

## VITALITY: THE NUMBERS BEHIND THE SCIENCE

The Vitality Group's extensive experience with a highly diverse client base has enabled it to develop a rich data set that links healthy behaviors to healthcare claims. The Vitality Group is in a position to leverage this dataset as the basis for groundbreaking research to understand how healthy activities impact on healthcare costs.

### MEMBERS ENDORSE THE VITALITY™ PROGRAM

As a first step to judge the ability of Vitality to control healthcare costs, it is necessary to determine whether members find value in the program – first, are the incentives sufficient to encourage engagement, and second, once engaged, do members believe that the program has a positive impact on their health.

#### *Strong foundation in behavior change*

A research study was undertaken in 2008 to understand the ability of Vitality to encourage sustained behavior change. The study categorized members by frequency of verified gym activity as follows:

1. "Fitness Inactive" (0 to 3 gym visits per year)
2. "Low Fitness Engaged" (4 to 23 gym visits per year)
3. "Medium Fitness Engaged" (24 to 48 gym visits per year)
4. "Fitness Engaged" (more than 48 gym visits per year)

The analysis was conducted as a cohort-based study and found a statistically significant increase in the levels of fitness activity both 1 year, and 5 years, after implementation of Vitality.

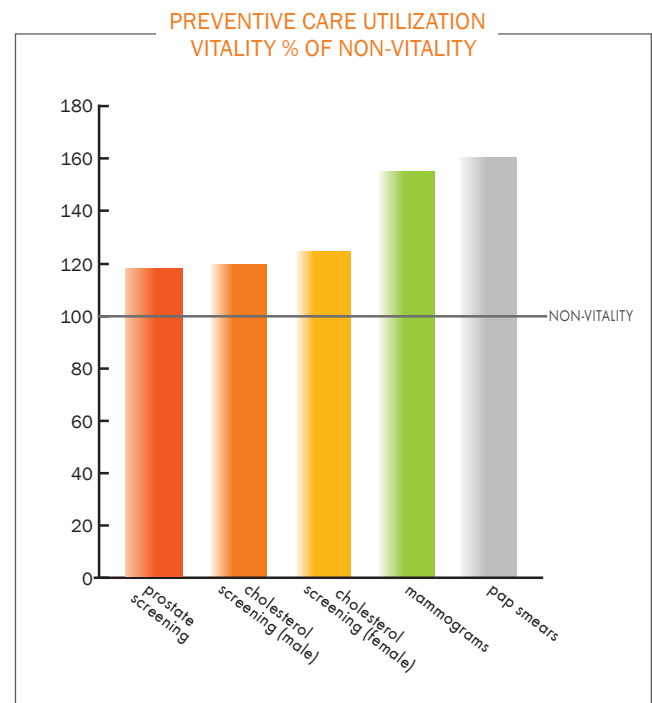
#### *Perception of health improvement*

The United Kingdom Vitality membership base was surveyed so as to understand the perceived value of the program. The results indicated that the program construct resonated well with members. Specifically, half of surveyed members believe that Vitality has made them healthier, while 43% indicated that Vitality had encouraged them to lead a healthier lifestyle.

### VITALITY ENCOURAGES HEALTH-CONSCIOUS BEHAVIOR

As the international Vitality program is offered as a voluntary ancillary product of a health insurance carrier, it is possible to compare the experience of members engaged in Vitality to those who have elected not to participate in the program. This creates a natural control group against which the results of the engaged Vitality population can be compared.

To corroborate the member survey results, a statistical analysis was performed to determine the correlation between Vitality engagement and health consciousness. The results strongly supported the anecdotal feedback, and indicated that members who were engaged in Vitality were more likely to take steps to understand their health status, and to engage in ongoing preventative screening, than members who did not participate in Vitality.

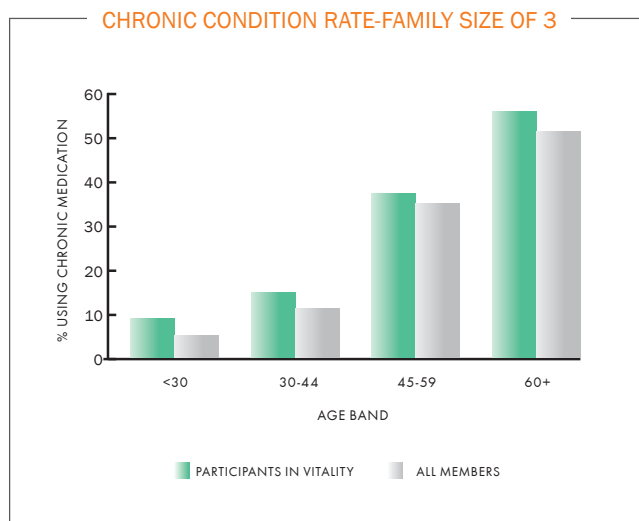


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### GOOD FOR THE HEALTHY, GOOD FOR THE SICK

The results of the Vitality program are compelling, but a proper understanding of them must include an inquiry into selection bias. Therefore, to understand this link between Vitality participation and selection, The Vitality Group engaged Milliman USA to undertake an independent analysis of the data.

Encouragingly, Milliman found that at-risk members, defined as those using chronic medication, had a higher propensity to engage in Vitality at each age group than all other members.



### THE 2008 VITALITY STUDY

The most extensive analysis of the Vitality program was authored by senior researchers at Harvard Medical School and the University of Cape Town. A cross-sectional analysis using data from 900,000 members was performed, and was designed to assess the effect of Vitality engagement on clinical indicators and healthcare costs. Various adjustments were made to the data to ensure that the results were due solely to differences in engagement in Vitality, rather than due to profile differences of the members.

For the purposes of the analysis, members were categorized as being either “Not Engaged,” “Low Engaged” or “High Engaged” in Vitality, based on their degree of participation in activities aimed at fitness, preventative screening and health education. Across the population, 65% of members were engaged in the program, while over 15% were highly engaged.

The conclusions drawn from the analysis were that Vitality-engaged members are healthier than their non-engaged counterparts, and that when they take ill, make better patients in terms of overall healthcare utilization. The research study found that “Highly-engaged members experienced lower costs per patient, shorter stays in hospital, and fewer admissions compared to all other groups.”

The charts below illustrate the difference in in-hospital claims costs for the highly-engaged and non-engaged members of the Vitality program. The research study found that in-hospital costs were approximately 25% lower for engaged Vitality members in key Diagnostic Related Groups, driven by a combination of lower admission rates and lower costs per in-patient event.

