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INTERNATIONAL ACTUARIAL ASSOCIATION



Institute of Actuaries of India



13th Global Conference of Actuaries 2011

Emerging Risks... Daring Solutions

Health Insurance and Wellness Programmes

Emile Stipp

Chief Health Actuary – Discovery

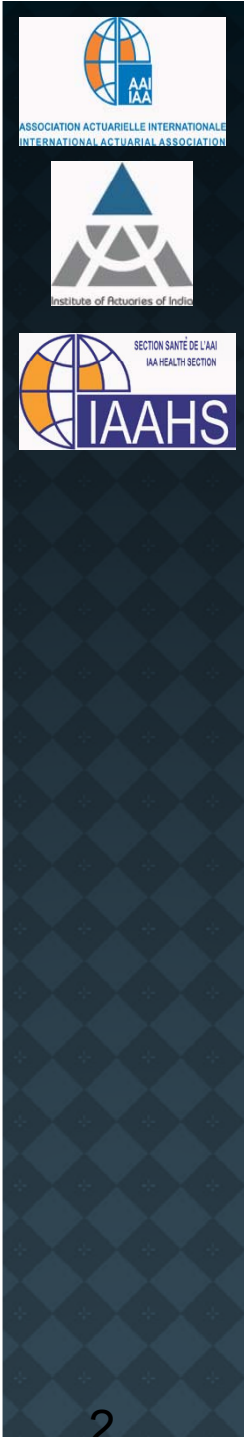
Chairman - IAAHS

South Africa

February 20 – 22, 2011

Introduction

- 1 The international case for Wellness Programmes
- 2 Case study: Background to Vitality Wellness Programme
- 3 What does the data show – does wellness programmes work?
- 4 The effect of a wellness programme on a health plan
- 5 Conclusion



1 The international case for Wellness Programmes



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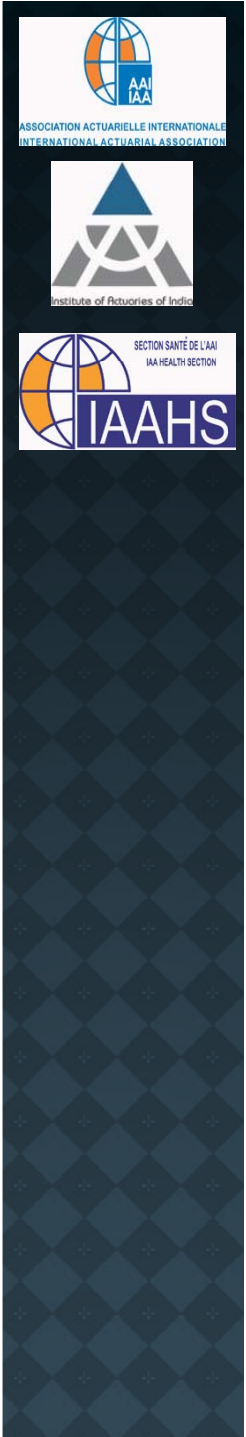
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Wellness programmes and Health Insurance

Overall aim is to answer some questions:

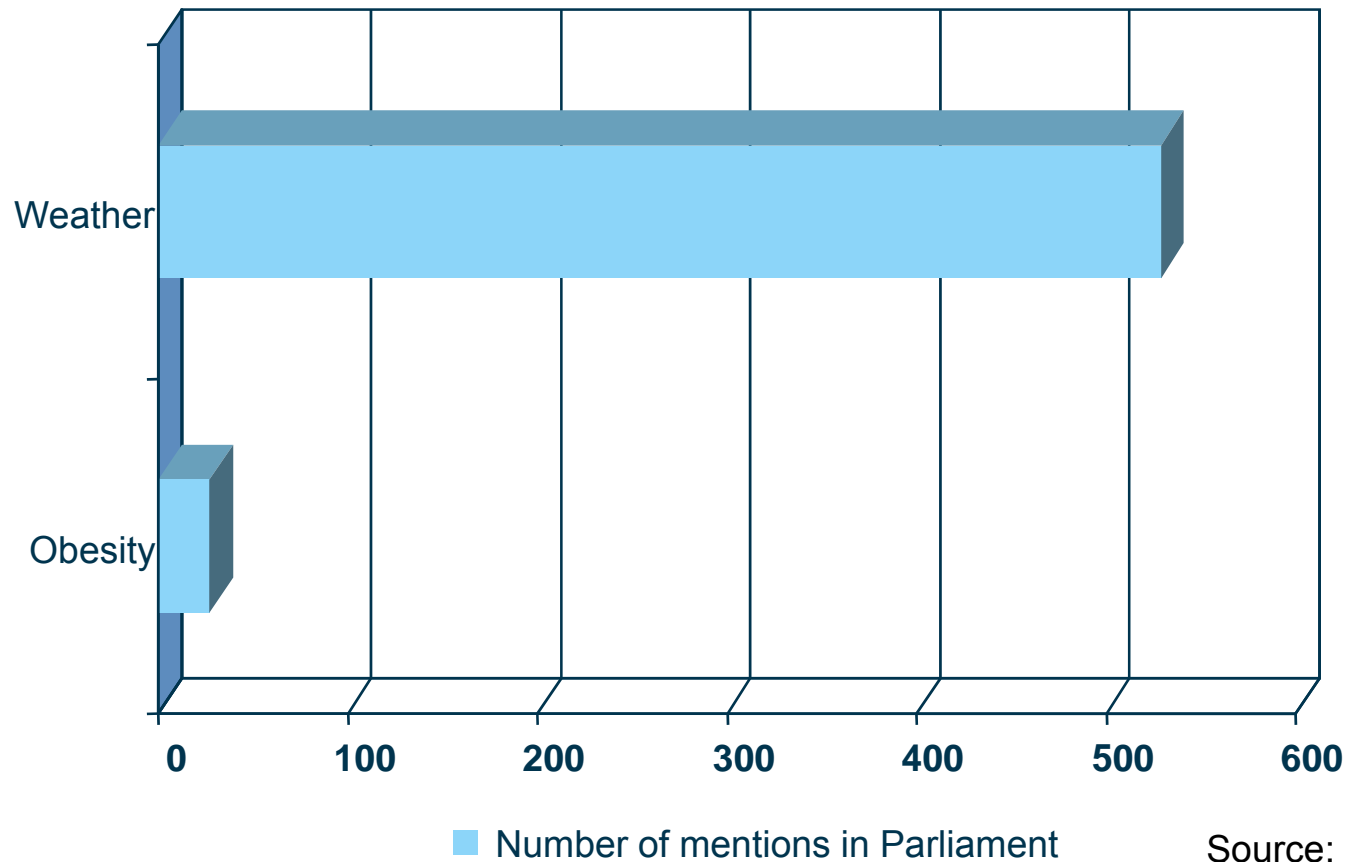
How do wellness programmes fit into health insurance?

- ◉ Do they reduce costs, and by how much?
- ◉ Does a wellness programme change behaviour?
- ◉ Does it work? Vitality case studies:
 - Showing Discovery data from South Africa



Diseases of Lifestyle: a major public health issue

UK PARLIAMENTARY REFERENCES IN 1996

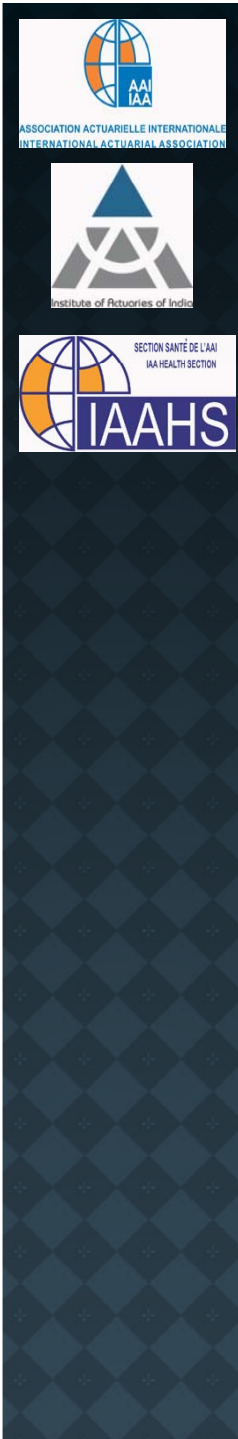
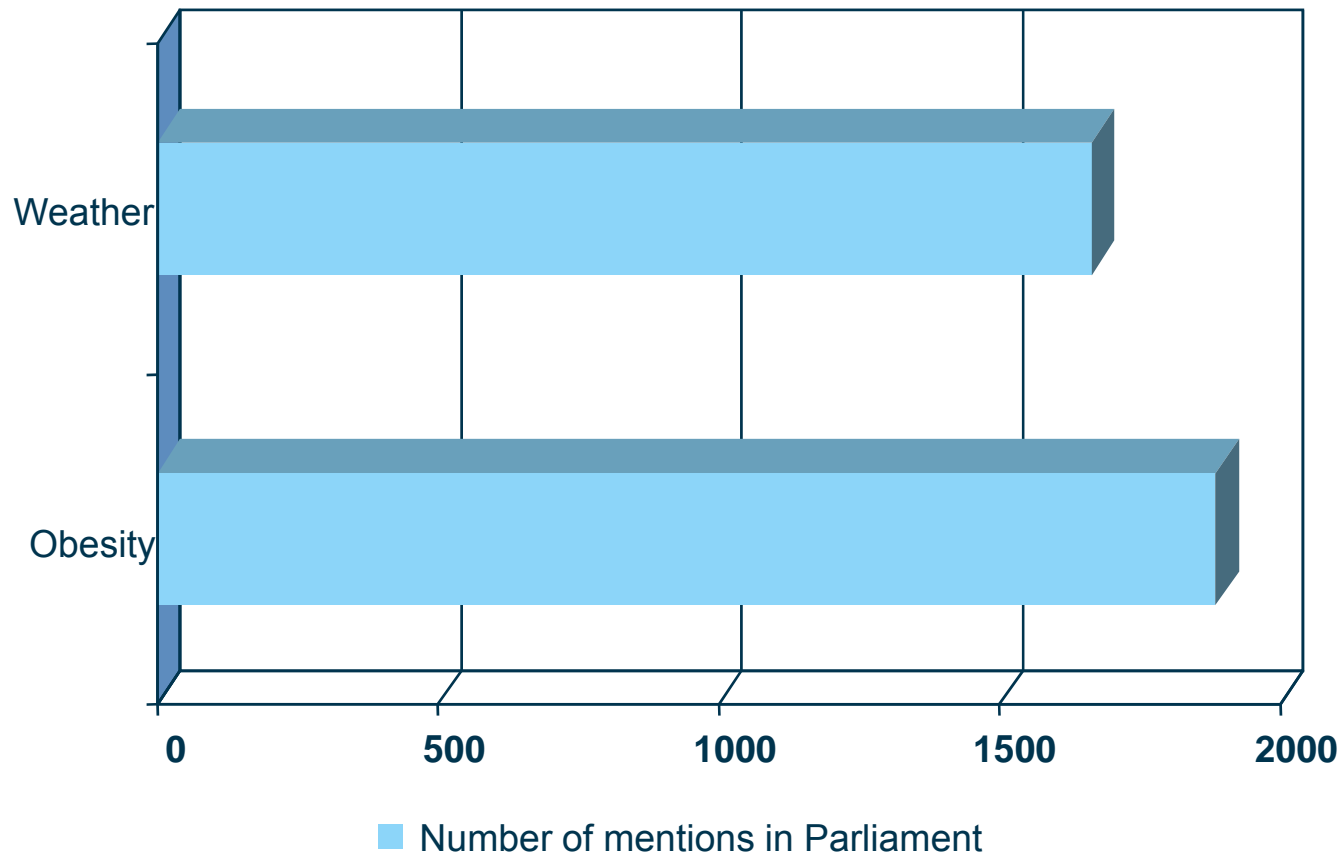


Source: Hansard
(House of
Commons Daily
Debates)

A vertical sidebar on the right side of the slide. It contains four logos stacked vertically. From top to bottom: 1. AAI IAA logo with a globe icon and text 'ASSOCIATION ACTUARIELLE INTERNATIONALE' and 'INTERNATIONAL ACTUARIAL ASSOCIATION'. 2. Institute of Actuaries of India logo with a stylized 'A' and 'I' and text 'Institute of Actuaries of India'. 3. IAAHS logo with a globe icon and text 'SECTION SANTÉ DE L'AAI' and 'IAA HEALTH SECTION'. 4. A dark blue patterned background at the bottom of the sidebar.

Diseases of Lifestyle: a major public health issue

UK PARLIAMENTARY REFERENCES IN 2006



U.S. Business Leaders Concerned

- ◎ Top Four Concerns of U.S. CFO's*
 - Consumer demand for products/services
 - Cost of labor/benefits
 - Credit markets/interest rates
 - Cost of fuel

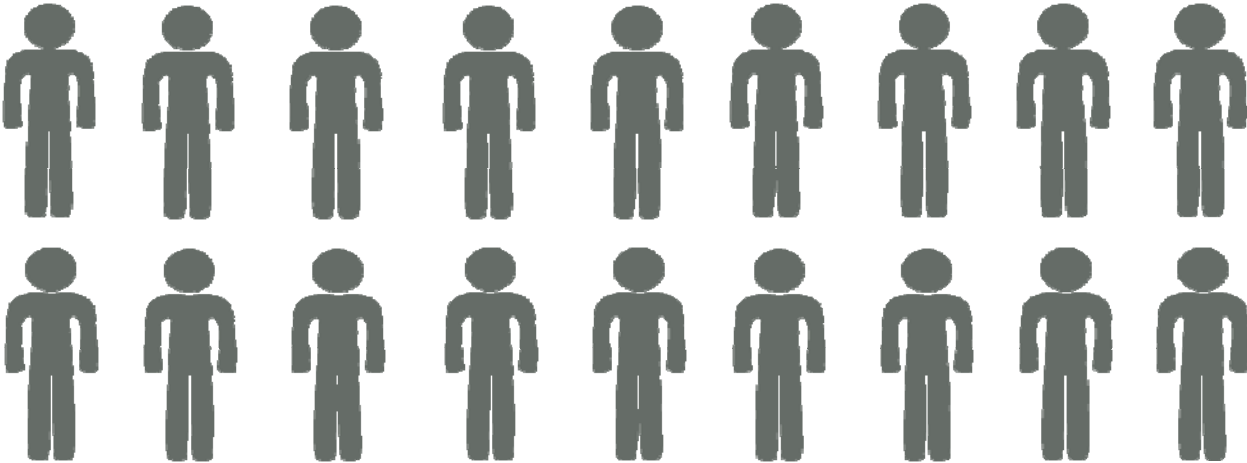
The average employed American earns \$36,140/yr.**
To provide healthcare coverage represents another \$9,000/yr.

* CFO Magazine, February 2008 ** U.S. Department of Labor: Bureau of Labor Statistics

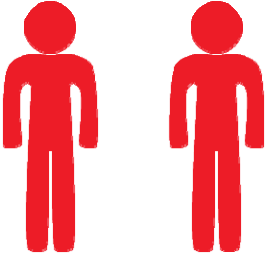


Why \$9,000 per employee?

If the U.S. only had 20 people:

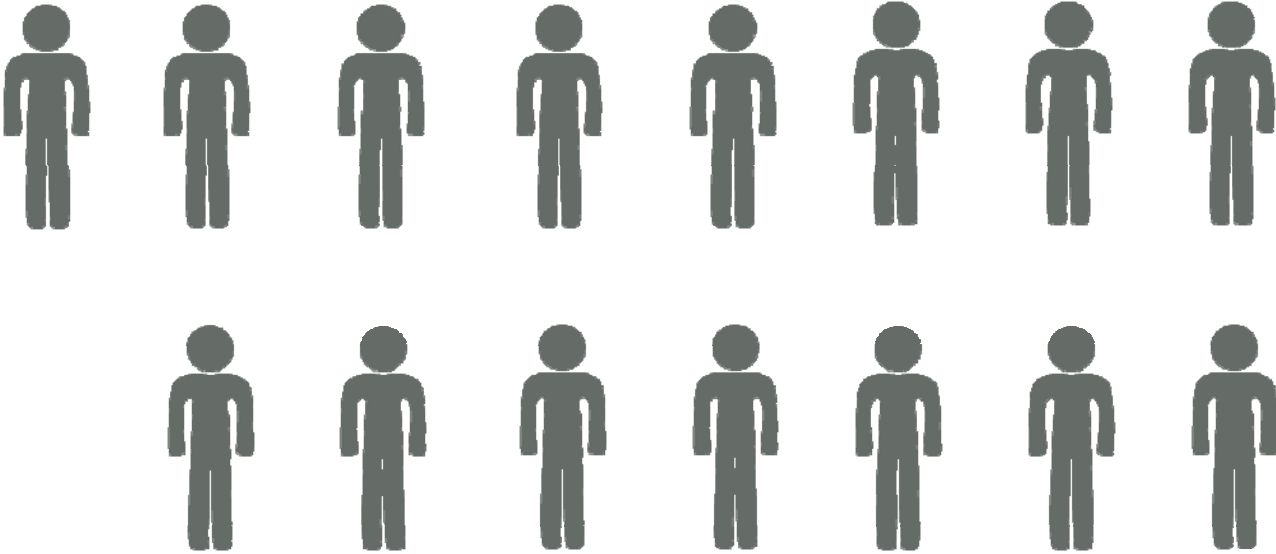


Two would be diabetic:

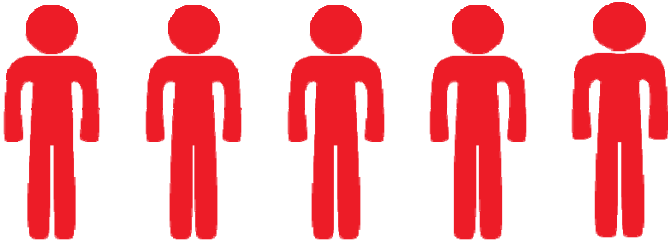


Why \$9,000 per employee?

If the U.S. only had 20 people:



Five would have
Cardiovascular Disease:

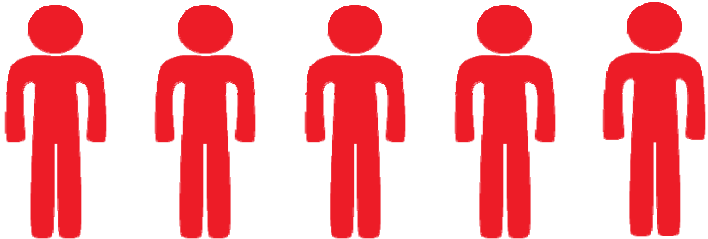


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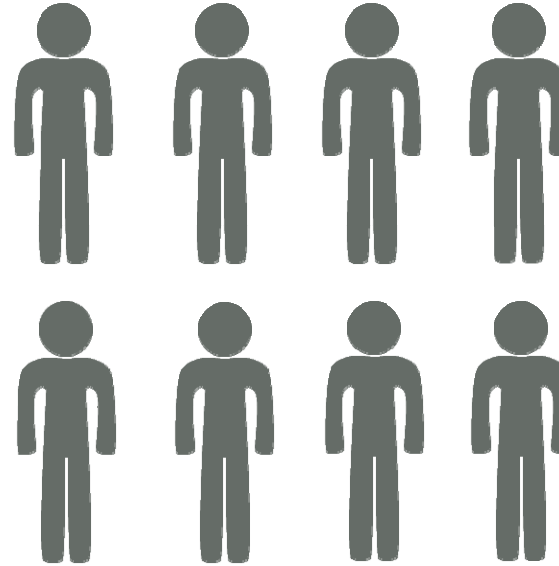


Five would have high blood pressure:

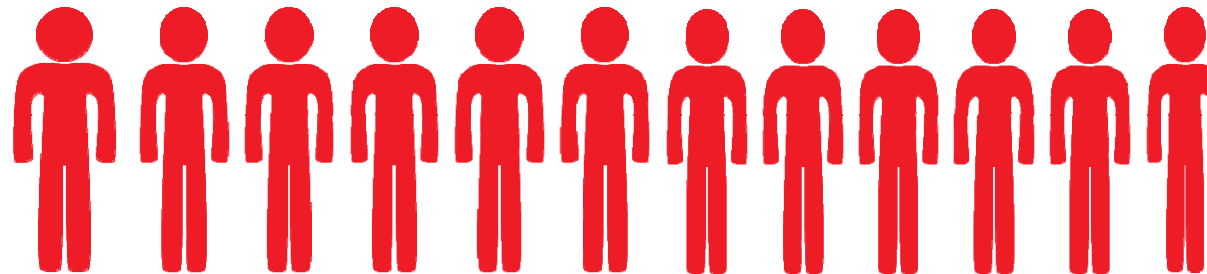


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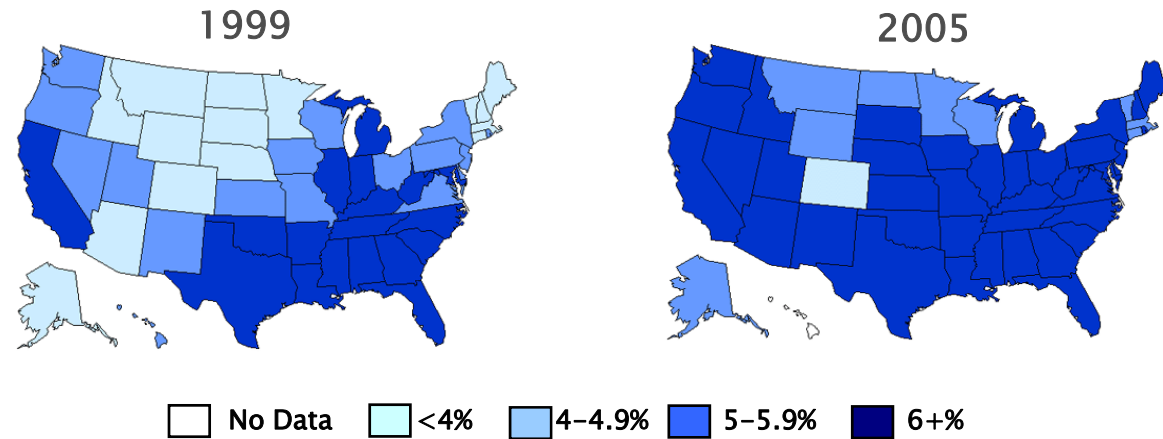


12 would be
overweight
or obese:

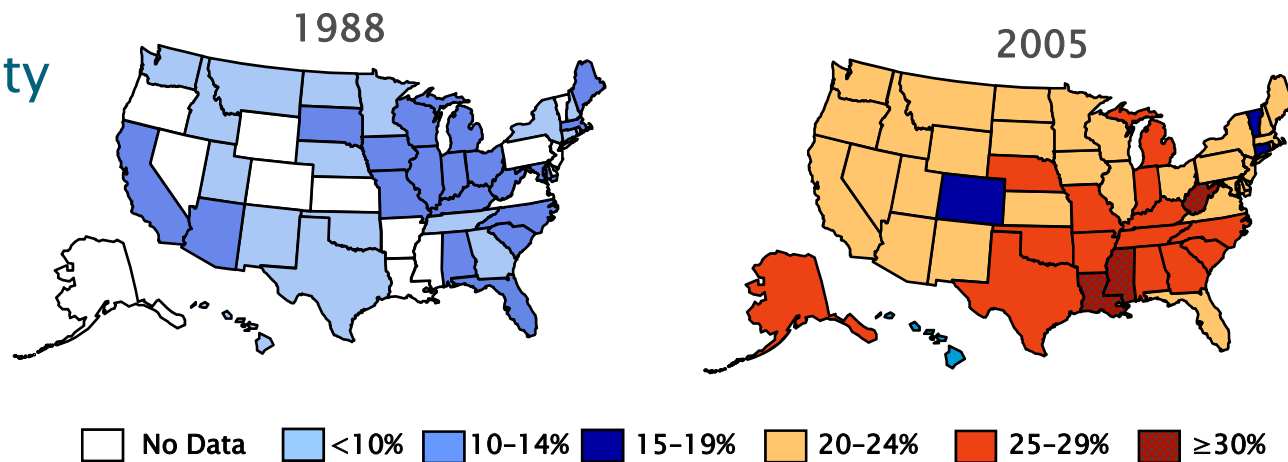


Lifestyles and Risk Factors Drive Costs

Diabetes



Adult Obesity



Source: Center for Disease Control Data

Source: CDC, Obesity Trends 1985 – 2006; BMI ≥30, or ~ 30 lbs overweight for 5' 4" person

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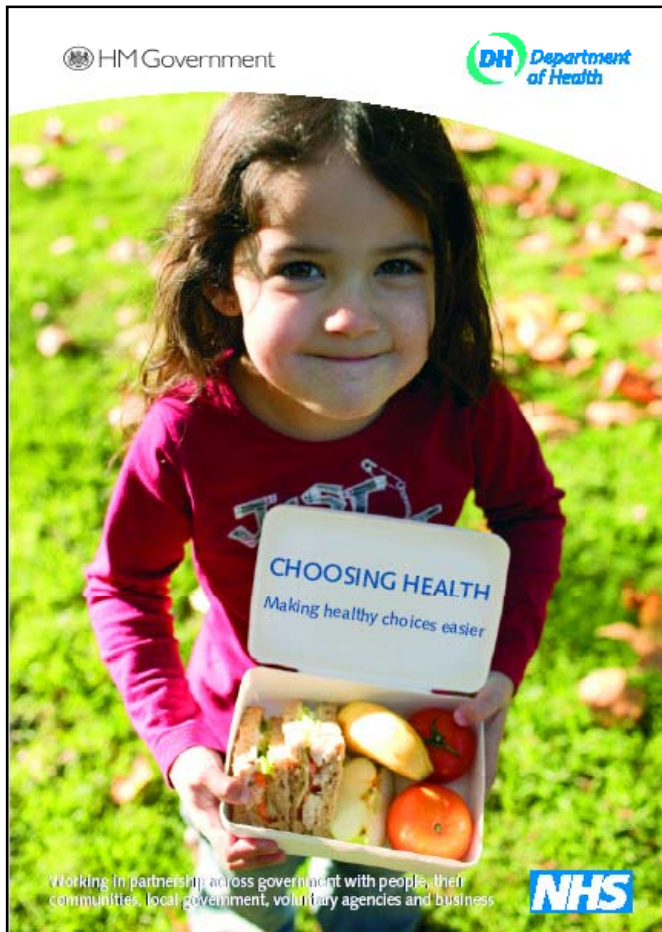
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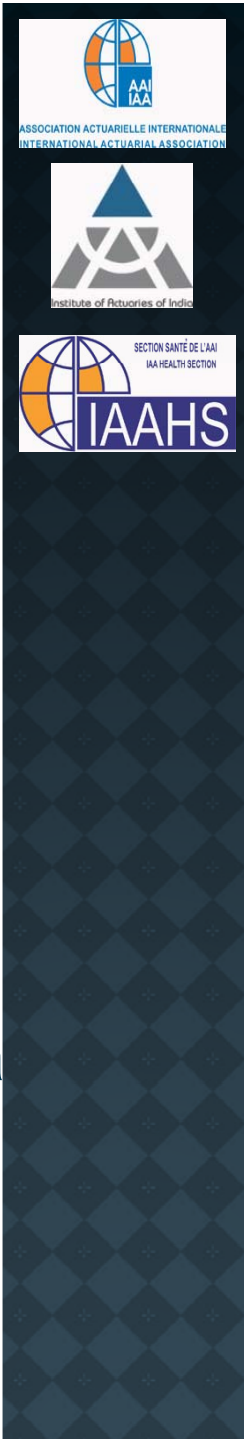
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IAAHS

Diseases of Lifestyle: a major public health issue



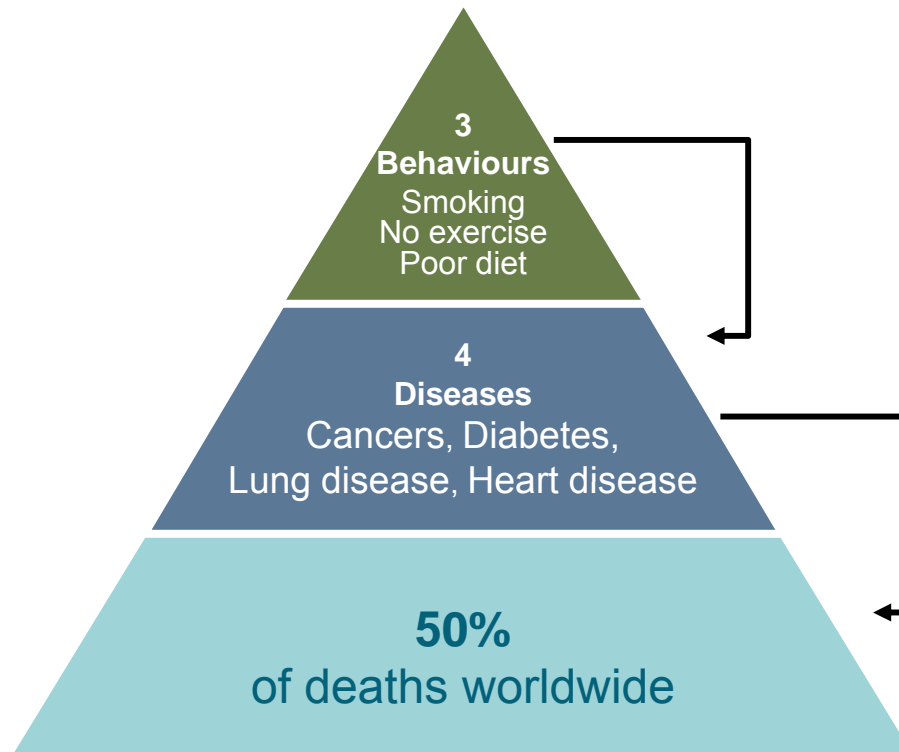
“Only by shifting more emphasis towards prevention of ill-health, rather than treating it, can we enable the NHS to meet the health needs of the decades to come.”

Rt. Hon. Patricia
Hewitt MP, 16
November 2005



The drivers of morbidity and mortality

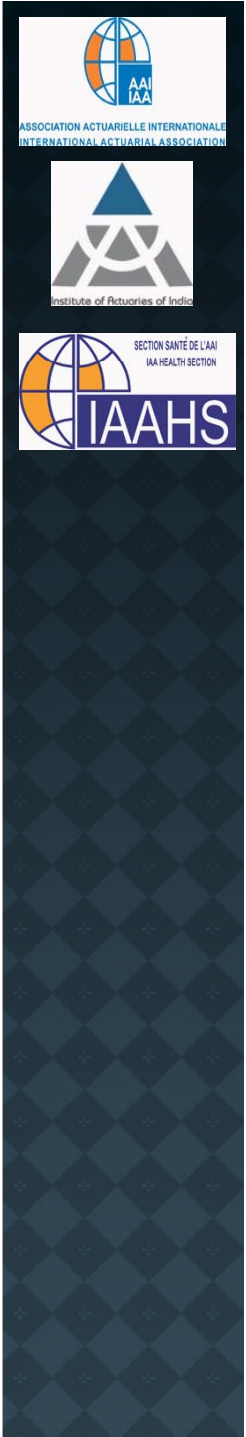
The Oxford Health Alliance's 3-4-50 model



Source: Bradshaw, et al, MRC Policy Brief no 1, March 2003.

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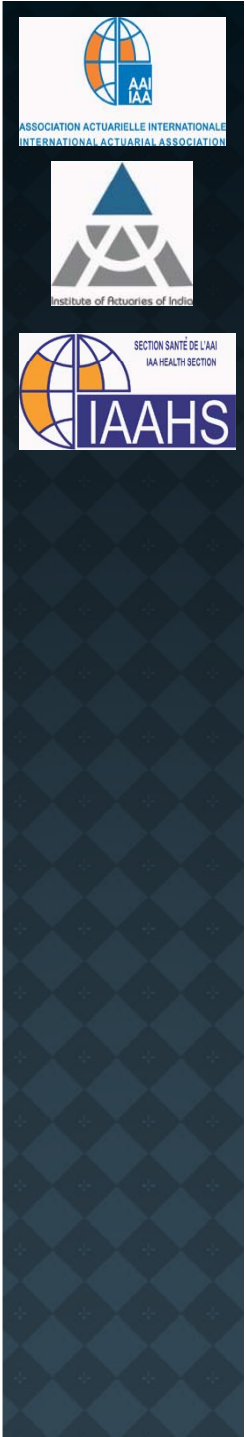
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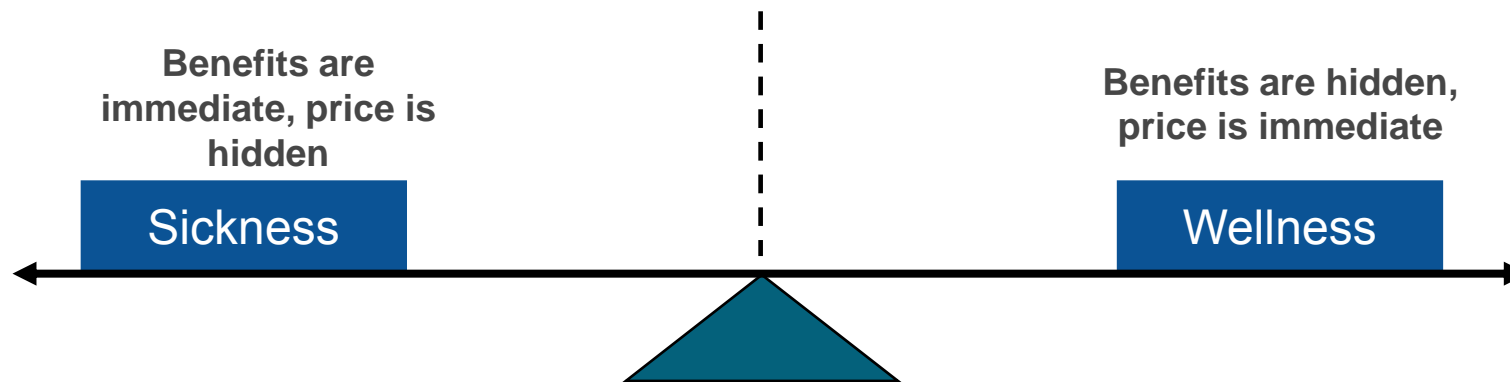
Today's public health issues

- ⦿ Not contagious (in the traditional sense)
- ⦿ Little controversy about the 'cure'
- ⦿ Good public knowledge
- ⦿ Limited role for traditional medical interventions

Need for different solution which can change
people's behaviour



Problem is one of behavioural economics



Under consumption of preventive care

Lack of information

True efficacy of different health and wellness approaches is not well understood

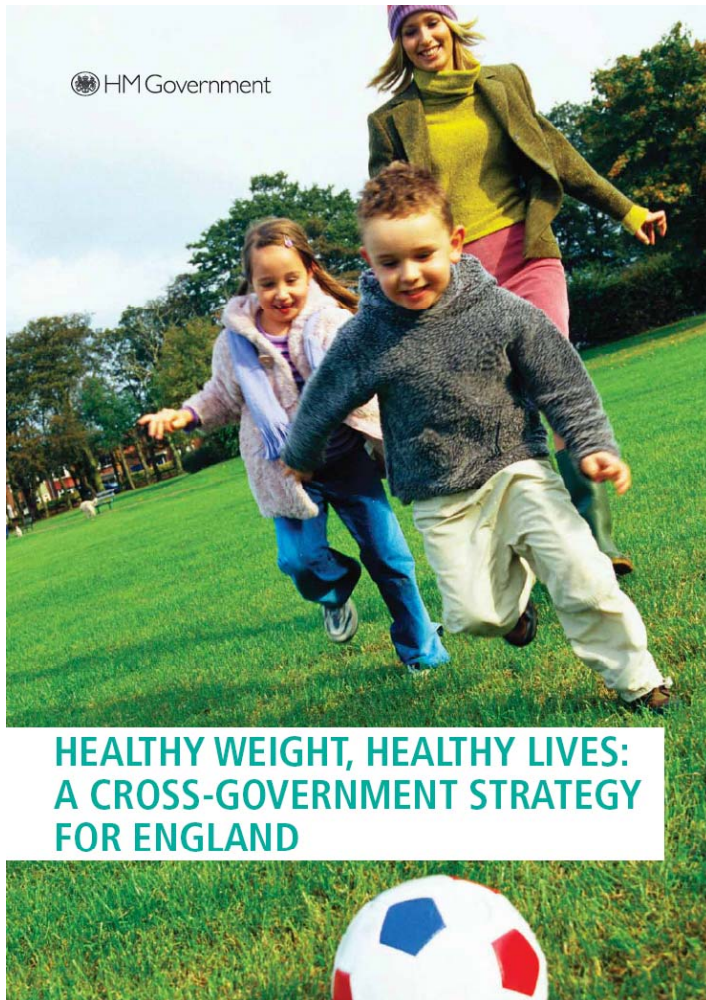
Over-optimism

People tend to overestimate their abilities and health status

Hyperbolic discounting

Future rewards of a healthy lifestyle are significantly undervalued relative to cost today

Widespread appreciation of incentives



Creating incentives for better health

We need to rework the incentives for individuals and public bodies to encourage actions now, thereby avoiding the often much larger costs in later years”

“...we will look at using financial incentives, such as payments, vouchers and other rewards, to encourage individuals to lose weight and sustain that weight loss, to eat more healthily, or to be more consistently physically active”

Acceptance of wellness programmes

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Business

Health consumerism

The wellness boom

Jan 4th 2007 | NEW YORK
From *The Economist* print edition

Helping consumers to lead healthy lifestyles is becoming a big business

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2 Case study: Discovery and the Vitality Wellness Program



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Introducing Vitality

Heritage

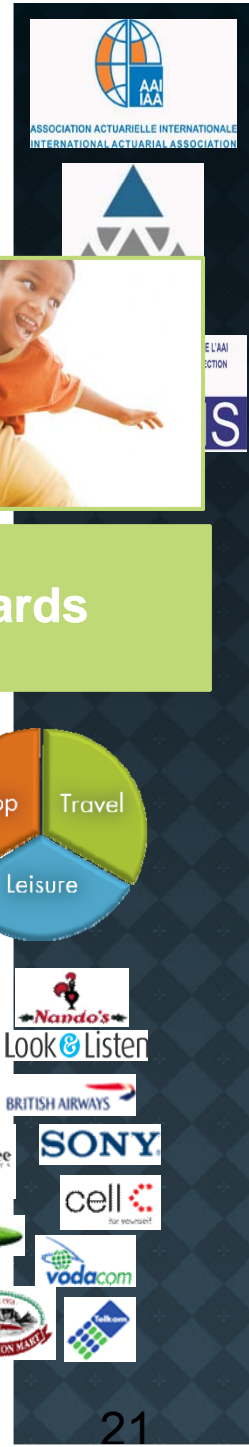
World's longest standing, scientifically based health enhancement solution

Coverage

More than 1.5 million members across the United States, United Kingdom and South Africa



Structure of the Vitality Wellness program



1
Know how healthy you are



2
Set personal health goals



3
Enjoy rewards



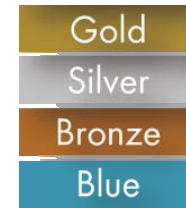
Stress Centre |



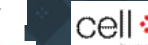
Nutrition Centre |



master your universe



EXCLUSIVE BOOKS



3 What does the data show – does Vitality work?



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The case for wellness

1

Does engagement in wellness reduce healthcare costs?

Is there a correlation between engagement in wellness and lower healthcare costs?

If yes, is it a result of selection or of engagement in wellness activities?

2

Does Vitality induce wellness?



The case for wellness

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Does Vitality induce wellness?



Vitality studies conducted

VIP studies

- Cross-sectional study of 948 974 Discovery Health members from 2003 to 2007
- Determine the impact of engagement on medical claims experience and healthcare costs
- Risk-adjusted for covariates such as age, gender chronic status and health plan
- Done in conjunction with Harvard, University of Cape Town, University of the Witwatersrand and the Sports Science Institute of South Africa



Risk adjustment

Why risk adjust?

- Underlying risk characteristics of members who engage are different from those that don't – engaged are typically healthier and younger than non-engaged – this is the selection effect
- Hence remove effect of different underlying risk profiles on claims experience before drawing conclusions about impact of engagement

Risk adjustment methodology

- Use statistical techniques (such as GLM) to quantify impact of different underlying risk profiles in groups of members with different engagement levels
- Adjust claims of engaged vs non-engaged using such risk factors

Risk adjustment factors

Age
Gender
Plan (all Discovery benefit plans)
Chronic status (iabetes, etc – 26 conditions)
Multiple chronic conditions (0, 1, 2, 3, 4+)
Region (9 provinces of South Africa)
Family size (single, +1, +2, +3, 4+)

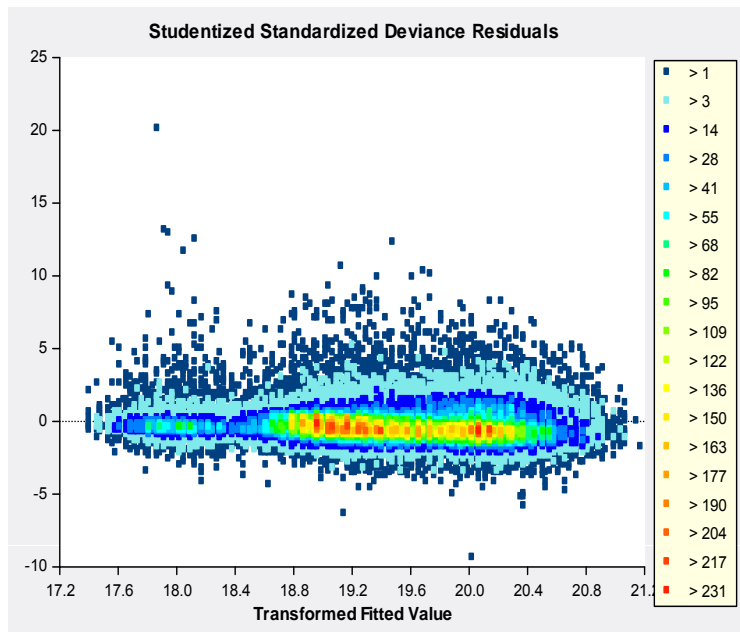
Statistical testing indicates that all risk factors are significant at well above 99% level of certainty



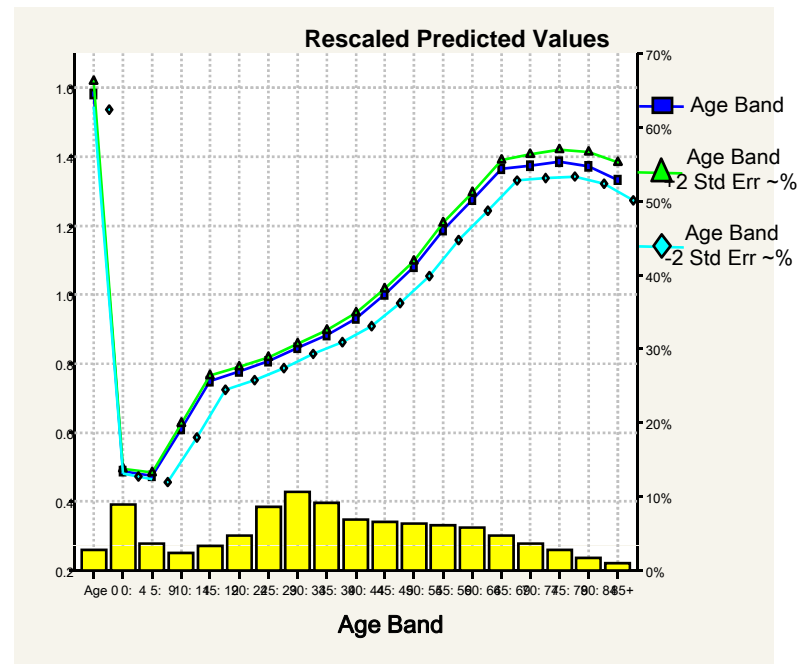
Statistical tests

Have we adequately risk adjusted? Yes, model has high goodness-of-fit and narrow confidence intervals around predicted values

Residual plot indicates goodness of fit

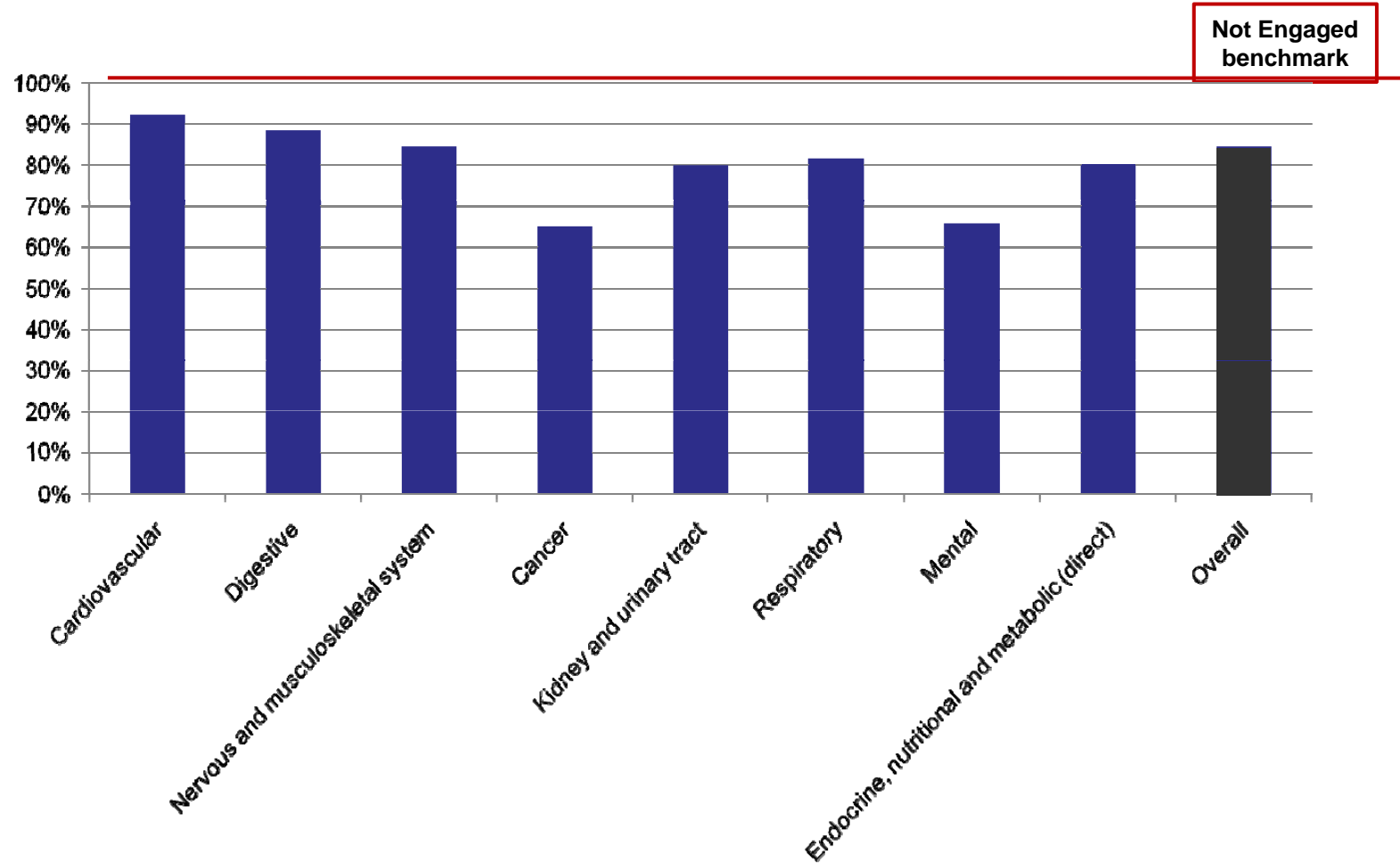


Narrow confidence intervals around predicted



VIP Study 1: Vitality engagement is correlated with lower healthcare costs

Risk-adjusted hospital admission costs for engaged vs not engaged



P < 0.001 for all categories (incl overall result) except cancer where P < 0.01

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*Categorisation based on diagnosis-related groups using ICD-10, CPT-4 and local procedural codes

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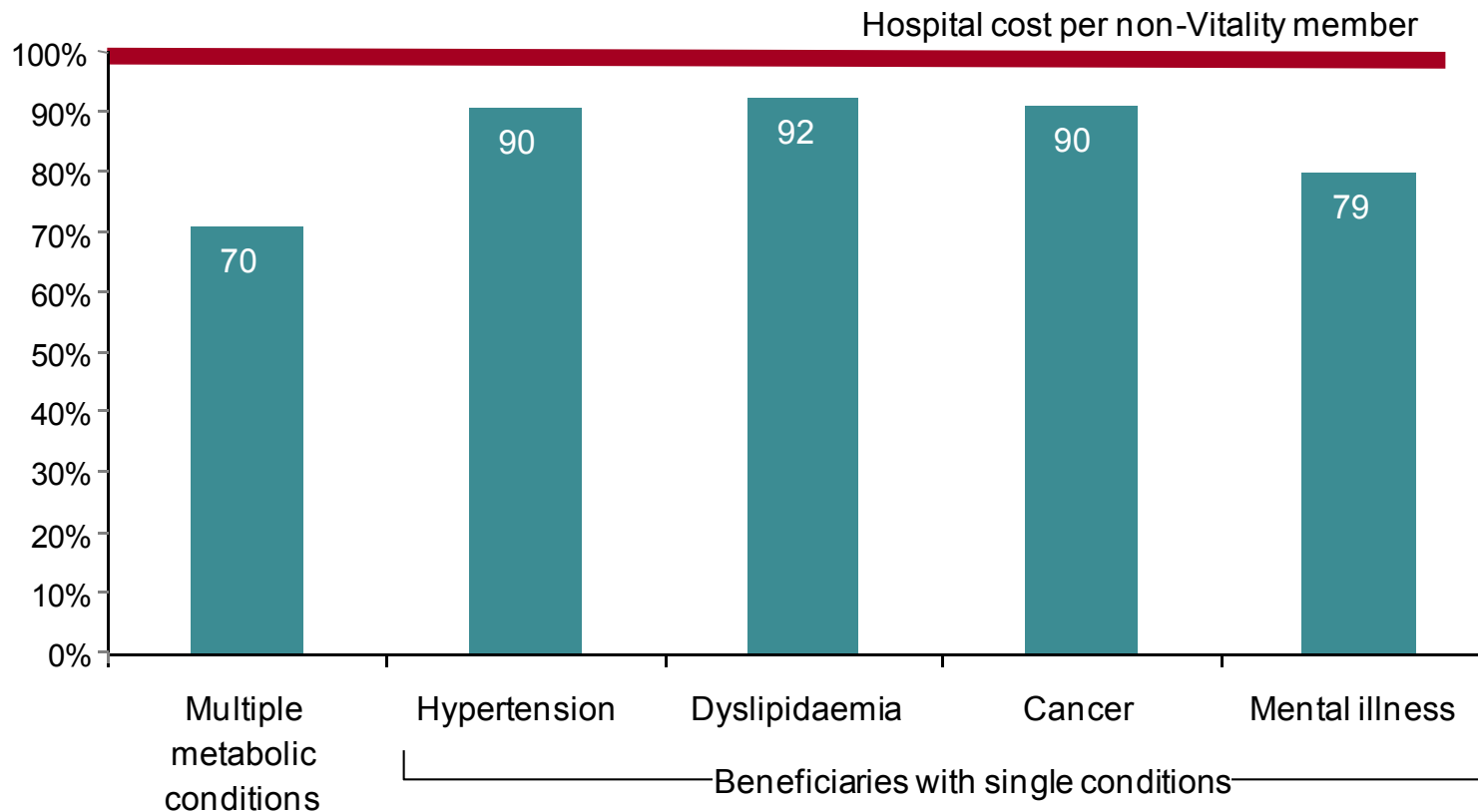
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VIP Study 2: Vitality engagement reduces the cost of managing chronic disease

Risk-adjusted hospital cost for chronic members: engaged vs not engaged



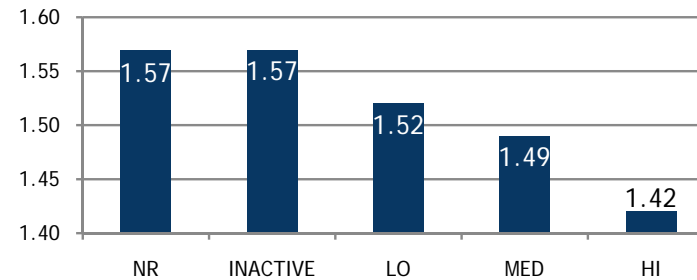
P = 0.001 for multiple metabolic conditions, all single conditions are not statistically significant

VIP Study 3: Fitter people spend less time in hospital and incur lower healthcare costs



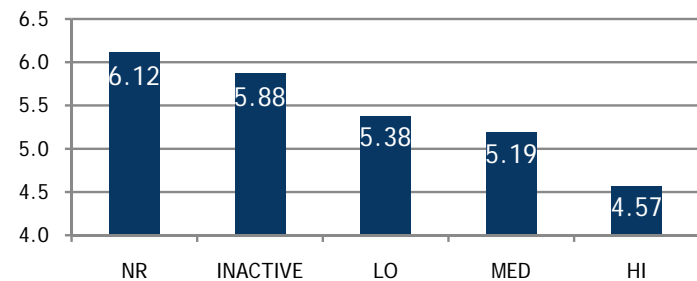
1. Admission per patient*

- 9.6% lower in highly active individuals vs inactive



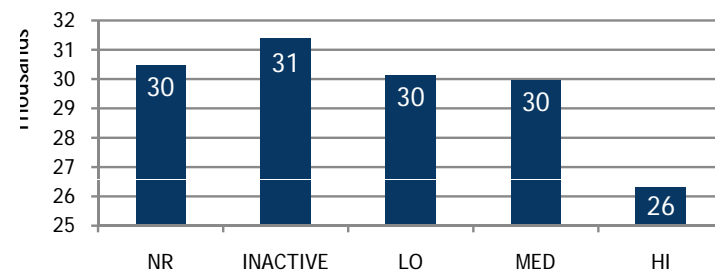
2. Length of stay in hospital

- On average 0.57 days shorter for highly active individuals vs inactive



3. Cost per patient

- Medical costs once hospitalised R5,052 lower for highly active individuals vs inactive



Fit people make better patients – admissions, length of stay and costs are risk-adjusted

*Patients with at least one admission event

Vitality studies conducted

Member-based
study

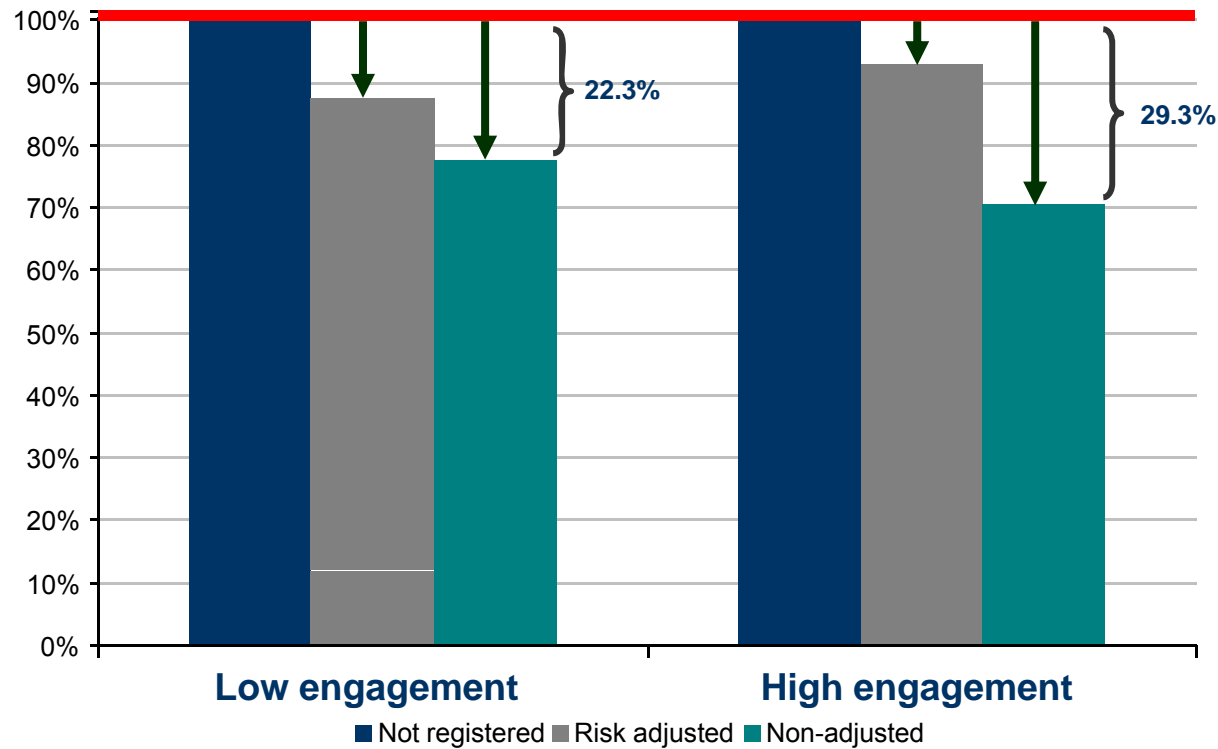
- Cross-sectional study of 836 000 Discovery Health Fund members in 2007
- Quantify the (risk-adjusted) impact of both selection and engagement on medical claims experience



Membership-based studies

Those with low engagement levels have 22.3% better loss ratio – 12.7% is due to selection and 8.5% engagement

Those with high engagement levels have 29.3% better loss ratio – 6.2% is due to selection and 21.8% engagement

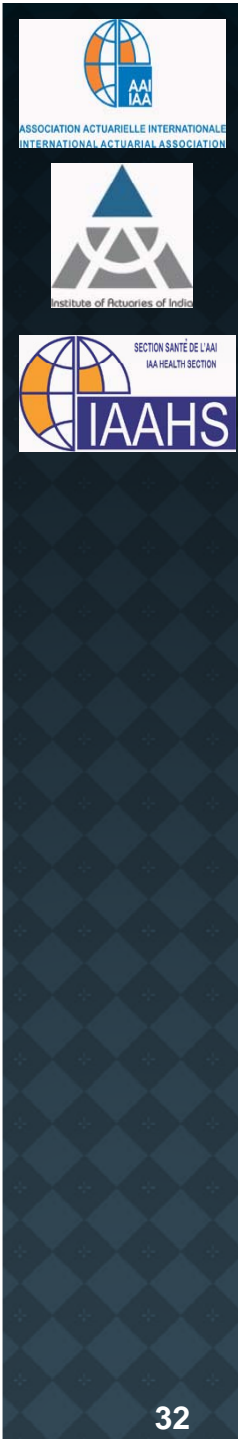


Key observations

- After adjustment for risk profiles, engaged members have lower claims ratio
- Differential is larger for those that engage more
- Those with lower levels of engagement are the healthiest in the group – ie higher engagement is often associated with older and sicker (eg chronically ill) members

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Vitality studies conducted

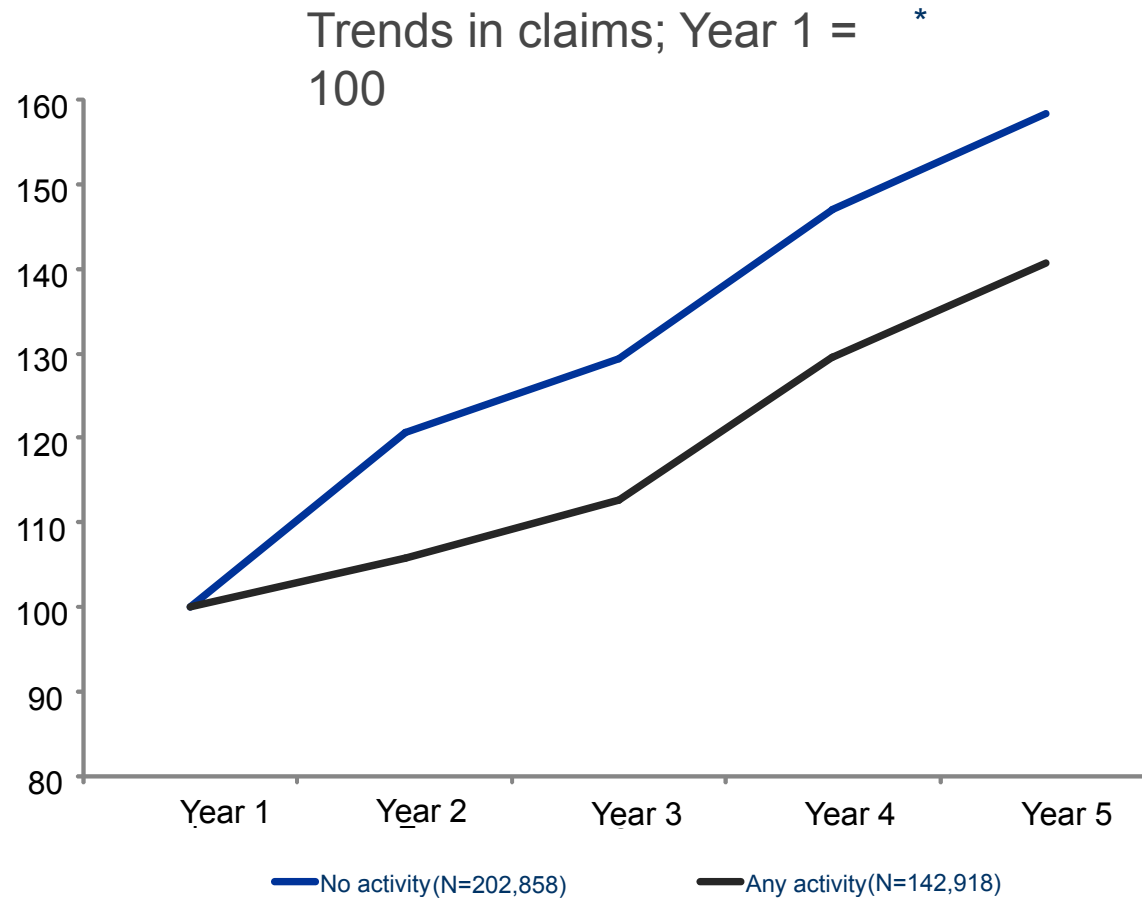
Longitudinal
study

- Longitudinal study tracking 374 497 members of the Vitality Wellness Program between 2003 and 2007 who were on the plan for at least 36 months in the period
- 33 196 197 member months of data
- Show the impact of engagement on medical claims experience – comparing participant against themselves over the period



The longitudinal Vitality study – results

Evidence of lower morbidity for members with any level of engagement

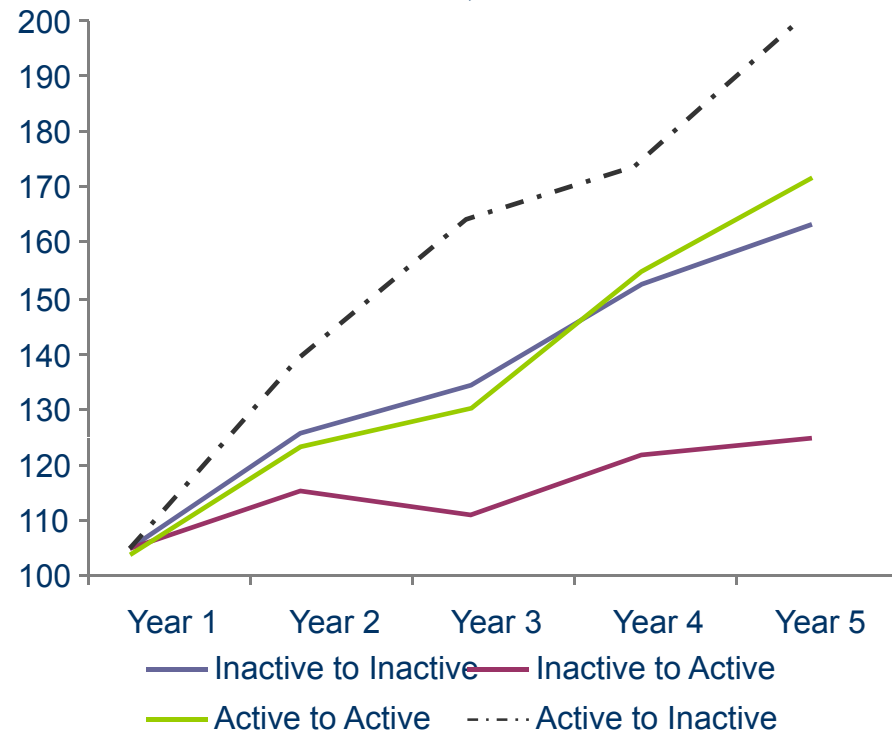


The longitudinal Vitality study - results

Lower morbidity for engaged members

		After	
		Inactive	Active
Before	Inactive	206 908	10 022
	Active	3 823	27 286

Trends in claims; Year 1 = 100



The longitudinal Vitality study – trends

Annual trend in healthcare costs

		After	
		Inactive	Active
Before	Inactive	12%	5%
	Active	18%	14%

- Those that maintain their levels of engagement exhibit the same trend
- Those moving from Inactive to Active show a significantly lower trend in healthcare claims
 - Indicates that Vitality engagement leads to lower healthcare costs over time
- Those moving from Active to Inactive show worse trends
 - Indicates that lower engagement leads to higher healthcare costs or
 - They may have had an adverse healthcare event that stopped them from engaging

The case for wellness

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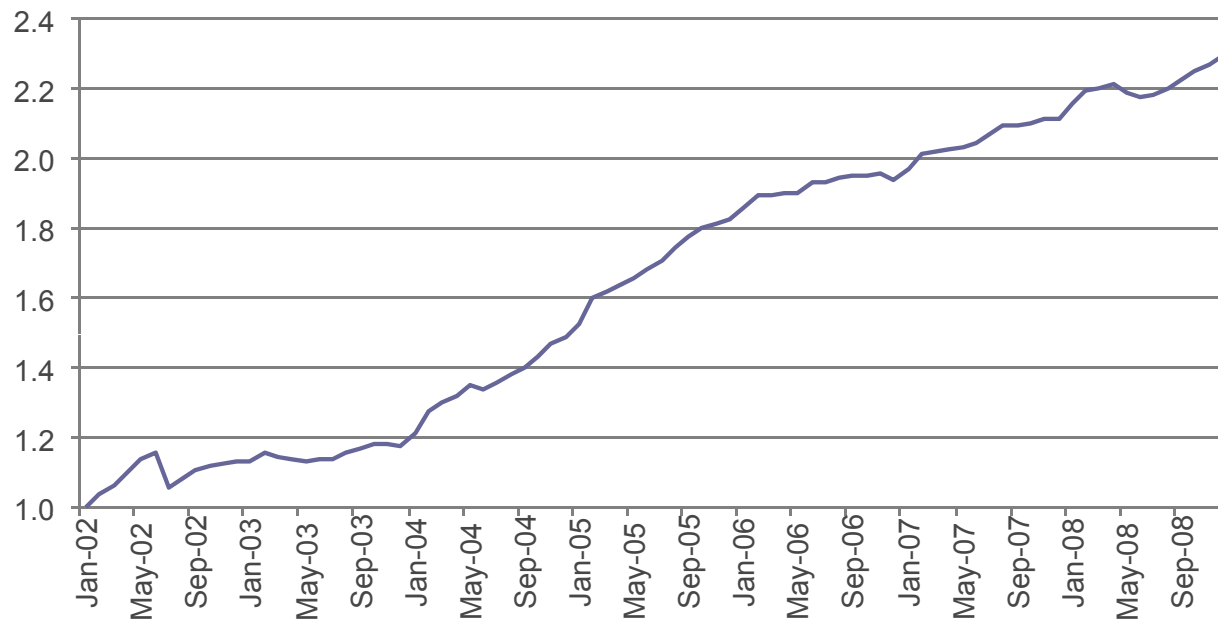
Does Vitality induce wellness?



Data shows increasing engagement over time

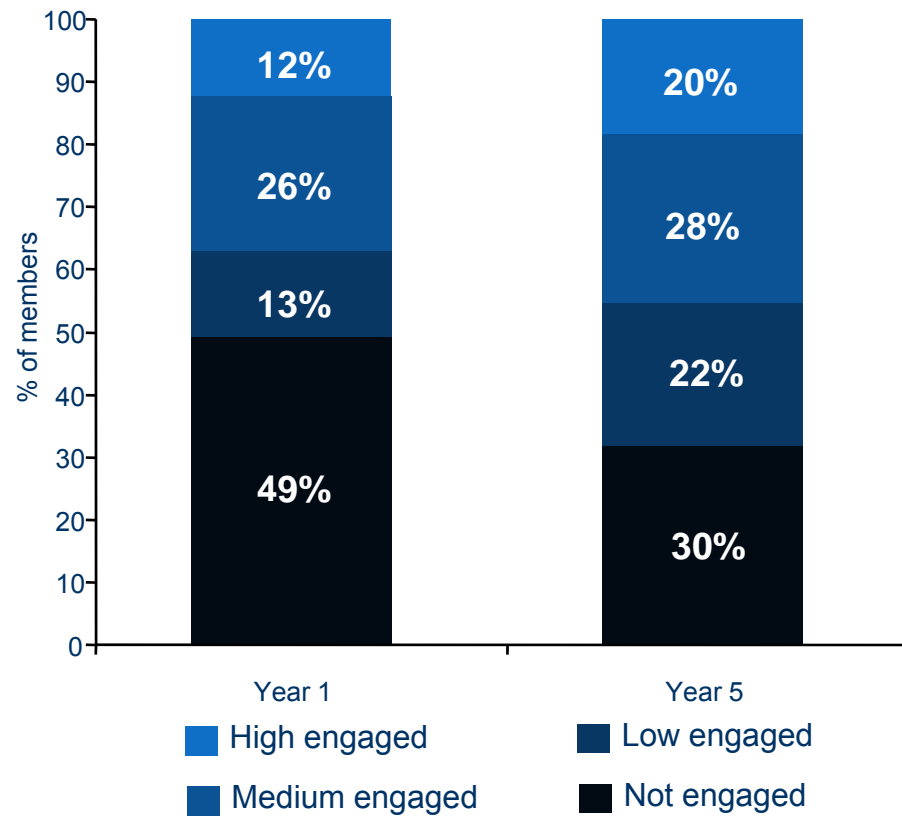
Percentage of Vitality members with a gym visit

Gym penetration into Vitality base:
(January 2002 = 1)



Data shows increasing engagement over time

Engagement levels amongst longitudinal study test participants over the investigation period



4 The effect of Vitality on a health plan



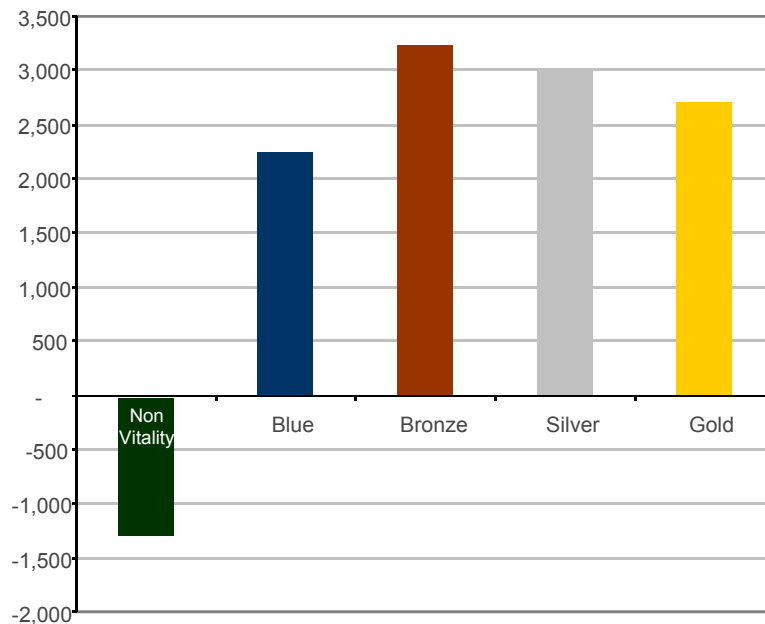
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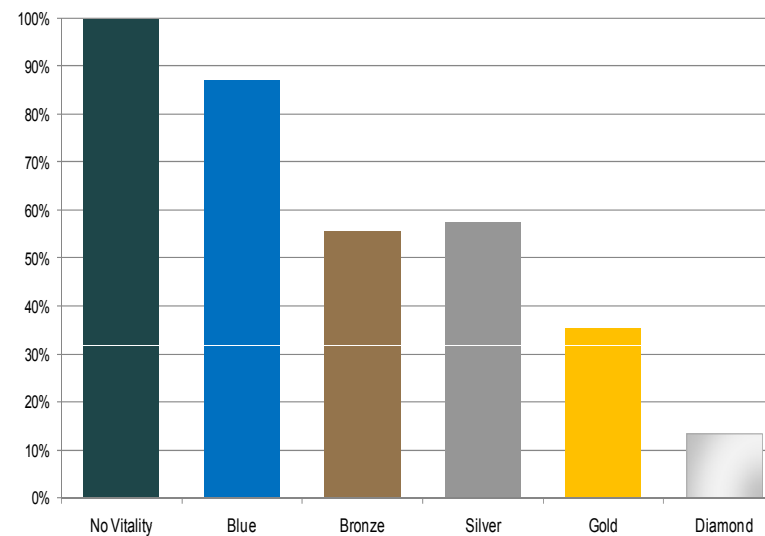
This has worked well for the Discovery Health Fund

Selection combined with the Vitality effect give overall positive results

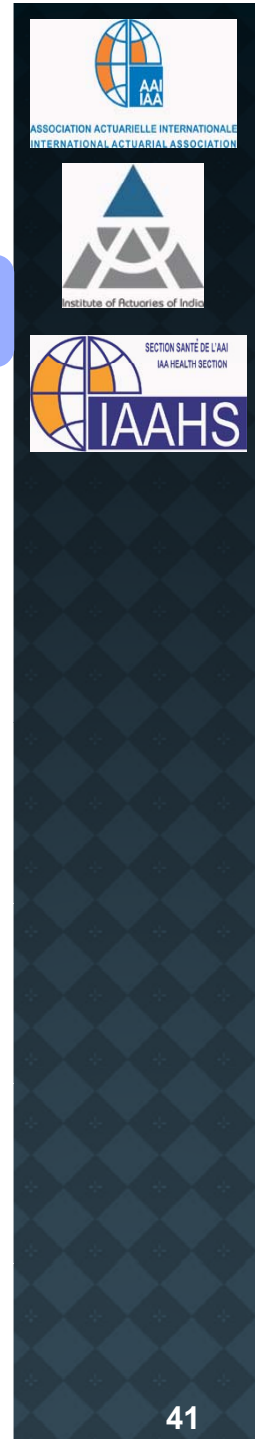
Surplus* per member



Withdrawal rates relative to non-Vitality members

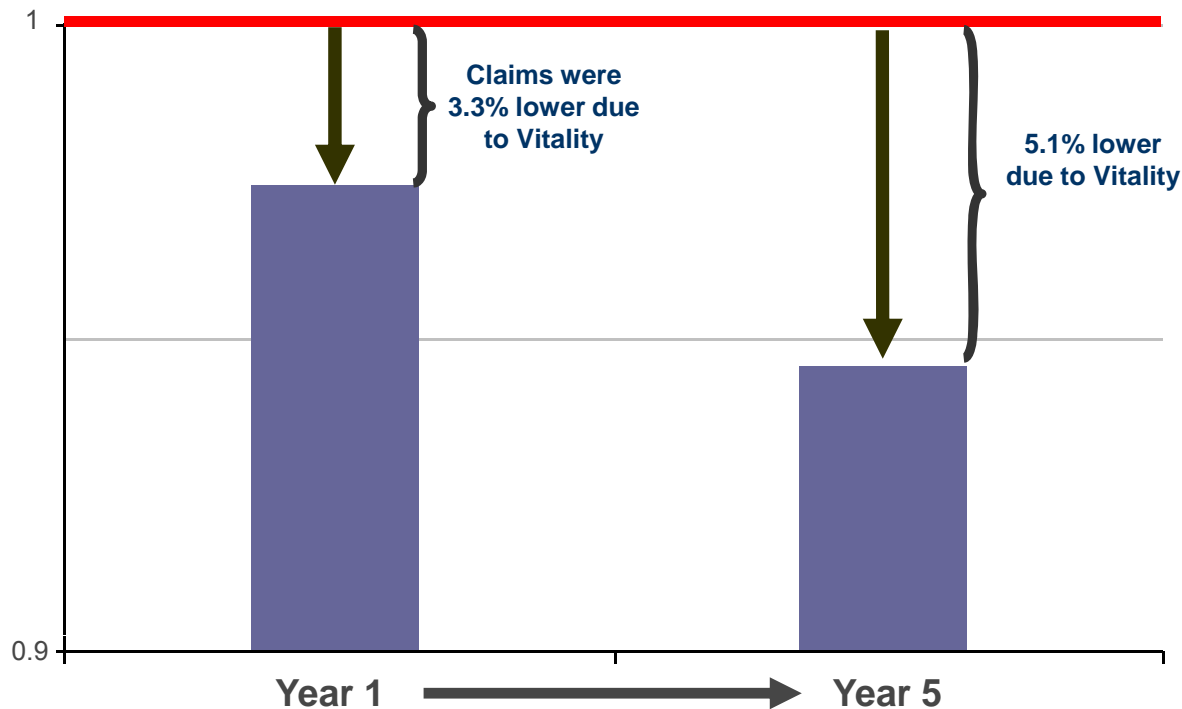


*Surplus = Premiums - Claims - Expenses



Impact on surplus of Health Fund

Combined effect is a positive impact on surplus* arising



- 45% of the surplus arising in 2007 in the Discovery Health Fund was a result of Vitality engagement
- This is after risk adjustment for selection

*Surplus = Premiums - Claims - Expenses

5 Conclusion



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Concluding remarks

- 1 A well-managed wellness programme can improve health and reduce claims
- 2 Increasing engagement leads to a significantly lower claims trend over time
- 3 Well structured rewards and personal communication leads to increasing engagement
- 4 This leads to major benefits in terms of attraction and retention of healthy members, and improving the health of all members



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Emerging Risks... Daring Solutions



Wellness Programmes and Health Insurance



Emile Stipp

Chief Health Actuary: Discovery

Chairman: IAA Health Section

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