Zooming in on ZIP codes
Mapping longevity to strengthen liability management

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Agenda

1. Why are we here?

2. How can ZIP-codes help with longevity?

3. How can they help us?

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1 Why are we here?

# Club Vita

Proper noun, [kluhb vee-t*uh*], \ˈkləb vē-tə\

🇬🇧 2008   🇨🇦 2015   🇺🇸 2019

1. Center of excellence for improving understanding of human longevity.

2. Community of organizations with a shared interest in longevity and belief that the 'bigger' the data, the lower the (statistical) noise.

3. Provider of longevity risk informatics to support pension funds' risk management strategies and enable market innovation.

Club Vita is an independent data utility, supporting pension funds, advisors, insurers & asset managers

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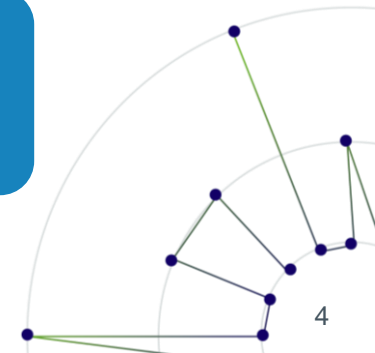
4 year gap between states

	#*			Life expectancy at 65**		#*			Life expectancy at 65**
	1		Hawaii	84.91		1		Hawaii	87.99
	2		California	84.38		2		Florida	87.12
	26		Virginia	83.23		26		Idaho	85.68
	27		Rhode Island	83.23		27		Illinois	85.68
	50		Kentucky	81.42		50		Mississippi	84.05
	51		Mississippi	81.03		51		West Virginia	83.99

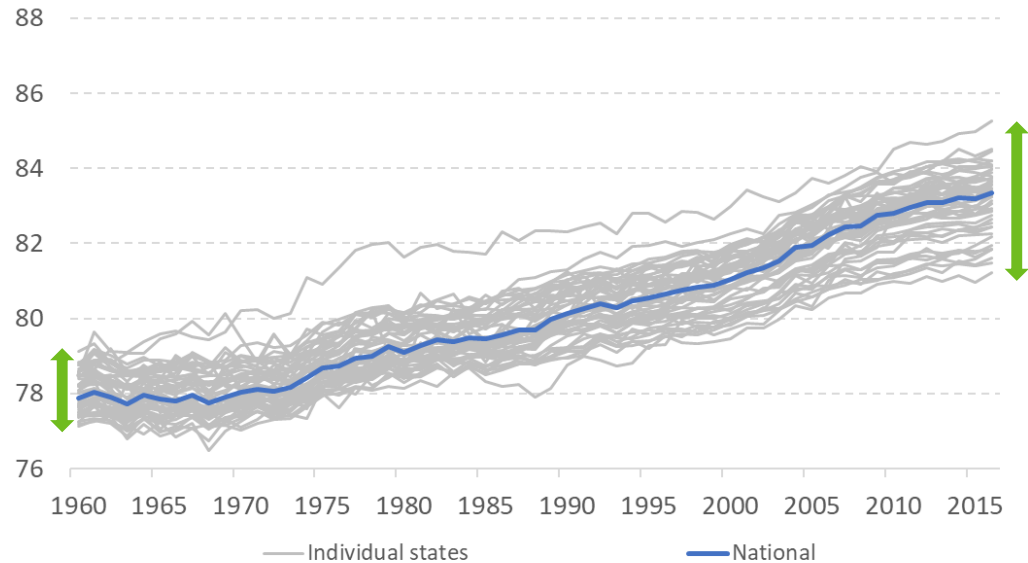* Life expectancy ranking out of 50 states and District of Columbia
** Source: United States Mortality Database

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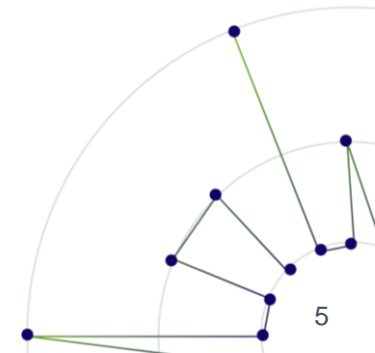
Longer lifespans, but widening gaps
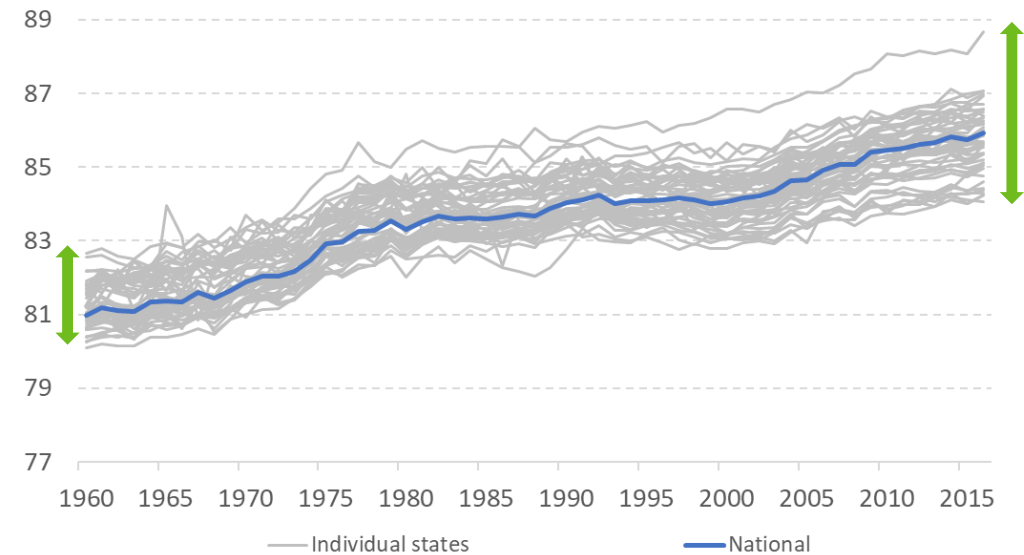

Life expectancy from 65 (male)

Life expectancy from 65 (female)

Individual states — National

2 year gap → **4 year gap**

2.5 year gap → **4.6 year gap**

What is driving this diversity and how can we describe it?

2 How do ZIP codes help us calculate today's longevity?

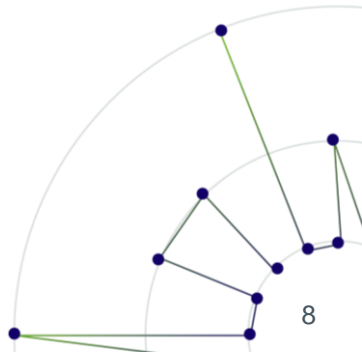# What affects how long people live?

Lifestyle

Affluence

Occupation

Health

Gender

Something else?

Zooming in on diversity

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|	**Society of Actuaries RP14 tables**	**Club Vita 5-digit ZIP code model**	**Club Vita 9-digit ZIP code model**
Range of life expectancy at age 65* *based on male normal health retirees	2.9 years	5.4 years	7.7 years
Rating factors	• High/low pension amount • Blue/white collar	• **5-digit** ZIP code • Pension amount • Blue/white collar	• **9-digit** ZIP code • Pension amount • Blue/white collar
Factors used at one time	One	All	All

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Remember join the dots?
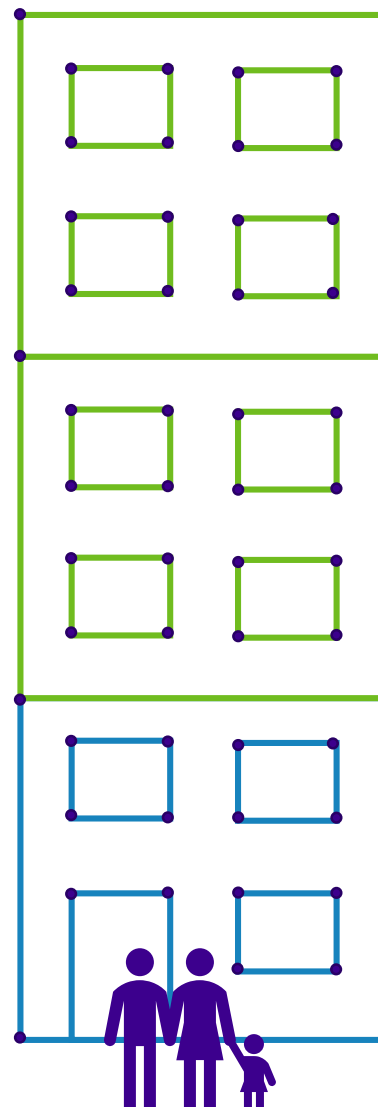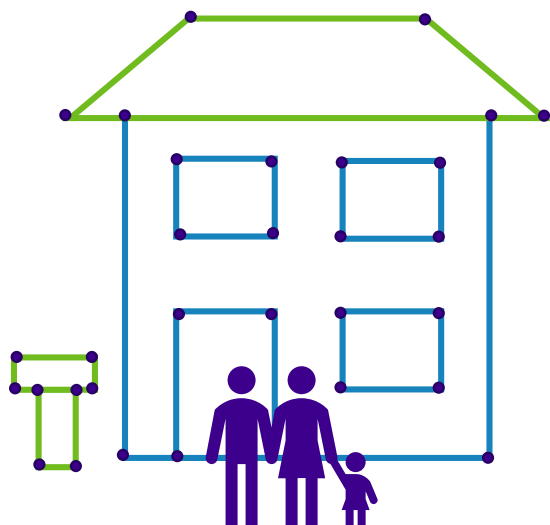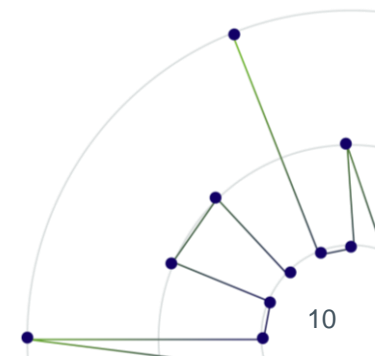
9-digit ZIP code model

5-digit ZIP code model

RP14 tables

ZIP code modelling –
like joining the dots to understand your participants

Grouping ZIP codes
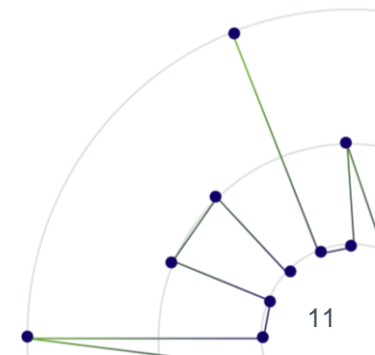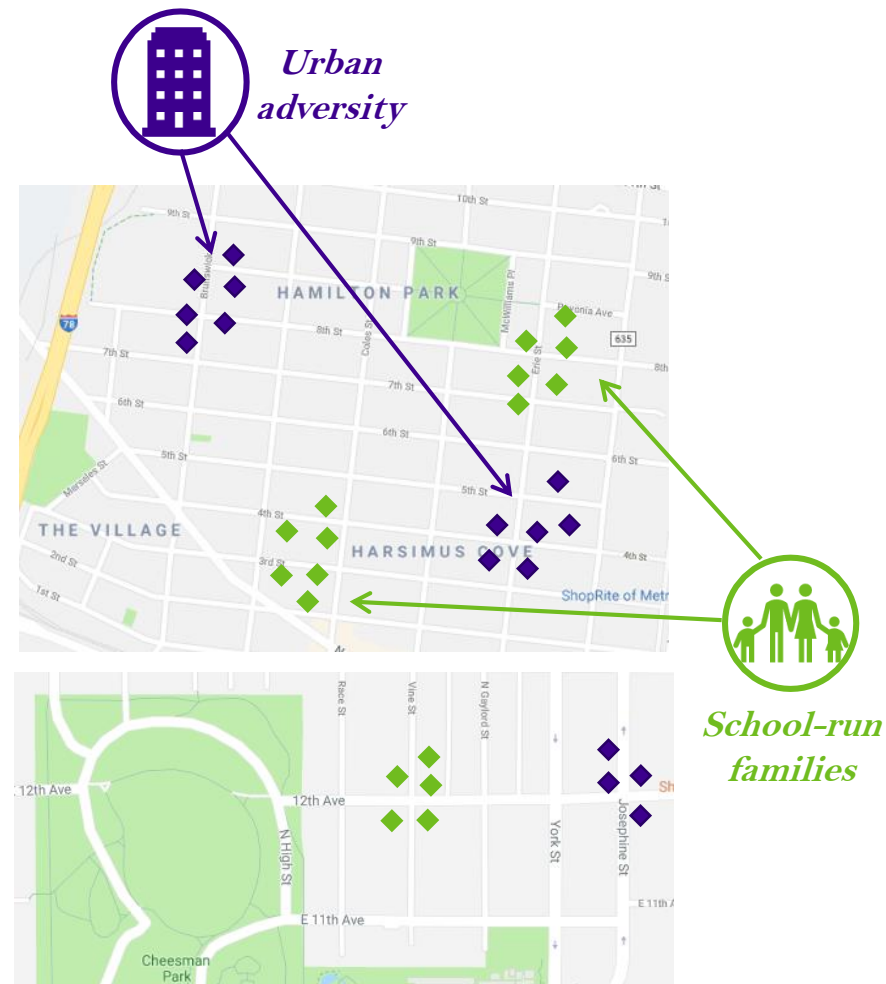
Marketing principles:

1. People living in similar neighbourhoods have similar characteristics
   (diversity within ZIP codes mean ZIP+4 is necessary)
2. Neighbourhoods can be characterized by types of people living there
3. Neighbourhoods with same characterization appear all over the country
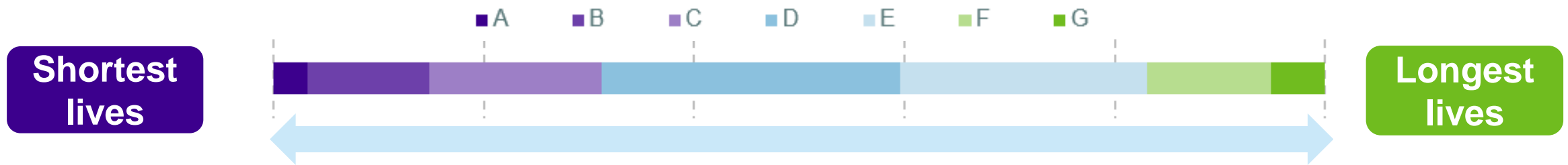
Club Vita principle:

- People with similar characteristics have similar longevity

- CAMEO's marketing groupings: 58 different types of neighbourhood

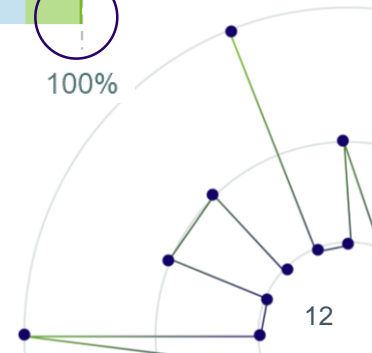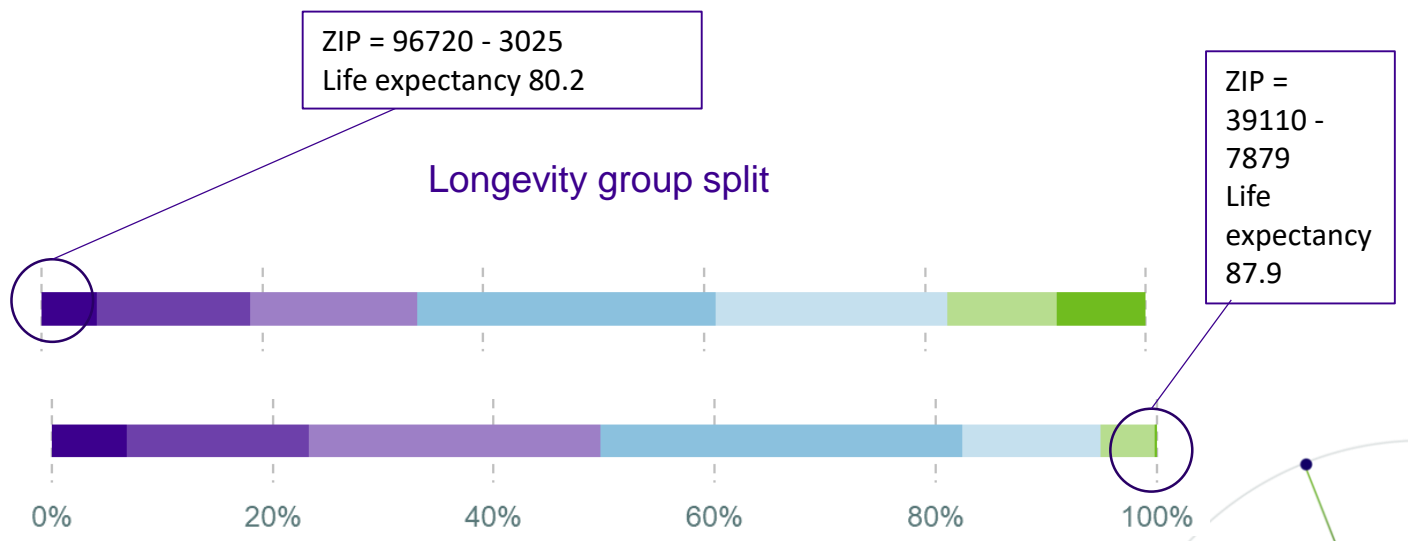- Club Vita's longevity groupings: 7 groups for men: 6 groups for women

*Neighbourhood characteristics for illustration only

Urban adversity

School-run families

Club Vita's longevity groups

■A ■B ■C ■D ■E ■F ■G

Shortest lives

Longest lives

#*			Life expectancy at 65**	Longevity group split

ZIP = 96720 - 3025
Life expectancy 80.2

ZIP = 39110 - 7879
Life expectancy 87.9

| 1 | | Hawaii | 84.91 | |
| 51 | | Mississippi | 81.03 | |

0%   20%   40%   60%   80%   100%

* Life expectancy ranking out of 50 states and District of Columbia
** Source: United States Mortality Database

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Club Vita's longevity groups

■A ■B ■C ■D ■E ■F

Shortest lives

Longest lives

#*			Life expectancy at 65**

ZIP = 96720 - 2504
Life expectancy 82.6

Longevity group split
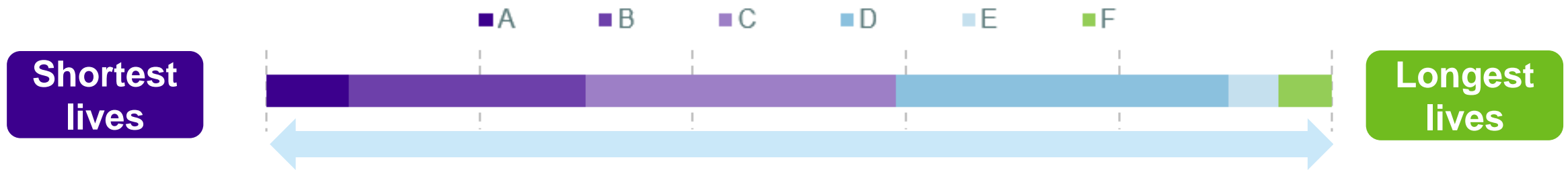
ZIP = 26691-4114
Life expectancy 88.5

| 1 | | Hawaii | 87.99 |
| 51 | | West Virginia | 83.99 |
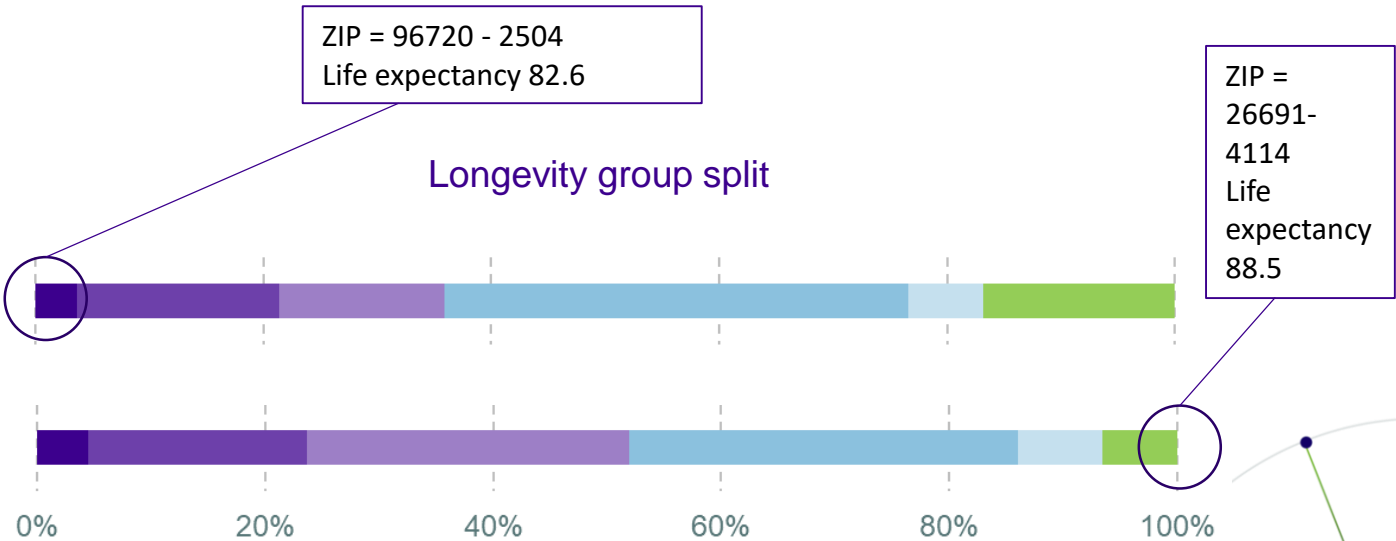
0%   20%   40%   60%   80%   100%

* Life expectancy ranking out of 50 states and District of Columbia
** Source: United States Mortality Database

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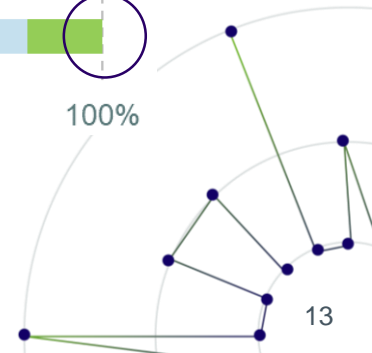
Why 9-digit ZIP codes?

79936 El Paso, TX
Population 115k

90011 Los Angeles, CA
Population 106k

60629 Chicago, IL
Population 105k

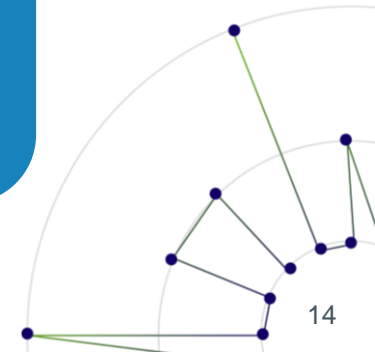Source: localistica, as at 4 April 2019

90650 Norwalk, CA
Population 105k

90201 Bell Gardens, CA
Population 101k

➢ On average, a 5 digit ZIP code covers 7,800 people – but in many cases covers more than 100,000 residents

➢ Around 1/3 of all 5 digit ZIP codes contain addresses from six different 9-digit longevity groups

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First calibration to US private sector plans

Life expectancy from 65

Healthy retirees

| 80.2 | ←→ | 87.9 |

ZIP+4	←→	3¼ yrs
$	←→	3¼ yrs
Collar	←→	1¼ yrs

| 79.2 | ←→ | 87.9 |

Ill-health retirees

Life expectancy from 65

| 82.6 | ←→ | 88.5 |

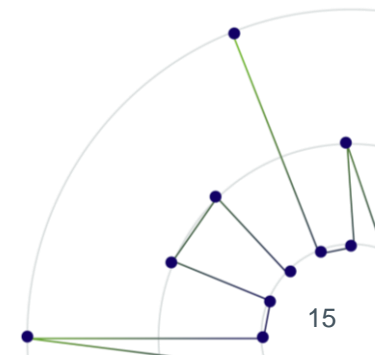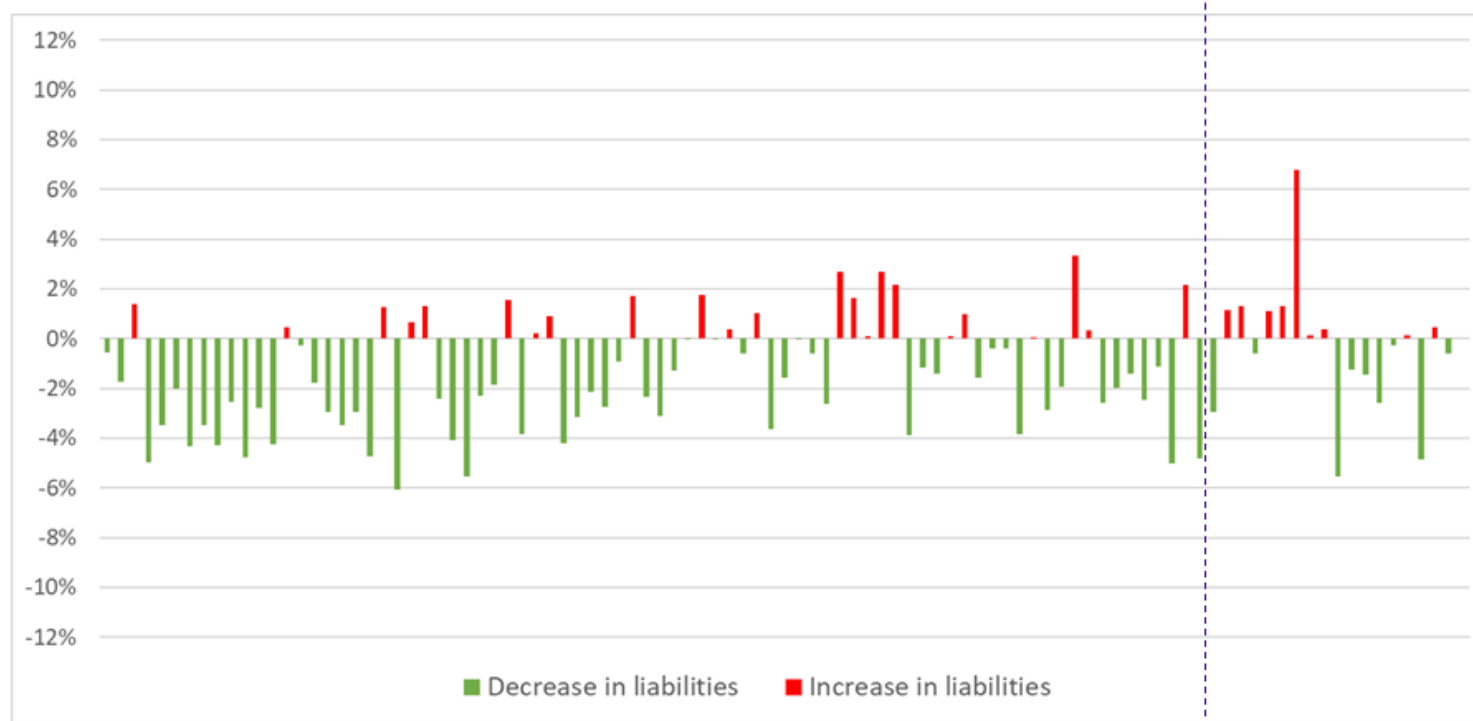| ZIP+4 | ←→ | 3½ yrs |
| $ | ←→ | 1½ yrs |
| Collar | ←→ | 1 yrs |

| 81.7 | ←→ | 83.5 |

Ill-health retirees

But how good is the fit to multi-employer plans?

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3 How can
ZIP codes help us?
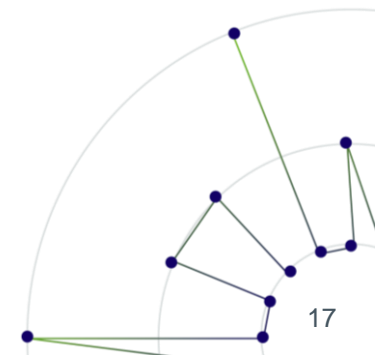
Most single-employer plans see funding improve

Impact of moving from
Adjusted RP14 with MP18 improvements to 2015
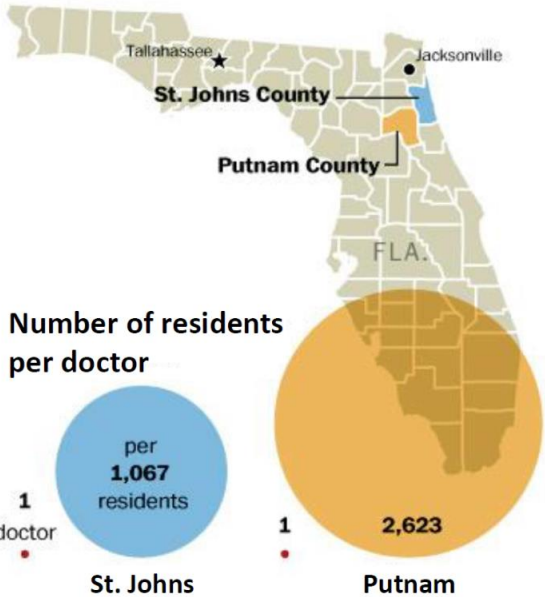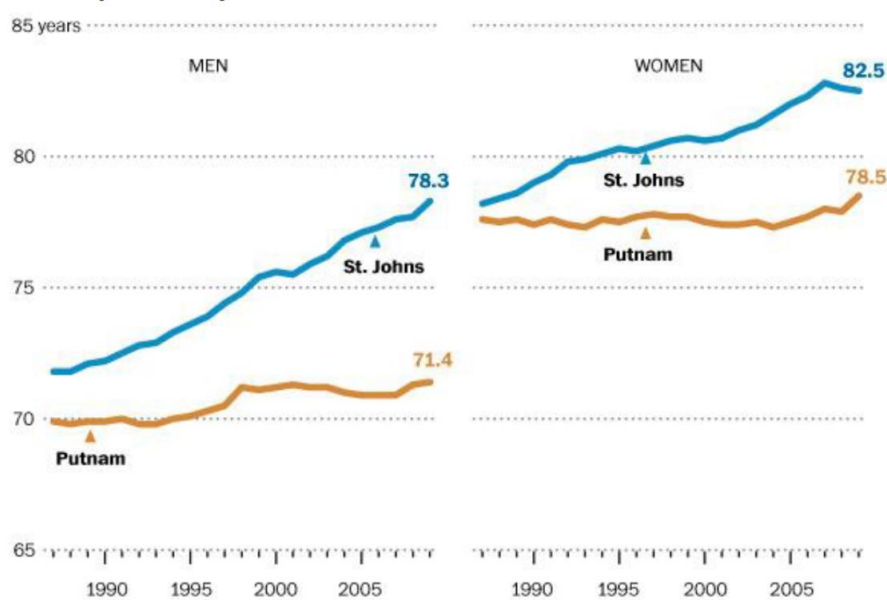to **v1 9 digit ZIP US VitaCurves**

What might be the effect on multi-employer plans?
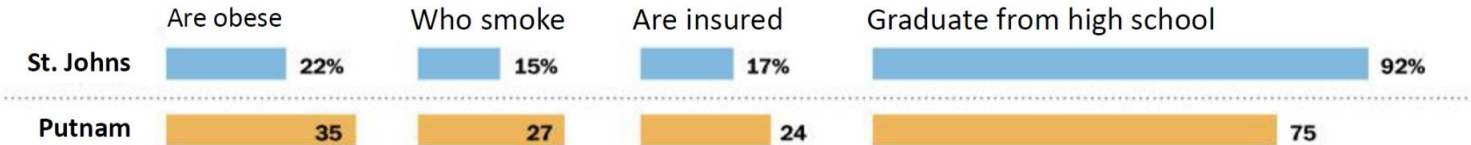
Lowest liabilities ⟷ Highest liabilities

⇨ *"Self-credible"*

Are trends the same for everyone?

Differences in LE from health status, education and lifestyle for two neighbouring US counties
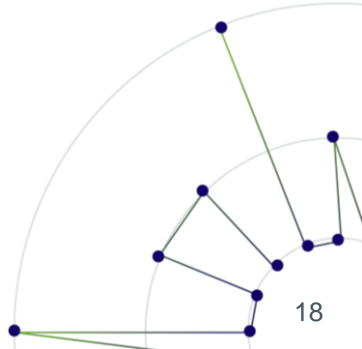

SOURCE: County Health Rankings and Roadmaps program, Robert Wood Johnson Foundation. The Washington Post. Published on March 10, 2013, 8:07 p.m.
http://www.washingtonpost.com/business/economy/economic-inequality-contributing-to-gap-in-life-expectancy/2013/03/10/54b5d21c-89df-11e2-98d9-3012c1cd8d1e_graphic.html

How can ZIPcodes be handled safely?

| The concerns	The solution
Discrimination: *Possible cause of indirect discrimination in life or health insurance.*	**Restrict usage to groups:** *Longevity models will not be used for pricing individual insurance. Our applications are in "group" situations where the sponsor or trustees are seeking to improve security.*
Data privacy: *9 digit ZIP code and date of birth could potentially enable identification of people.*	**Analysis completed on depersonalized data:** *We only use personal identifiers to check the data. Once checked, we anonymize records (including replacing ZIP codes with a proxy group for longevity).*

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Key benefits for multi-employer plans

✓ A consistent approach to longevity that captures the demographic characteristics of each of your plans

✓ Smaller multi-employer plans enabled to tailor their assumptions

✓ Trend assumptions that reflect your people, not the national average

✓ Possible improvements in funding, certain improvements in risk management

✓ Opportunity to insure longevity whilst you keep control of assets

✓ But to do this...

We need your help!
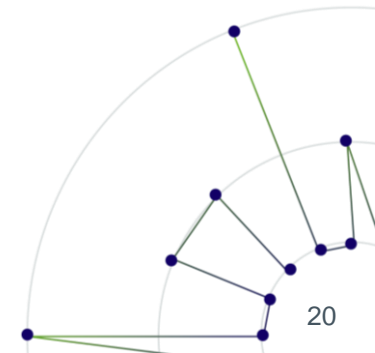
Lang may yer lums reek

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