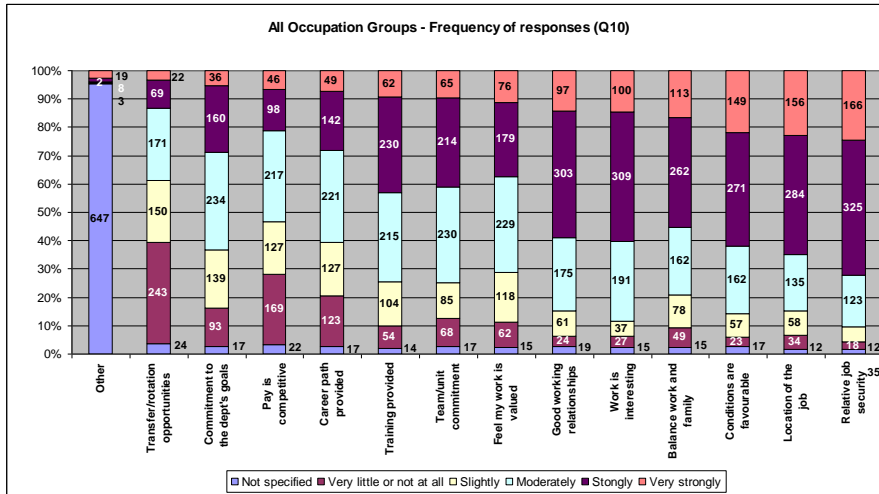Preparedness to return to the organisation at a future time

There were 364 people who indicated that they were likely to leave the organisation in the next five years. In response to the question 'Would you consider rejoining the organisation sometime after you

have left (including contracts and consultancies)?' 298 answered 'yes' - 4 were under 21, 69 were 21-30, 84 were 31-40, 56 were 41-50, 74 were 51-60 and 11 were over 60. This represents approximately 82% in comparison with the number intending to leave. Approximately, 80% in each age group indicated a preparedness to rejoin the organisation at some future point. Interestingly, 11 out of 12 over 60 years of age indicated a preparedness to return to work.

Factors contributing to employee's decision to continue with the organisation

Employees were asked 'How strongly have the following factors encouraged you to stay in the organisation?' Figure 6 shows respondents ratings against 14 items based on working conditions.

Figure 6   Factors influencing continued employment with the organisation

All Occupation Groups - Frequency of responses (Q10)

Legend: Not specified | Very little or not at all | Slightly | Moderately | Strongly | Very strongly

The three top reasons given by respondents for remaining with the organisation were job security, favourable work conditions and location of the job. Factors reported as influencing the decision to stay with the organisation, by age, are shown below in Table 4.

Table 4   Why employees choose to remain with the organisation (N = 679)

Why employees remain - by age	Under 21		21 – 30		31- 40		41 – 50		51 – 60		Over 60	
Transfer/rotation opportunities	0	0%	32	23%	27	15.1%	19	10.7%	12	7.8%	1	5.9%
Commitment to the organisation's goals	0	0%	31	22.3%	40	22.4%	64	35.7%	51	33.3%	7	41.2%
Pay is competitive	0	0%	38	27.4%	31	17.4%	36	20.1%	35	22.8%	3	17.7%
Career path provided	4	100%	49	35.3%	50	28.1%	46	25.7%	37	24.2%	3	17.7%
Training provided	3	75%	77	55.4%	77	43.3%	73	40.8%	54	35.3%	4	23.6%
Team/unit commitment	1	25%	59	42.4%	67	37.6%	76	42.5%	65	42.5%	8	47%
Feel my work is valued	3	75%	41	29.5%	57	32.1%	77	43%	66	43.1%	8	47%
Good working relationships	3	75%	75	53.9%	102	57.3%	112	62.6%	94	61.5%	14	82.3%
Work is interesting	2	50%	67	48.2%	100	56.2%	118	66%	105	68.6%	11	64.7%
Balance work and family life	3	75%	85	61.1%	92	51.7%	105	58.7%	81	53%	7	41.1%
Conditions are favourable	2	50%	105	76.3%	110	61.7%	105	58.7%	87	56.8%	5	29.4%
Location of the job	3	75%	77	54%	116	65.2%	136	76%	92	60.2%	14	82.4%

| Relative job security | 2 | 50% | 104 | 74.9% | 127 | 71.4% | 125 | 69.8% | 115 | 75.1% | 11 | 64.7% |

DISCUSSION

The purpose of this study was to report the efforts of a state public transport organisation to analyse their human capital risk and gather data to inform the development of retention strategies for its engineering and professional staff. A survey of 1212 engineering and technical professionals revealed that a multi-faceted approach to retention strategies, that differentiates the needs of new graduates, experienced staff and 'baby boomers', is required. Survey respondents (N=679) identified a range of incentives, including training and development, enhanced career opportunities, recognition for good work, appropriate remuneration and good leadership as important.

The top three reasons for joining the organisation included job security, interesting work and work related to their degree. Reputation of the organisation was an important attractor, particularly for younger staff. Further analysis by age showed that the relationship between employment and degree declines with age. This is unsurprising because the career pathways in the public sector require engineering and technical professionals to move out of their profession and into management in order to receive higher remuneration and job variety. Location was important in the 31-40 year age grouping and this may be because this age grouping is often concerned with establishing a home, family and career. Job security was important to all respondents and this may be a reflection of the type of personality that chooses public sector employment, rather than a global incentive, however the data is not available here to make that generalisation. Training and development was particularly important to the age groups between 21 and 40 and this suggests that keeping employees 'growing' should form an important age-varied strategy for retention. Pay was rated 7th of 11 reasons for joining the organisation, supporting the general contention that pay, while not unimportant, should not be the prime focus for retention strategies.

The issue of 'plateaued' careers is related to training and development and career opportunities. The risk is that, unless perceptions are explicitly addressed and developmental opportunities created, staff perceiving that they have reached their ceiling may become de-motivated and possibly seek employment elsewhere. This is particularly important for critical occupations, such as civil and structural engineers. An option might be to cross-train professionals for professions-in-demand to enhance their career opportunities and improve flexibility for the organisation. The relatively high number of 'plateaued' workers in the 31-40 and 41-50 age groups is a particular concern for both risk of turnover and the potential for diminished motivation and performance.

The relationship between intention to leave and age was fairly predictable at the upper end, but high numbers in the 21-30 and 31-40 age group, as the experienced professionals in the organisation, creates a number of potential problems including the loss of technical expertise, the loss of corporate knowledge, fewer experienced professionals to fill the role of senior managers as they retire, work intensification for remaining staff and loss of on-the-job mentors for junior professionals. This, in turn, may cause younger professionals to seek experience elsewhere, thus creating a vacuum in the ranks of those who will fill the experienced professional group, and so on. Better pay elsewhere, lack of career opportunities and feeling that their work was is undervalued influence the decision to leave. Career,

pay and skill development were all identified as potential influences to leave, particularly in the 21-30 and 31-40 age groups. Staff over 51 years indicated personal factors, alternative work arrangements, excessive change and feeling their work is undervalued influence their decision to leave. Both 31-40 and 51-60 age groups were concerned about work/home life balance and this is generally consistent with life cycle issues. A relatively modern phenomenon, due to increased life expectancy, is the issue of elder care, which may influence early retirement or flexible work options for some.

Incentives to stay included improved career opportunities, individualised remuneration packaging and no loss of superannuation. An analysis by age provided a deeper appreciation for the diverse needs of particular groups. The 21 to 40 age groups listed incentives to remain with the organisation as greater work variety, improved leadership, training and development and individualised remuneration packaging. The introduction of development plans, mentoring, project work and performance management may serve to address some of the needs of this group. Individualised remuneration packaging is likely to become more important as the cost of housing increases and salary sacrificing and mortgage repayments in a tax-friendly environment may assist in retaining employees concerned. Work/home balance issues are important to groups with a young family and those seeking transition to retirement or more free time for other life interests and responsibilities. Recent changes in superannuation may allay some of the concerns about punitive superannuation arrangements and the organisation might consider arranging financial planning for staff, of all ages, to design effective financial strategies for individual circumstances.

It is a good sign for the organisation that approximately 80% of respondents indicated a willingness to return to the organisation at a future date. While there is some likelihood of a social response bias in this answer, there are particular groups – such as the 60+ group – that should be included in a multi-faceted strategy to retain and transfer organisational knowledge and bolster mentoring arrangements.

The final section - factors influencing continued employment with the organisation - is useful for branding purposes but may also figure in a dynamic strategy that seeks to meet individual needs throughout the employee's life cycle in the organisation. Reasonable pay, good working conditions, job security and good working relationships appear to be working well in the organisation, although pay as a motivator declines sharply in the 31-40 years age group – the time of peak experience and skill portability.

The study has a number of limitations. The data is drawn from a single public sector organisation and a narrowly defined grouping of professionals. However, this specificity also permits insights to be drawn concerning a group of professionals critical to meeting urgent infrastructure needs.

Future studies should include measures of affect and turnover and consider the effectiveness of current retention strategies.

This study has shown that a simplistic approach to retention strategy development is likely to be less effective than multiple strategies tailored to meet individual needs, based on an understanding of the differing needs of particular age groups.

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