Northamptonshire County Council Pension Fund

VITAINDEX

Longevity Analytics for Northamptonshire County Council Pension Fund

December 2012

CLUB VITA

Club Vita LLP

Foreword

This VitaIndex report compares your own experience with the rest of Club Vita's dataset (VitaBank) and a peer group of similar funds. Your first VitaIndex report also contained a more general analysis of the combined data of the participants of Club Vita which you may wish to have to hand when reading this report. This VitaIndex report has been updated to reflect your own recent experience, as well as the updated recent experience of other VitaBank participants since the previous Index report was produced.

VitaIndex, like most of Club Vita's tools, is primarily intended for trustees and pension managers. It assumes no prior knowledge of the statistical analysis of longevity.

Individual characteristics - we are all different

Every fund has its own 'demographic DNA' which explains why its members have a lower or higher life expectancy than others. The DNA refers to the fund's mix of the following[1]:

- **Normal and ill-health** retirees – a pensioner retiring in normal health can typically expect to survive between 2 and 3½ years longer than a pensioner that retires in ill-health. The effect of retirement health on life expectancy is at the upper end of this range for pensioners that have the best lifestyles and highest levels of affluence.
- **Lifestyle**, or how individuals spend their money outside of work, can lead to considerably different life expectancies – all else being equal, there is a difference of up to 5 years in life expectancy between the least healthy and healthiest lifestyles.
- The effect of wealth, or **affluence** of members on life expectancy, is best measured differently for men and women:
  - For men, the last known salary (revalued to current terms) is generally a better indicator of the effect of affluence on longevity, men with the highest levels of affluence having a life expectancy of up to 2½ years longer than those with the lowest.
  - For women, the effect of affluence on longevity is best predicted by the amount of pension in payment, the effect being smaller than that seen in men.
- **Occupation**, or whether an individual has carried out a 'manual' or 'non-manual' role, accounts for less than 1 year difference in life expectancy for men (and up to 1½ years for women), with 'ex-manual' workers tending to have lower longevity.
- Your **VitaCleansing** and **VitaCurves** reports give you more information on the quality of your data and your scheme's 'demographic DNA'.

Longevity trends

- Life expectancy has recently been increasing at around two years per decade.
- The rate at which these improvements will continue is unknown – however most published projections relate to analysis of trends in insurance company data or the population as a whole, and represent an average for people with very different longevity characteristics.
- Our analysis of the experience data received has shown that the historic rates of improvement have been of a different 'strength' and 'shape' to the published projections.

[1] The differences in life expectancy that are shown here reflect what happens when one element of the demographic DNA is changed and all other elements are left unchanged (e.g. lifestyle accounts for up to 5 years difference in life expectancy for individuals with the same retirement health, affluence and occupation characteristics).

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- Inevitably, actual experience will differ from whatever is anticipated. We believe that it is important that all schemes **monitor** emerging experience and remain **informed** of the latest developments. Please see your **VitaMonitor** report for the latest such information.

We do hope that you enjoy reading your VitaIndex report. We are very grateful for any feedback that you may have on the content of these reports.



Steven Baxter | Andrew Gaches | Steven Hood

For and on behalf of Club Vita LLP

11 December 2012

Contents

1 The profile of your membership

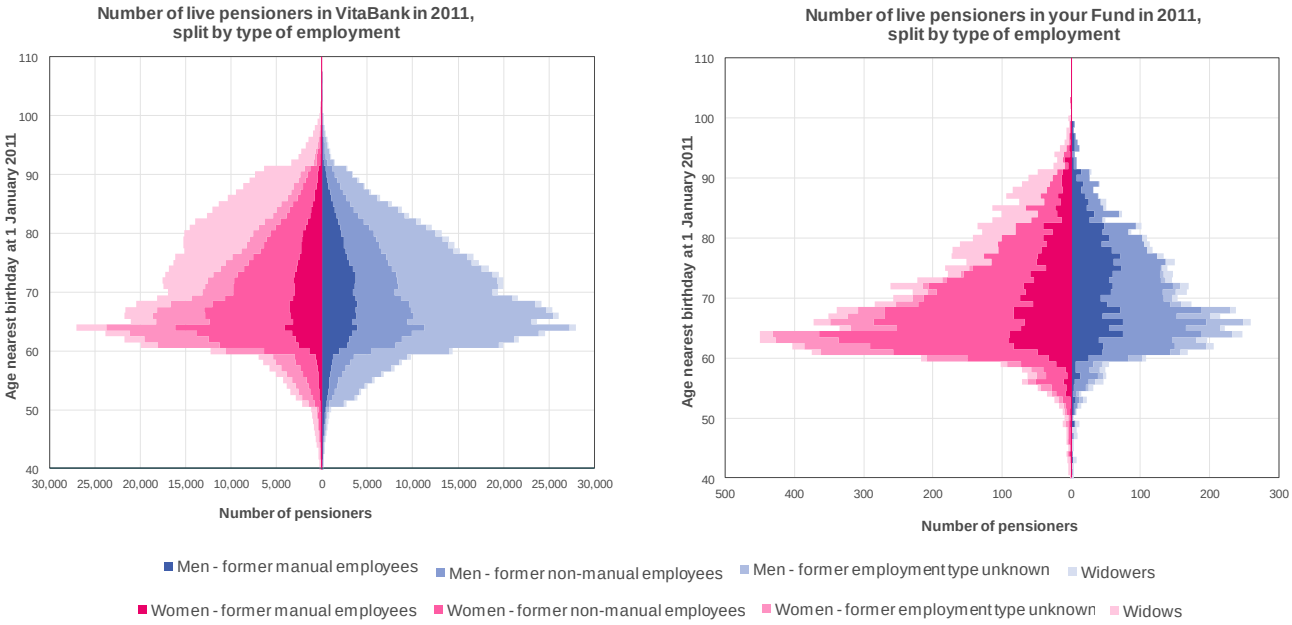
Club Vita aims to provide greater insight into the longevity characteristics in occupational pension schemes by bringing like-minded schemes together in a community where longevity experience data is pooled. By combining the data from individual schemes a clearer picture of the underlying patterns emerges.

The combined data, known as **VitaBank™**, presented in this report comes from the 156 schemes currently participating in Club Vita, who in total had around 1.6m pensions in payment[2], spread across the UK. The charts in this section illustrate the membership profile of VitaBank and contrast this with the data of the Northamptonshire County Council Pension Fund ("the Fund").

1.1 Profile of pensioner membership

Chart 1A – Split by type of former occupation

The 'population pyramids' below show the numbers of pensions in payment at each age in VitaBank and in your fund in 2011.



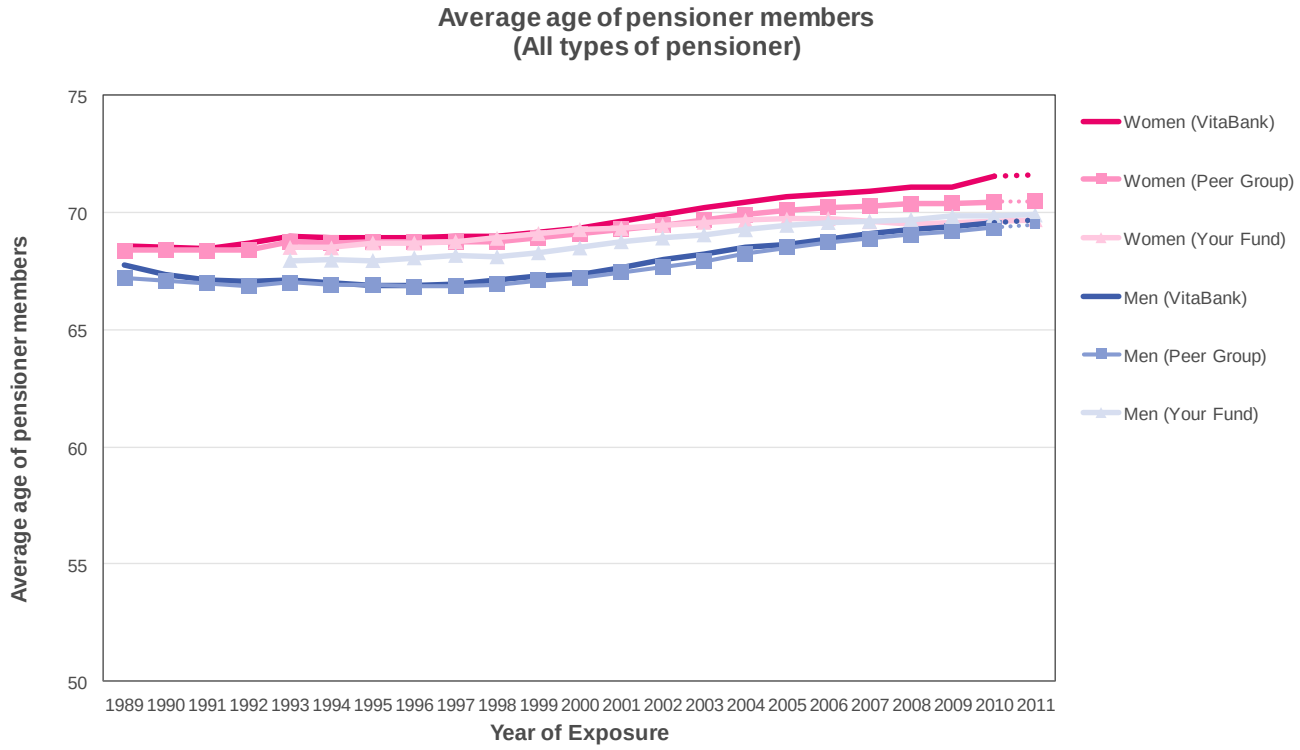
The data is grouped according to age and gender and also according to the main types of employee role we are able to identify in the database, namely former manual employees, former non-manual employees and 'unclassifieds'. The 'unclassifieds' are members of pension schemes where a manual / non-manual split is not available or members of local authority pension schemes who joined after 1998 after which a manual/officer (i.e. manual/non-manual) classification ceased to apply.

The scheme pensioners represent just 0.8% of the records of live pensioners in VitaBank. With the current number of pensioners, the scheme 'population pyramid' demonstrates greater 'jumps' in the progression of number of pensioners between ages relative to the 'smoother' progressions seen in VitaBank.

[2] As at the last date each scheme in VitaBank submitted data to Club Vita. As schemes are supplying updated information at different points in time the actual numbers of pensions in payment shown in later charts are slightly lower than this.

Chart 1B – Ageing pensioners

This chart looks at the average age of pensioners in each year from 1989 to 2011 (excluding pensioners aged below 40).



Note: Since funds contribute data at dates spread across the year not all schemes will have provided data covering the entire of the most recent calendar year(s). Consequently some of the points in the chart above (and in later charts) are connected to historic points by a dotted line to reflect the provisional nature of this data.

Within the pooled data the average pensioner ages have risen over the 22 years to 2011, from age 67.8 for men and 68.6 for women in 1989 to ages 69.7 and 71.6 respectively.

The equivalent numbers for the Northamptonshire County Council Pension Fund, your peer group of other LGPS Schemes and VitaBank as a whole are shown in the following table for 1993 (the date from which your scheme information is reliable) and 2011.

	Average age of pensioners			
	Men		Women	
	1993	2011	1993	2011
Northamptonshire County Council Pension Fund	68.0	69.9	68.5	69.7
LGPS Schemes	67.0	69.5	68.7	70.5
VitaBank (all funds)	67.1	69.7	69.0	71.6

The increase in average pensioner ages is only partially a result of improving longevity: much of the increase is simply due to the ageing of the pension fund membership i.e. as pension schemes ‘grow up’ (or mature) so the balance between new retirees at young ages and ‘established’ pensioners at older ages changes.

2 Considering your longevity experience

2.1 Components of longevity experience

When making longevity assumptions for the members of your fund there are two key elements:

- **Baseline longevity -** In principle this is measurable from the numbers dying in recent years – although a large volume of data would typically be needed before we can really be certain about these rates
- **Longevity improvements -** In order to project future changes in longevity it is important to have a good understanding of recent changes. We provided analysis of the improvements seen within the occupational pension schemes participating in this study within your previous VitaIndex report.

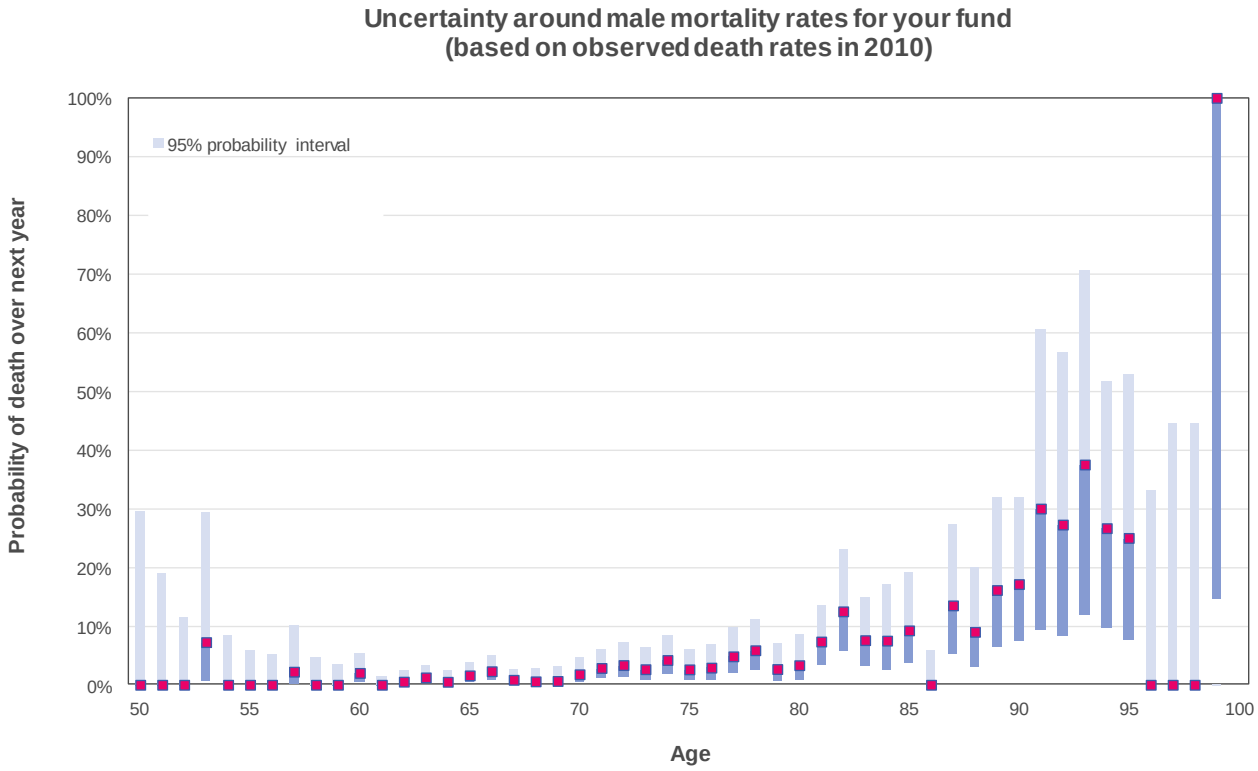
2.2 Death is 'fuzzy'

For individual funds it can be very difficult to draw conclusions about baseline longevity from recent experience alone – even for large funds such as yours.

Crude death rates and a best guess at mortality rates (men)

It is possible to analyse the 'crude' death rates experienced at different ages for individual pension schemes, in an effort to work out what proportion of people might reasonably be expected to survive to their next birthday, or more morbidly what proportion died at each age (the death rate). In the chart below we see the pattern of death rates by age (illustrated by the pink dots) for your fund in 2010.

Chart 2A – Crude death rates and a 'best guess' at mortality rates



At some ages the dots/bars may be missing – this occurs where your fund has no members of those ages alive in 2010 and so we are unable to draw any conclusions about the death rates at those ages in that year.

The actual death rates are 'spiky' – while there is a general pattern that the death rates are lower at younger ages, and not unsurprisingly, tend to increase with age, the death rates (pink dots) do not form a smooth curve.

The 'spikiness' identified above (by the pink dots) makes it difficult to say with certainty what proportion of individuals might, at each age, reasonably be expected to survive, or die during, the next year. The challenge when setting a longevity assumption becomes working out what the underlying 'pattern' is – i.e. how to draw a gradually increasing (smooth) curve through, or between, the observed points.

For your fund, what we can actually say is that the 'true' death rates are likely[3] to be somewhere in the blue bars (i.e. in all except one in twenty ages the 'true' mortality rates pass through the bar). In addition, the deeper the shade of blue the more likely it is that the true death rate lies in that part of the bar.

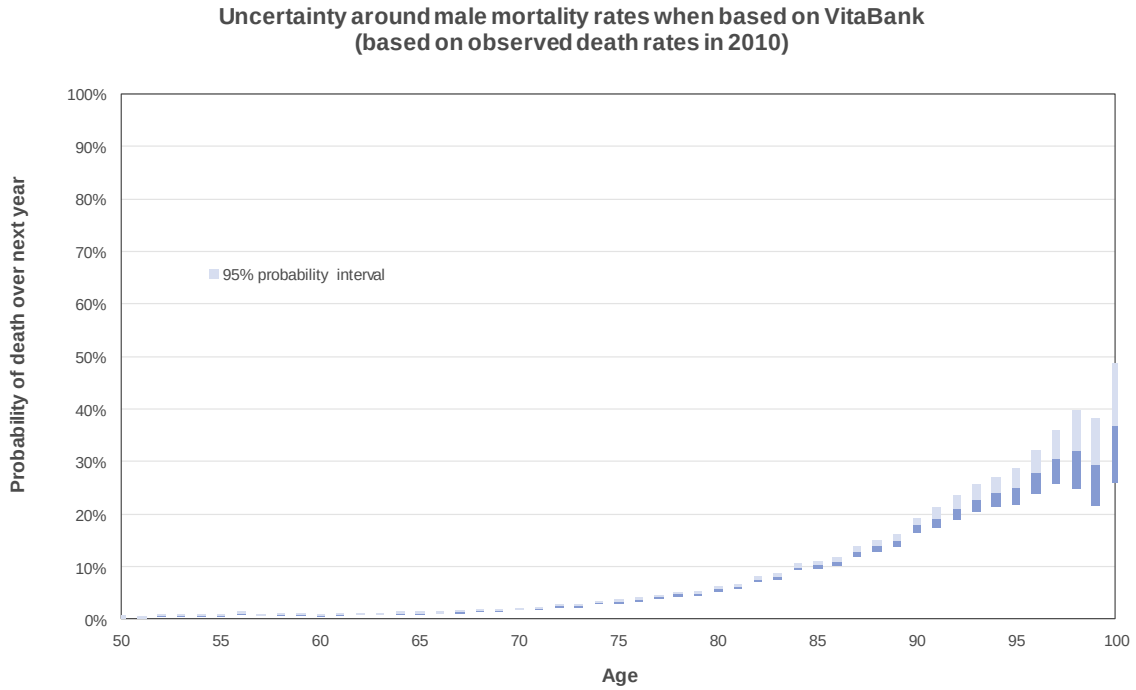
Whilst we have some certainty at those ages where there are lots of pensioners and widow(er)s (i.e. the younger ages) the uncertainty as to the true mortality rates generally increases with age as there tend to be fewer pensioners and widow(er)s at those older ages. Since it is at the older ages (75+) where pension liability values are typically most sensitive to the mortality rates assumed, the uncertainty we see above is particularly unhelpful when trying to set longevity assumptions.

2.3 Lifting the fog on longevity

One way to remove some of the uncertainty seen above is to pool data over a number of calendar years – however for small funds in particular this often requires use of a large number of years worth of data before the noise is reduced. An alternative to this is pooling the data across a large number of funds – as done in Club Vita.

Chart 2B – Clarity in numbers

The chart below shows the comparable chart to 2A – but for VitaBank as a whole in 2010.



[3] For the technical reader: the shaded blue bars are 95% beta-binomial Bayesian probability intervals for the 'true' average mortality rate at each age in light of the observed crude death rates.

The blue bars are now considerably shorter – this shows how much more certain we can be about the 'true' mortality rates when working with the greater data volumes in VitaBank.

It remains a little difficult to draw a nice smooth curve through the bars above – this reflects the fact that the mix of people differs at each age i.e. each bar is based on lots of people with different longevity characteristics and so different chances of dying.

Because of the large amount of data obtained by pooling we can start to look at smaller groups of individuals defined by the characteristics that we have found to affect longevity, and identify with confidence the mortality rates experienced by such groups. (We explored this and the complex statistical methods we have used to identify the underlying patterns in your first VitaIndex report.)

3 Every fund is different

3.1 Who lives longest – you, your peers or everyone else?

This section looks at the extent to which life expectancies are different in the individual funds participating in Club Vita.

Jargon buster

Life expectancy is the average length of time an individual can expect to live. Life expectancy can either be expressed as **future life expectancy** (for example 20 years for someone currently aged 65) or as **total life expectancy** (for example 85 for someone currently aged 65). In this report we use total life expectancies.

The chart overleaf plots the life expectancy for men against women, with each fund[4] identified by a single marker. These 'period' life expectancies represent the lifespans that would be expected if mortality rates observed over the last five years were repeated in future[5] - this makes no allowance for future improvements.

Jargon buster

When looking at life expectancies it is important to know whether they include any allowance for future changes in longevity. **Period life expectancies** are based on mortality rates experienced for one particular period, whilst **cohort life expectancies** are determined using projected death rates for one particular generation and so assume some future change (usually reduction) in the chances of dying at each age. Throughout this report we use period life expectancies.

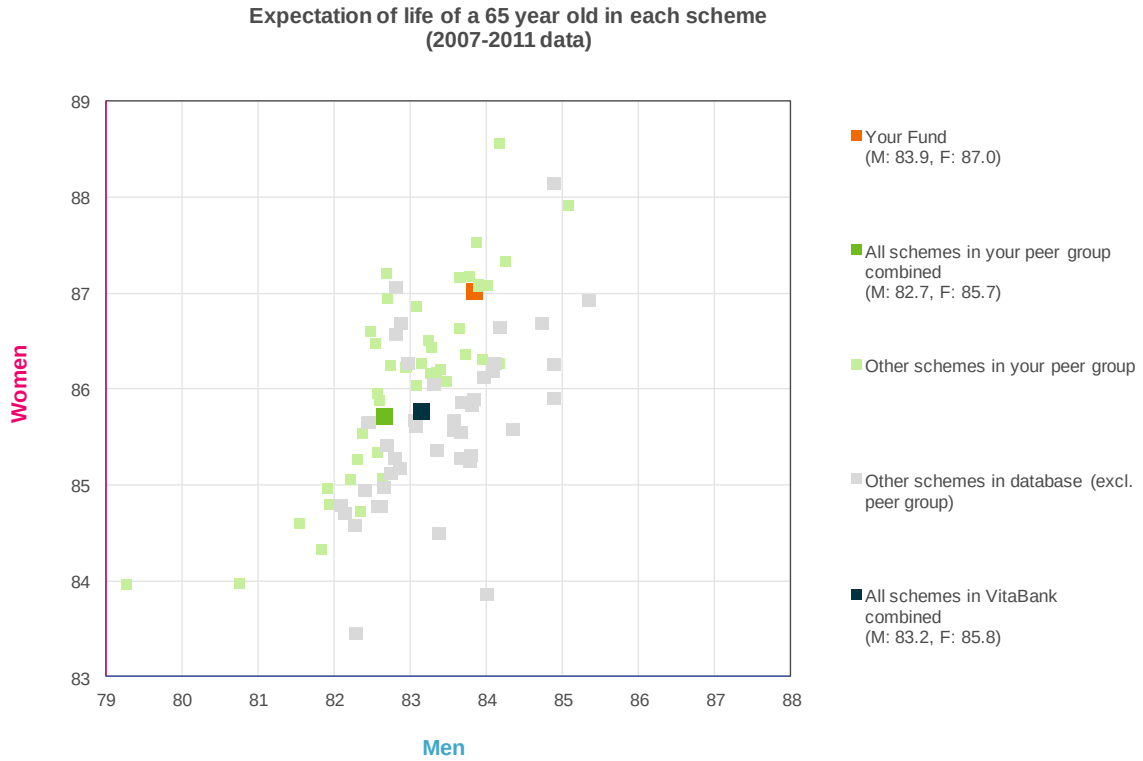
In calculating the life expectancies we have included the information relating to widow(er)s as this provides insight into mortality rates at the oldest ages, where, as seen in Chart 1A there is considerable volumes of data in relation to widows in particular.

We have highlighted your fund so that you are able to compare your experience against that of other funds in the database and in particular your peer group of other LGPS Schemes - which are highlighted in green.

[4] Please be aware that markers are not shown for all schemes in the dataset as those with less than 1,000 years of exposed to risk over the period 2007-2011 are likely to be subject to too much random variation for the marker to be meaningful. Immature schemes (i.e. those with no or very few individuals at the older ages (85+) have also been excluded.

[5] To avoid problems with the sparseness of data at extreme old ages for some schemes the mortality rates have been calculated in five year age bands and at the oldest age bands VitaBank's average data is used where schemes have insufficient data to use their own crude death rates.

Chart 3A – Variations in life expectancy



If men and women demonstrate the same mortality patterns in each fund then within this chart we would observe a diagonal line. It is therefore encouraging to see that the funds appear to follow a diagonal suggesting that men and women exhibit similar mortality patterns in each fund. Some of the funds which appear off of the diagonal may be due to distortions caused by relatively small bodies of data, or differences between the male and female populations in those funds in terms of the other key longevity differentiators we identify in section 4.

You, your peers and everyone else

The gap between highest and lowest appears considerable: from 79.3 to 85.9 for men and from 83.5 to 89.3 for women within the database as a whole. In particular:

- Within LGPS Schemes there is a range of life expectancies of between 79.3 and 85.1 for men and between 84.0 and 88.6 for women.
- Within your peer group the average life expectancy is 82.7 for men and 85.7 for women. For both men and women this is similar to the average life expectancies for VitaBank.
- The life expectancies within your fund are 83.9 for men and 87.0 for women. For both men and women this is greater than the life expectancies seen for other LGPS Schemes and for the combined data in VitaBank.
- Your previous Index report may have shown slightly different life expectancies within your fund for men and women. The main reason for this change will be the updating of our analysis for the more recent experience observed within your Fund and the other Club Vita participants.

4 Everyone is different

Many of the characteristics that Club Vita has identified as affecting longevity (gender, lifestyle, affluence, occupation and retirement health) are inter-related. For example, the average income of former non-manual employees is typically higher than that of manual employees. In other words, if you were to consider the effect of occupation on longevity (ignoring other characteristics), some of the higher mortality seen for former manual workers relative to non-manual workers will be due to income and lifestyle differences rather than simply due to their occupation.

In order to make appropriate allowances for different longevity characteristics it is important to be able to identify the impact that individual characteristics have in isolation and how the impact of these characteristics decrease with age. Our research team has used sophisticated statistical techniques designed to separate out the impact of individual longevity predictors i.e. the effect of different parts of your fund's demographic DNA – a summary of these methods is included in Appendix B.

As part of this analysis our statistics team have also identified the groupings of salary and pension which provide most insight into differences in longevity.

Change in longevity characteristic	Impact on life expectancy from age 65 (if all other characteristics are unchanged)
Male to female	Increase of 2½ to 3 years
Normal to ill health retiree (men)	Typically a decrease of 2 to 3½ years (the impact is biggest for those combinations of lifestyle and affluence with the longest life expectancy in normal health)
Geo-demographic longevity group A to G for men	Increase of 4½ to 5 years
Increase in pay at retirement from below £20,000 p.a. to over £55,000 p.a. (men)	Increase of 2 to 2½ years
Manual to non-manual (men)	Increase of less than 1 year (the impact is larger for women at around 1½ years)

Technical note: Above values are based upon the adjusted impact of the change in a single characteristic as derived from logistic generalised linear models fitted to the 136 schemes loaded onto VitaBank as at February 2012 and stratified by sex and adjusted for age, occupation, retirement type, affluence (salary at exit/retirement and pension) and postcode based longevity group (including any significant interactions between these covariates). For additional details please see Appendix B. Please note that the above results are based upon our latest research and so may be slightly different to results in earlier reports reflecting changes in the impact of different factors over time and the additional insights we continue to gain from the dataset.

In order to understand why different funds exhibit different life expectancies we need to understand more about why the different members of those funds may have different life expectancies and how your fund differs from others in terms of its **demographic DNA** (i.e. the makeup of your membership in terms of the different longevity characteristics that we have identified). The demographic DNA of your fund is explored in the following section and some additional summary statistics are provided in an Appendix to this report.

5 Your fund's demographic 'DNA'

Please note that:

- The charts show only members for whom we hold the relevant data – the proportion of your members for whom we hold relevant data is shown in footnotes; and
- With the exception of charts 5B and 5C, the charts consider only the pensioner membership of the fund i.e. widow(er)s have been excluded.

Chart 5A – The sick die young ... your ill health 'DNA'[6]

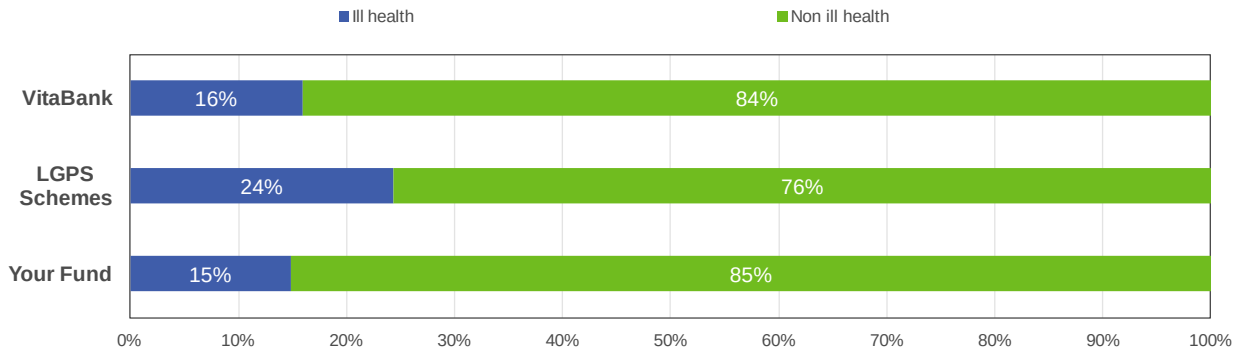
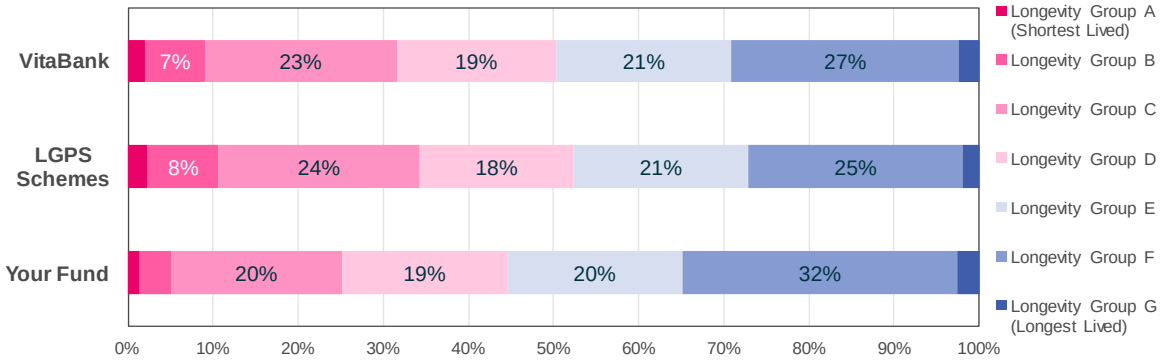
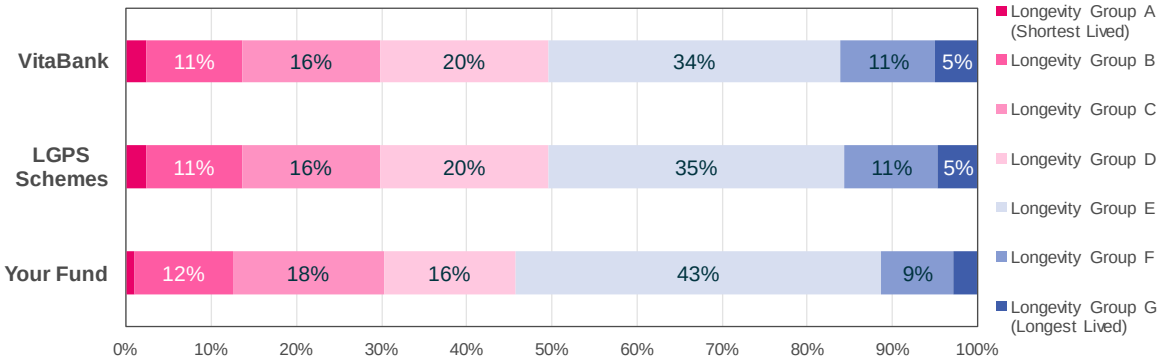


Chart 5B (men) & 5C (women) – Life is more than just work ... your geo-demographic 'DNA'[7]





[6] Retirement health was supplied for almost all of your pensioners.

[7] We have recorded usable postcodes for 75% of your pensioners and dependants – please see our VitaCleansing report for more information.

Chart 5D – Money matters ... your male affluence 'DNA'[8]

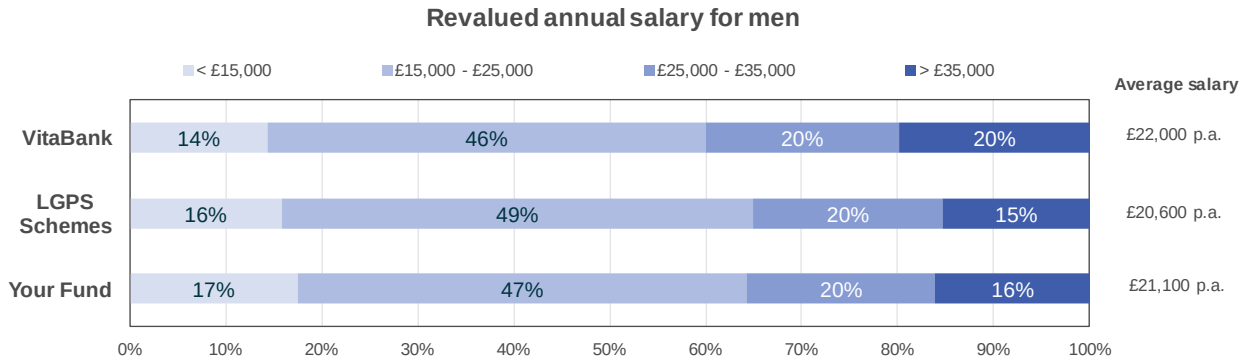


Chart 5E – Money matters ... your female affluence 'DNA'[9]

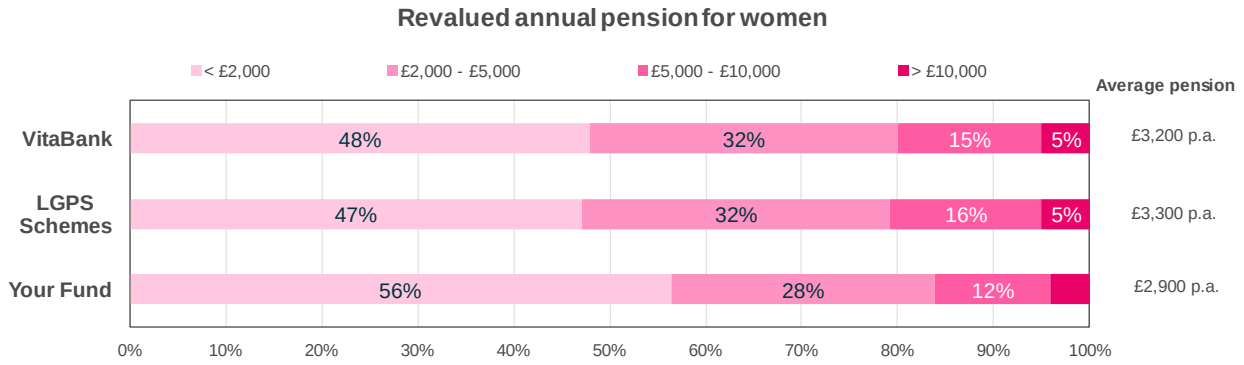
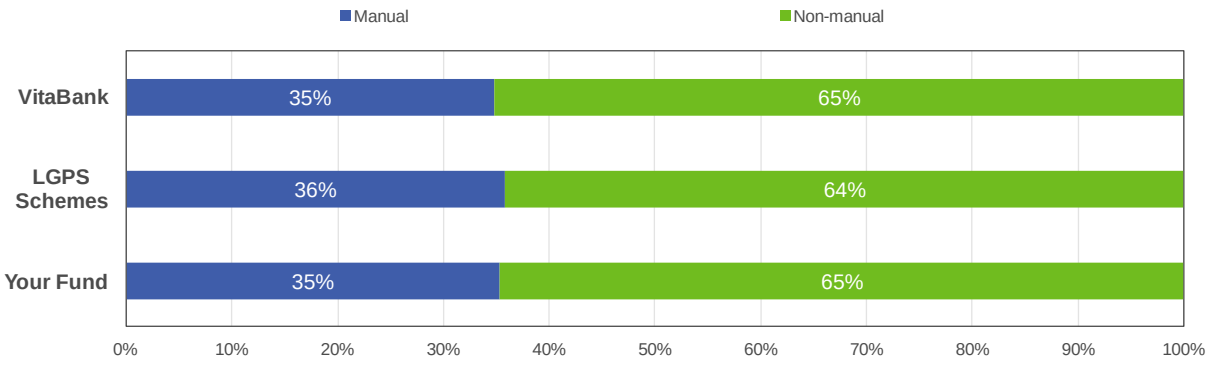


Chart 5F – A job for life and death ... your occupational 'DNA'[10]



Typically we would expect that, all else being equal, relative to the average occupational pension scheme:

- funds with a higher proportion of ill health retirees will have a lower average life expectancy;
- funds where a higher proportion of members live in postcodes associated with the 'worst' lifestyles (shortest lived) will have a lower average life expectancy;
- funds with lower salaries or pensions in payment will have lower average life expectancy; and

[8] A reliable salary value was supplied for 99% of your pensioners – please see your VitaCleansing report for more information.
[9] Pension was supplied for almost all of your pensioners – please see your VitaCleansing report for more information.
[10] This information is known for 88% of your members - please see your VitaCleansing report for more information.

- funds with a higher proportion of former manual employees will have a lower average life expectancy.

We can look at the DNA of your pensioners to see if it helps explain the life expectancy seen in Chart 3A relative to other LGPS Schemes and VitaBank. In the table below ⇧,⇩ and ⇔ indicate that your demographic DNA suggests that you should have on average higher, lower or similar life expectancy to other schemes, respectively.

Longevity Characteristics		What does your demographic DNA suggest about how your fund's average life expectancy should compare to...?	
		Peer group	VitaBank
Retirement health		⇧	⇔
Lifestyle	Male	⇧	⇧
	Female	⇔	⇔
Affluence	Male	⇧	⇩
	Female	⇩	⇩
Occupation		⇔	⇔

Based upon the table above your fund's longevity characteristics are consistent with a higher life expectancy than other LGPS Schemes but a lower life expectancy than VitaBank. In practice, though, the fund's membership is a diverse mix of individuals that exhibit a range of different combinations of longevity characteristics and this is reflected by the position of the fund on chart 3A. This is explored further in your VitaCurves report.

Further information on our analysis of your scheme's longevity characteristics, including the consideration of non-pensioner members, is provided in your **VitaCurves** report. In particular the **VitaCurves** report considers the impact on the value of your liabilities of adopting the latest version of **VitaCurves** as your longevity assumptions.

6 Living longer but how much longer?

So far the focus of our analysis in VitaIndex has been on identifying which factors distinguish between those who are expected to live longer or shorter than others – i.e. factors which it may be important for you to take into account when setting the baseline assumption for funding purposes – and investigating your fund's demographic 'DNA'.

However, mortality rates are likely to change in the future and in order to put possible future projections into context it is important to understand how mortality rates and life expectancies have been changing in the past. In this section we start to consider the changes that have been happening over the last 18 years.

6.1 Two years a decade

The following two charts demonstrate a helpful way of summarising the information we hold on recent improvements in longevity into a single figure – a life expectancy.

To generate life expectancies we have taken the crude death rates across all ages in each single calendar year to calculate the implied expected age of death if the same death rates continued to apply in all future years. As the death rates in a single year do not allow for further improvements in longevity they can be useful for comparing year-on-year trends in mortality, and variations between membership groups, but cannot be used to give a best estimate of future life expectancy. In each case we have considered someone who has reached age 65 in each single complete calendar year of experience (i.e. from 1993 to 2011).

One benefit of not making any allowance for future changes in mortality is that the life expectancy figures produced do not incorporate any judgemental views on 'longevity improvements', and are simply functions of the observed data[11].

The charts reveal:

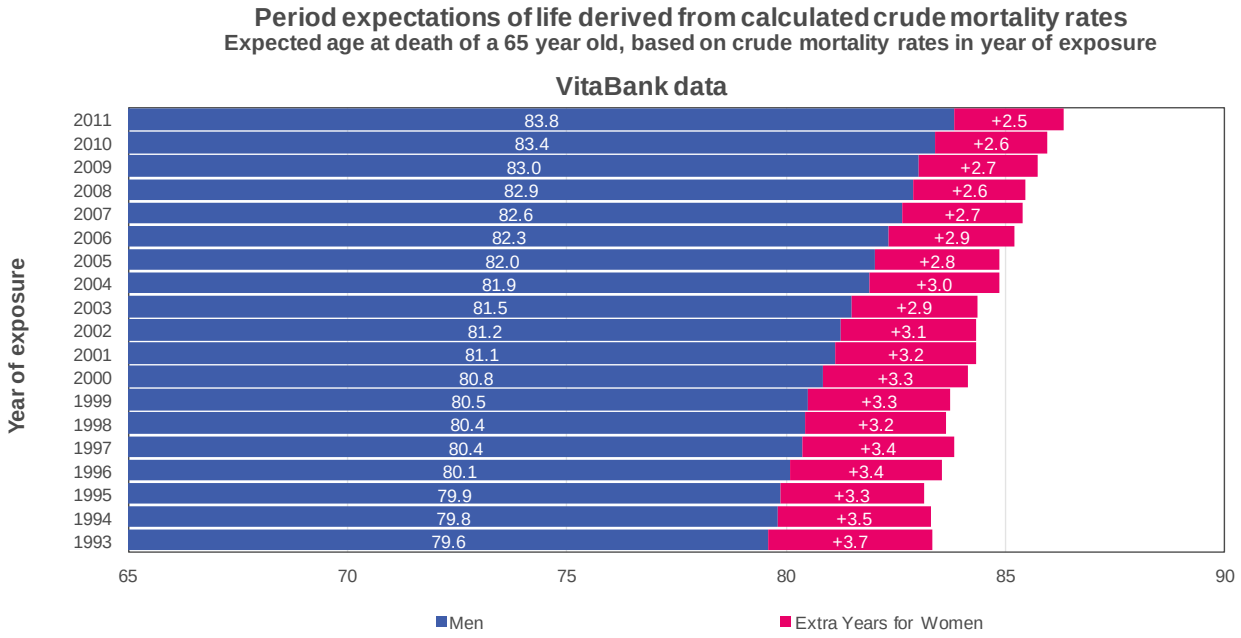
- The life expectancy for males (at age 65) has risen from 79.6 in 1993 to 83.4 in 2010 – an increase of around 2.7 months each year, or around 2.2 years per decade[12].
- The life expectancy for women has also risen, but less rapidly than for men. This shows that the life expectancy for men has been catching up with women. One of the drivers for this is that more men smoked historically and so the quitting of smoking which has happened in recent decades has been most beneficial to men.
- The life expectancy of individuals within the fund has been far more variable over time, highlighting the clarity that comes from pooling data.

Further information on our analysis of longevity improvements was provided in your first VitaIndex report and annual updates to this will be provided in your VitaMonitor report.

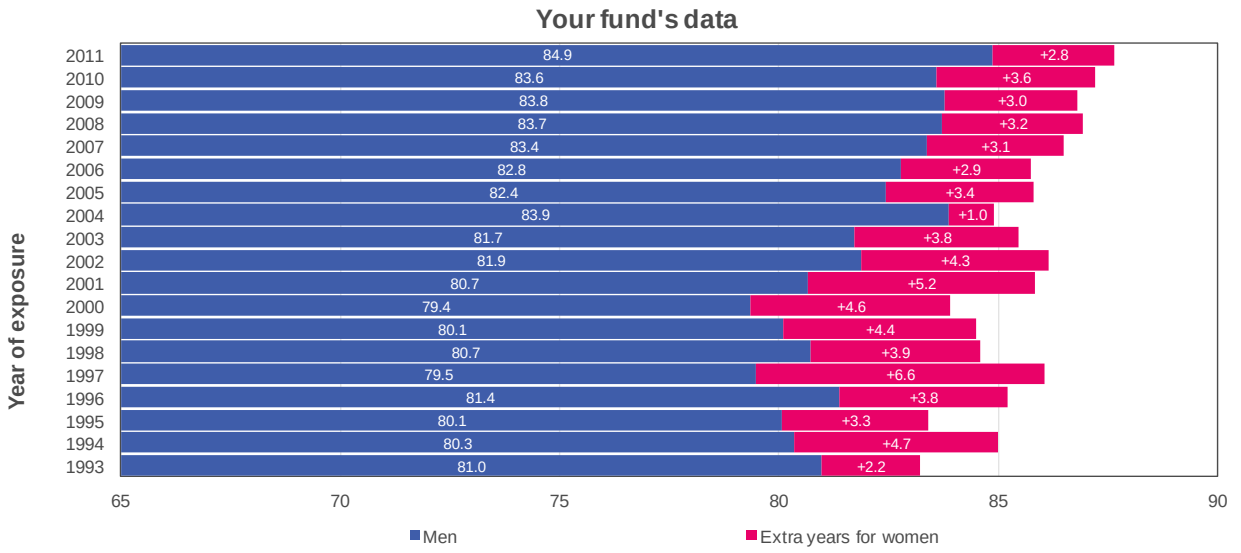
[11] However, this introduces a limitation because we do not have complete information at all ages – for instance at some ages where we are observing a small number of individuals there will be some years where no one is observed to die, suggesting a misleadingly low death rate of 0%. Similarly at other ages there may only be a small number of individuals all of whom die, or there may be no one alive at all. To avoid these problems some smoothing of the crude death rates has been carried out at ages over 100.

[12] The results are also similar to those observed in the UK population, as evidenced by National Statistics studies. http://www.statistics.gov.uk/STATBASE/ssdataset.asp?vlnk=9522

Chart 6A and 6B – Increasing life expectancies



Note: Not all schemes have submitted data covering all of 2011. As such, the life expectancy shown above for 2011 is provisional.



Appendix – Your fund, your peer-group and VitaBank

The table below contrasts the Northamptonshire County Council Pension Fund with your peer group (LGPS Schemes) and the combined dataset of the first 156 occupational pension schemes to participate in Club Vita.

		Men			Women			Combined		
		Within your fund	Within your peer group	VitaBank	Within your fund	Within your peer group	VitaBank	Within your fund	Within your peer group	VitaBank
Population Profile (2010)	Active	27%	35%	27%	36%	41%	35%	33%	39%	31%
	Deferred	37%	29%	34%	43%	33%	34%	41%	31%	34%
	Pensioners (excluding widow(er)s)	33%	34%	37%	18%	21%	22%	22%	25%	28%
	Widow(er)s and dependants	3%	3%	2%	4%	6%	9%	4%	5%	6%
	Split by gender	39%	40%	49%	61%	60%	51%	-	-	-
Pensioner Profile (2010) Retirement Type	Proportion retiring on 'normal health'	83%	72%	81%	86%	76%	79%	85%	75%	80%
	Proportion retiring on grounds of ill health	17%	26%	14%	14%	22%	17%	15%	24%	15%
	Proportion retiring where retirement reason is unknown	0%	2%	5%	0%	2%	4%	0%	1%	5%
Pensioner Income (2010) excl. widow(er)s (revalued to 2008)	Proportion with pensions of less than £2,000 p.a.	30%	22%	23%	56%	47%	48%	45%	36%	34%
	Proportion with pensions of between £2,000 and £5,000	28%	31%	30%	28%	32%	32%	28%	32%	31%
	Proportion with pensions of between £5,000 and £10,000	19%	25%	25%	12%	16%	15%	15%	20%	21%
	Proportions with pensions in excess of £10,000 p.a.	23%	22%	22%	4%	5%	5%	12%	12%	14%
Average Pensions in Payment (revalued to 2008)	All former employment types	£6,823	£7,026	£7,326	£2,866	£3,270	£3,247	£4,212	£4,560	£5,215
	Former manual employees	£3,165	£4,034	£3,928	£1,218	£1,437	£1,444	£2,182	£2,827	£2,810
	Former non-manual employees	£10,020	£9,789	£10,622	£3,854	£4,288	£4,269	£6,219	£6,477	£6,976
Average Salary at Retirement/Exit (revalued to 2008)	All former employment types	£21,124	£20,647	£22,007	£15,539	£15,943	£16,027	£17,253	£17,653	£18,608
	Former manual employees	£16,292	£16,935	£16,985	£12,517	£12,485	£12,508			
	Former non-manual employees	£27,871	£27,583	£28,164	£17,862	£18,151	£18,138			
Average Ages (inc widow(er)s)	Pensioners (1993)	68.0	67.0	67.1	68.5	68.7	69.0	68.2	67.9	68.0
	Pensioners (2010)	69.9	69.4	69.5	69.7	70.5	71.6	69.7	70.0	70.6
	Age at death of pensioners (1993)	73.8	74.4	74.6	74.4	77.3	77.8	74.1	75.7	76.0
	Age at death of pensioners (2010)	78.7	78.2	78.9	80.6	81.1	82.5	79.7	79.8	80.7
Period Life Expectancy (2005-2009)	Pensioners inc widow(er)s	83.9	82.7	83.2	87.0	85.7	85.8	85.6	84.4	84.5

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For the avoidance of doubt, this report does not constitute actuarial advice. Furthermore, this report should not be construed as providing advice on the appropriateness of any mortality assumption for the purposes of scheme funding as required under Part 3 of the Pensions Act 2004 and The Occupational Pension Schemes (Scheme Funding) Regulations 2005.

The information in the report has been compiled by or on behalf of Club Vita LLP and is based upon our understanding of legislation and events as at December 2012. It should be noted that Club Vita LLP does not provide legal services and therefore, we accept no liability to you or to any other third party in respect of any legal opinions expressed in this report. You are advised to take independent legal advice in respect of any legal matters arising out of this report.

Utilisation of Data

The contents and conclusion of this report are reliant upon the extract of the current and historic data held by the fund's administrators. This was supplied to us by Mohammed Mansha of Northamptonshire Pensions Team on 16 November 2012. We have carried out a number of checks on the data to ensure that it is suitable for the purposes of longevity analysis. The results of this analysis are summarised in our **VitaCleansing™** report dated December 2012 and has resulted in the data from your fund having been included in our longevity analyses from 1 January 1993. Please be aware that the checks we have performed are designed to verify the data as adequate for the purposes of longevity analysis and does not warrant the data as suitable for other purposes.

The data analysed within this report relates solely to pensions in payment. In all of the analyses, pensioners aged below 40 have been excluded as the data on child dependants' (or young widow(er)s) pensions is sparse and unreliable.

Within this report we have identified a number of predictors of longevity which explain a considerable proportion of the variation observed in the mortality experience of the contributing schemes. However, not all of the variations between funds are explained in terms of the factors identified within this report. It is likely that there are additional factors which explain the residual variation in mortality experience. To the extent that some of these additional factors are found more or less frequently in the membership of the Northamptonshire County Council Pension Fund it may be particularly important for the sponsor and trustees of the fund to appreciate the impact of these factors on longevity.

Compliance statement

The following Technical Actuarial Standards are applicable in relation to the information referred to in this report:

- TAS R – Reporting;

- TAS D – Data;
- TAS M – Modelling; and
- TAS P - Pensions

This report complies with each of the above Standards.