THOMSON REUTERS

HEALTHCARE

MEMORANDUM

Ron Z. Goetzel, Ph.D.
Vice President of Consulting and
Applied Research in the
Healthcare division of
Thomson Reuters
Research Professor
Director of the Institute for Health and Productivity Studies
Emory University

August 12, 2008

Consultant Report:

THIRD ANNUAL MEASUREMENT AND EVALUATION REPORT

HEALTH REFORM INITIATIVE (HRI)

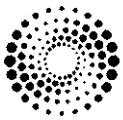
Department of Executive Services

Human Resources Division

King County

August 2008

Respectfully submitted by Ron Z. Goetzel, Ph.D.



THOMSON REUTERS

Summary of Major Findings

- The 3rd Annual Measurement and Evaluation Report is a well-written, clear, analytically sound, and thorough report of the current status of King County's Health Reform Initiative.
- In full disclosure, Dr. Goetzel and colleagues are limited in their ability to completely validate the analyses reported in the 3rd Annual Measurement and Evaluation Report without directly accessing and analyzing the raw medical claims data used in the Financial Analyses in the Measurement and Evaluation Report and given the limitations of the study design.
- In full disclosure, Dr. Goetzel and colleagues conducted portions of the analyses included in the Measurement and Evaluation Report (measures II and III) including analyses of health risk appraisal (HRA), absenteeism and presenteeism data provided by HealthMedia, Inc. to King County and then to Thomson Reuters.
- King County staff has used sound and defensible statistical methods to analyze the King County Health Reform Initiative's progress in reaching its health and financial goals.
- King County's conclusions and findings are reasonable in light of the reported health and financial data.
- A list of recommendations and suggestions for future analyses is presented.

Background:

King County's Health Reform Initiative (HRI) engaged Dr. Ron Z. Goetzel, Ph.D., and colleagues at Thomson Reuters to review its 3rd Annual Measurement and Evaluation Report, to certify that the analyses contained therein are valid, and to suggest improvements in future analyses. The 3rd Annual Measurement and Evaluation Report includes four key sections: I) Changes in Risk Profile; II) Changes in Burden of Risk for Conditions Affected by Behavior; III) Healthy Hours Worked; and IV) Financial Analysis. Dr. Goetzel and Thomson Reuters were asked to review and certify all the analyses reported in the Report.

Overall report:

The 3rd Annual Measurement and Evaluation Report is a well-written, clear, analytically sound, and thorough report of the current status of King County's Health Reform Initiative. The report includes measures of process (how health programs have been implemented) and outcomes (behavioral, health, and financial).

Certification limitations:

In full disclosure, Thomson Reuters is limited in its ability to completely validate the analyses reported in the 3rd Annual Measurement and Evaluation Report for several reasons:

- Thomson Reuters has access to reports of the Financial Analysis aggregated data but has not worked directly with the underlying data. As a result, we are not able to independently analyze the data and have not been asked to reproduce them.

- Further, Thomson Reuters was not involved with processing and cleaning the data or creating rules for dealing with outliers and cannot validate this part of the process.

- The non-experimental nature of the Health Reform Initiative hinders Thomson Reuters' ability to attribute causation. King County employees were not randomized into intervention and control groups nor were participants in the HRI compared to non-participants in other organizations. In fact, nearly all of the King County employees participated in the health promotion program in some way and therefore the design of the evaluation studies are pre-experimental in nature (pre/post design) without a control or comparison group. Thus we cannot fully rule out the effects of self-selection bias, history, and maturation as threats to internal validity.

Sound methods:

King County staff used sound and defensible statistical methods to analyze the King County Health Reform Initiative's progress in reaching its health and financial goals. Other researchers have also similarly analyzed overall healthcare utilization and costs and specifically examined the utilization and costs directly related to lifestyle-related diseases. King County has wisely examined the results from the total HRI program rather than parsing out the results of the individual programs, which can be challenging. Comparing healthcare cost and utilization trends over time to baseline trends is a valid way of evaluating the effectiveness of the HRI program, given "real-world" constraints

Findings are consistent with reported data:

We agree with King County's conclusions and findings in light of the reported data. The changes in King County employees' self-reported health risk are positive and impressive. The changes in the burden of risk for conditions affected by behavior have been addressed by examining claims data and specific diagnoses associated with those data that are associated with lifestyle. Healthy hours worked is reported in terms of absences from work, although the results are not yet definitive, and baseline presenteeism at work is reported. Finally, the report notes that healthcare costs overall are rising at a slower rate than in previous years, thus pointing to a potential attenuation in the rise in healthcare costs for the County.

Recommendations

Previously, in our review of preliminary results, we noted some areas that may benefit from different analytic approaches and should be considered in future analyses. Below, we offer some recommendations or suggestions regarding the analysis of financial data:

- About 7,000 new members (2,500 employees plus family members) were added into King County's self-insured KingCare^{SM} health plan in 2003 (compared to 2002) and, as a result, the experience for 2002 may not be suitable as part of the baseline period. It is likely that the demographics and health risks of these newly added members differ appreciably from other King County members. We suggest creating a new baseline period for the years 2003, 2004, and 2005, and examining utilization and cost trends for 2006, 2007 and 2008, and 2009 as the treatment period compared to baseline.

- Thomson Reuters recommends examining employees' trends in health care utilization (such as the annual number of office visits, emergency room visits,

hospital stays, etc.) in the analyses rather than only using health care expenditures or the number of employees and dependents using these services in a given time period as the outcome measures. Focusing only on health care expenditures can be misleading if they are confounded by changes in negotiated fees for medical services. We agree that it is appropriate to report allowed amounts and amounts paid in these analyses.

- In future actual vs. expected cost projection models, Thomson Reuters suggests also adjusting for age, sex, plan type, education, race, and occupation to account for employees' changing demographics over time. Thomson Reuters recommends including 95% confidence intervals when conducting actual vs. expected studies, which would inform the audience about the variability of the estimates and the likely range of values.

- Section II's conclusion states that King County's medical costs and medical care utilization resulting from unhealthy lifestyle behavior have risen slightly while Section IV's conclusions indicate that the County's overall cost of medical care has increased at an annual rate of 9-10%. Thomson Reuters recommends further investigating the underlying causes of increased medical costs and potentially analyzing the relative contribution of lifestyle-related diseases to these increased medical costs over time.

- If practical, Thomson Reuters recommends comparing King County's financial and health cost trends with a comparison group comprised of individuals matched by demographics and disease characteristics to the King County population, or, if not feasible, matched at the population level. However, it should be noted that creating and tracking data for an outside control group is an expensive proposition and would add significantly to the cost of the Measurement and Evaluation effort

- Extreme values can skew the data and conclusions. Thomson Reuters suggests repeating these analyses with and without outliers (extreme values) that may be atypical and skew estimates. While doing so may exclude some individuals from the analysis, it will hopefully provide a clearer picture of the general financial cost trends and demonstrate whether these extreme values have impacted the differences in expenditures over time. This, along with the other suggestions listed above, should be considered for possible future analyses.

- We would offer another way of presenting results from the lifestyle claims analysis. Below, we present data extracted from the report showing total and per employee expenditures related to lifestyle conditions. As shown, even though the proportion of total expenditures associated with lifestyle is growing over time (from ~ 19% in 2002 to ~ 22% in 2007, the percent increase in lifestyle related costs (per employee per year) seems to be dropping from a peak of ~22% in 2005 to ~ 14% in 2007. It is not clear whether this pattern will continue but it is worth noting as part of the overall burden of illness analysis in the report.

Table 15

Annual Total Claims by Lifestyle Area

Lifestyle Area	Total Paid 2002	Total Paid 2003	Total Paid 2004	Total Paid 2005	Total Paid 2006	Total Paid 2007
Alcohol Use	3,474,417	5,177,548	5,419,367	6,161,239	7,740,445	9,230,593
Stress, Anxiety, Depression	2,273,848	2,908,049	3,745,920	3,954,527	4,323,754	4,685,709
Obesity	5,871,200	8,024,259	9,338,019	11,300,611	12,388,270	14,663,547
Lack of Exercise	4,800,495	6,463,785	7,372,755	9,478,776	10,642,649	12,995,741
Poor Nutrition	4,083,477	5,423,883	6,249,501	7,657,501	7,972,675	10,087,688
Tobacco Use	3,021,934	3,579,776	4,193,232	4,993,975	5,603,568	5,958,310
Uncontrolled Hypertension	2,515,133	2,595,073	3,376,984	3,566,115	3,753,676	4,534,511
Uncontrolled Lipids	1,583,111	2,225,886	2,647,418	3,086,646	3,730,361	3,905,782
Any Lifestyle Area	7,919,259	11,486,494	12,492,406	15,169,405	17,705,624	19,671,940
Pct Increase		45.0%	8.8%	21.4%	16.7%	11.1%
Member Count	18,744	25,318	25,254	25,099	25,129	24,494
Paid per member	422	454	495	604	705	803
Pct Increase		7.4%	9.0%	22.2%	16.6%	14.0%
Total	41,784,428	59,500,903	65,076,701	71,740,661	79,806,340	88,023,464
Lifestyle as a percent of total	19.0%	19.3%	19.2%	21.1%	22.2%	22.3%