Attachment A

2009-506

King County

Fourth Annual
Measurement & Evaluation Report

Health Reform Initiative

Department of Executive Services
Human Resources Division

August 2009

Health Reform Initiative Policy Committee

Jim Buck
Bob Cowan
Kathleen Oglesby
Karleen Sakumoto
Dorothy Teeter
Noel Treat
Caroline Whalen
Anita Whitfield

Measurement and Evaluation Steering Committee

Ruth Hultengren
Nick Maxwell
Karleen Sakumoto
Kerry Schaefer
David Solet
Wendy Soohoo

Judith Clegg, Clegg and Associates
James T. Andrianos, Calculated Risk, Inc.

Kerry Schaefer Nick Maxwell Karleen Sakumoto

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Fourth Annual King County Health Reform Initiative Measurement and Evaluation Report

August, 2009

Key Findings and Policy Recommendations

Goals

- Improve the health of employees and their families.
- Reduce the rate of cost increase for health care.
- Increase the average number of "healthy hours worked" per employee.

Results to date (2006-2009)

Employees and their spouses/domestic partners have:

- Improved 12 out of 14 health risk factors.
- Reduced use of health care for 3 out of 5 key health conditions directly affected by changes in those risk factors.
- Reduced growth in health care costs; King County and employees spent an estimated $18 million less than expected based on cost trends in place before the Health Reform Initiative was implemented.
- Maintained the average number of healthy hours worked per employee.

Conclusions

- Employee health has improved and overall cost growth is in line with the council-approved target.
- Employees showed less growth in health care costs for conditions directly affected by modifiable risk factors than spouses/domestic partners, suggesting that the supportive environment of the workplace may have contributed to a difference in outcomes.
- Major changes in the way health care is delivered and paid for in the external marketplace should result in significant additional opportunities for health improvements and moderation in cost growth.

Policy Recommendations

- Continue intact the package of programs of the Health Reform Initiative through the 2010 – 2012 benefit cycle.
- Continue to play a strong leadership role in the Puget Sound Health Alliance encouraging improvements in the marketplace through cost and quality reporting, payment reform, tools for informed consumer choice, increased transparency and overall improved value.
- Continue independent evaluation of the Health Reform Initiative's impact for the duration of the effort.

Executive Summary

Each year the Health Reform Initiative (HRI) provides a measurement and evaluation report to the King County Executive and the King County Council. This is the fourth such report.

The HRI is a comprehensive, integrated effort to create a healthier King County workforce that is a more knowledgeable health care consumer, along with a health care system that is more efficient and effective in its delivery of care. At its inception in 2004, the HRI had two key goals: improve the health of employees and their families, and reduce the rate of cost increase for health care. The HRI added a third goal in 2007—determine whether employee productivity increased as a result of improvement in health.

To achieve these goals, the HRI has implemented a coordinated set of demand-side and supply-side programs:

Programs to Reduce the Demand for (or Use of) Health Care:

- The Healthy Incentives[SM] benefit plan design helps employees and their families build good health behaviors and manage chronic conditions more effectively.
- "Healthy workplace" programs include efforts to educate employees about health and the wise use of health care resources, as well as workplace activities to support physical wellness, healthy eating and preventive care (such as annual flu shots).

Programs to Moderate Costs the Health Care System (the Supplier) Charges:

- The Puget Sound Health Alliance brings about changes in the health care system to improve the quality of care and reduce health care costs. The Alliance promotes coordination of care across providers, encourages the use of evidence-based treatment guidelines and has created a system of quality measurement used by all providers, health plans and health plan sponsors in the region.

Health Reform Initiative Results 2006 - 2009

1. Employees improved many behaviors that put them at risk

Comparing 2009 to 2006, employees and their spouses/domestic partners reported improvements in 12 out of 14 health-related behaviors and risk factors as measured in the annual wellness assessment questionnaire. For two measures—physical activity and blood glucose—the changes are inconclusive and not statistically significant.

The risk profile for the King County population is a roll-up of the individual self-reported information from the wellness assessment about modifiable health risk factors, lifestyle behaviors, and biometric measures that may potentially indicate a danger to health. These include nine behavioral measures—alcohol use, depression management, injury prevention, mental health practices, nutrition, exercise, sun exposure, tobacco use, and behavior in response to stress; and five biometric measures—body mass index (BMI—

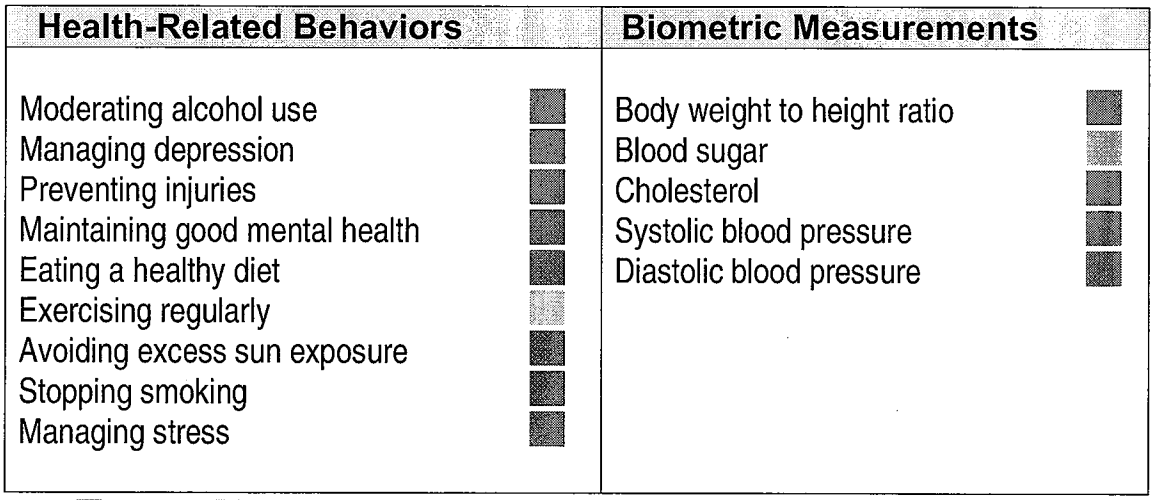
the ratio of weight to height), blood sugar, cholesterol, systolic blood pressure and diastolic blood pressure.

The greatest reduction in health risks occurred between the first and second years of the program (2006-2007). Additional, though less dramatic improvements occurred in 2008 and 2009. Research conducted by Dee W. Edington, PhD., Director of Health Management Research at the University of Michigan has shown that without intervention the risk level in populations tends to rise, leading to greatly increased health care costs. Dr. Edington has further shown that just keeping the risk level constant over time mitigates the growth in resultant health care costs[1].

Participation in the wellness assessment has reached 90 percent of all eligible employees and their spouses/domestic partners in all four years. Figure 1 below summarizes participant responses regarding their health risks.

Figure 1

Changes in the Percent of Members Practicing Healthy Behaviors and Testing in the "Healthy Range" on Biometric Measurements 2006 Compared to 2009



Key: Improved Stayed the same Got worse

Data are for employees and spouses/domestic partners who completed the wellness assessment in both 2006 and 2009; N= 10,234

These health improvements are particularly notable given the average age of King County employees (47) and the low turnover among these employees as they age. Without effective intervention, an aging population could reflect a worsening of health indicators over time. King County has been successful not only in keeping the healthy people healthy, but has also motivated those employees whose health is not particularly good to make positive health-related changes.

Improvements in body mass index and smoking are especially notable as these changes are very difficult for individuals to make and carry proven return on investment in medical claims. Body mass index (body weight to height ratio) risk for the King

County population has gone down from 67.8 percent in 2006 to 65.4 percent in 2009. Smoking has dropped from 10.4 percent to 6.2 percent. Most corporate health studies see a rise in obesity and blood glucose levels over time as populations age.[2,3,4,5,6,7,8,9,10]

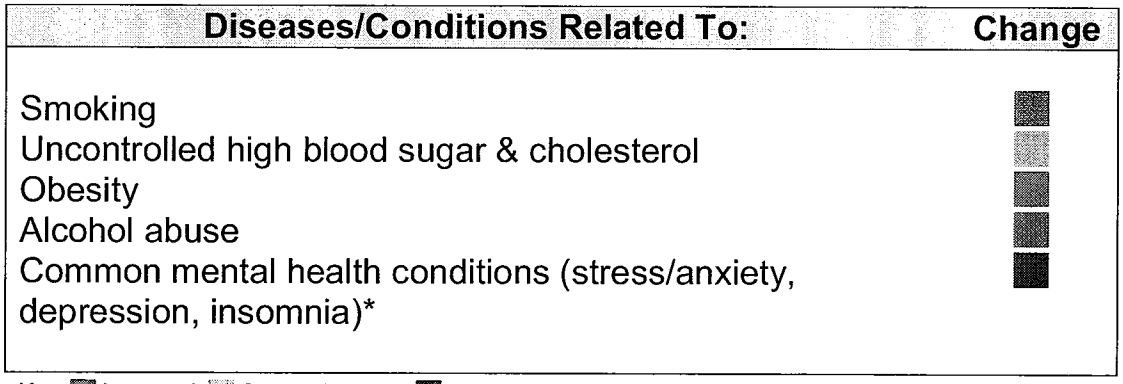
2. Employees improved many behaviors that lead to expensive conditions

The HRI consulted with external experts[11] to determine a list of diseases and health conditions that would show improvements within a period of a few months following changes in the health behavior measured by the wellness assessment. Comparing the cost per member per month for these types of conditions in 2006 to costs in 2009, the HRI saw moderation of per member per month costs for health problems related to smoking, obesity, and alcohol abuse; no statistically significant change for the uncontrolled high blood sugar and cholesterol grouping; and an increase in cost for the stress/anxiety, depression and insomnia grouping.

The cost increase for the stress/anxiety, depression and insomnia grouping may have been driven in large part by the 2006 Washington State Mental Health Parity Act. This law requires plans that offer mental health benefits to provide them at the same level of coverage (e.g. copays) and restrictions (e.g. annual or lifetime maximum benefits) as the non-mental health benefits in the plan. As employees became aware of this change in benefits, King County saw a significant increase in both the number of claims and the cost per claim for mental health-related conditions. In many respects this increase in cost for common mental health conditions may be a good sign that employees are now seeking assistance for problems that can have a high impact on both their ability to work productively and their quality of life overall. These results are shown in Figure 2 below.

Figure 2

Changes in Per Member, Per Month Cost for Health Conditions That Show Improvement within a Few Months of Improvements in Health-Related Behaviors 2006 Compared to 2009



Key: Improved Stayed the same Got worse

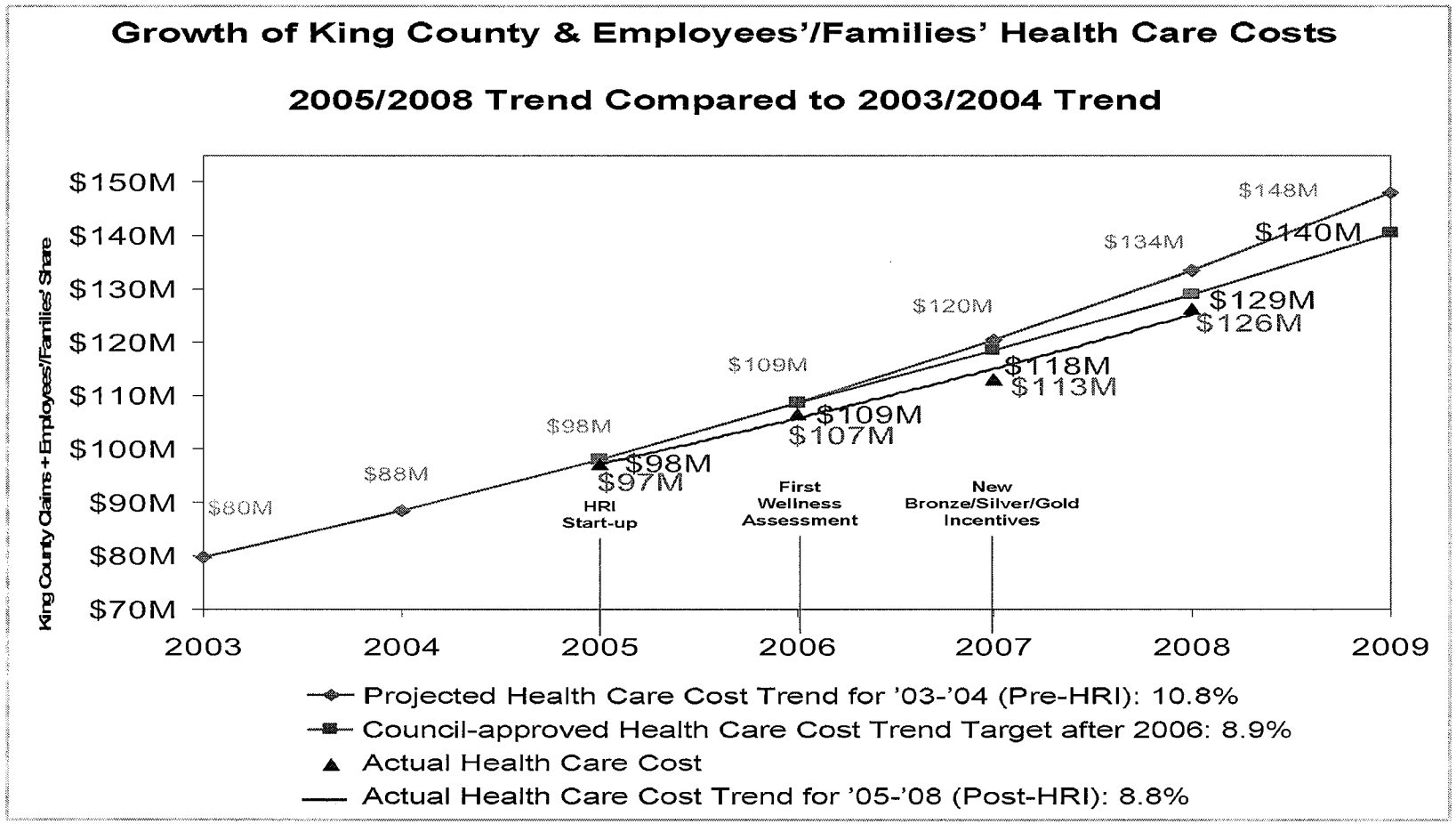
* The 2006 Mental Health Parity Act greatly increased coverage for mental health benefits.

Data are for employees and spouse/domestic partners who were in the KingCare℠ plan 2002 through 2008. N ranges from 11,120 to 12,732 year to year.

3. The county's health care cost increases have slowed

While the HRI has multiple objectives, perhaps the most closely watched key indicator of the HRI is its related impact on the health care costs county employees and their families are incurring. The expectation was that the HRI's comprehensive approach would reduce the unadjusted claims trend growth from 10.8 percent to below the 8.9 percent target established in 2004 for the 2005 to 2009 period. As Figure 3 on page 6 shows, the actual medical and prescription drug claims have dropped slightly more than the council-approved target. This lower increase in year-over-year costs has resulted in the county and its employees spending an estimated $18 million less for employee and family health care costs for 2005 through 2008 than was projected from the 2003-2004 cost experience.

Figure 3



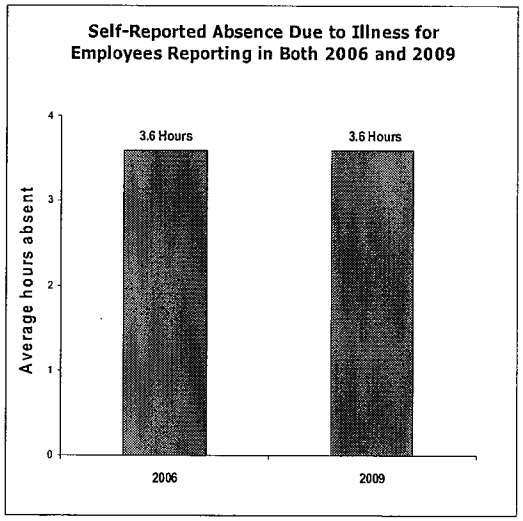
Data are for costs incurred in KingCare[SM] medical and prescription drug claims for active employees and their families with full benefits; excluded are costs for COBRA, early retirees, LEOFF1 retirees, and Local 587 part-time. Costs have not been adjusted for inflation. Population ranged from 17,241 to 24,235 KingCare[SM] members over that period.

4. Employees have maintained the annual number of healthy hours they worked
Comparing 2006 to 2009, employee absenteeism due to personal illness has remained unchanged. Comparing 2008 (the first year for this evaluation measure) to 2009, employee "presenteeism" (being adversely affected at work by health conditions) remained steady.

Health conditions not only affect health care claims costs, they also affect an employee's absence from work and ability to perform at full capacity when at work. In 2006, the HRI started collecting self-reported information from employees about the number of hours they are absent due their own personal health conditions, and in 2008 started collecting self-reported information from employees about the number of hours they come to work but work at less than full capacity due to a health condition (presenteeism).

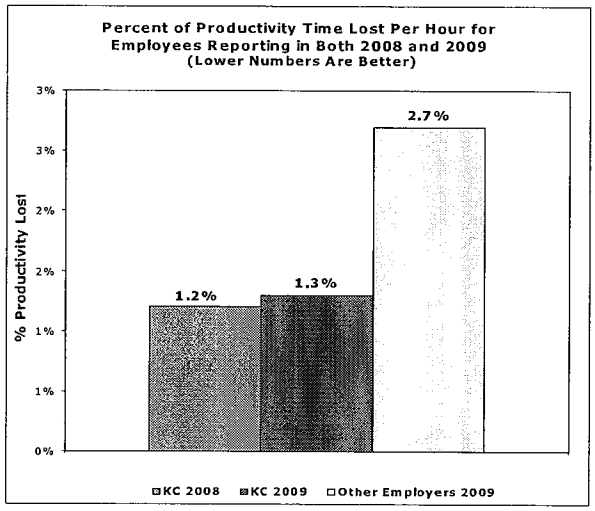
Absenteeism: There was no change in the self-reported hours of absence for employees due to illness in the four weeks prior to taking the wellness assessment for employees who took the assessment in both 2006 and 2009. Figure 4 below shows this comparison.

Figure 4



Data are for employees who answered absenteeism questions in both 2006 and 2009; N=4,642

Figure 5



Data are for employees who answered presenteeism questions in both 2008 and 2009; N=4,642

Presenteeism: The HRI added the eight-question version of the Work Limitations Questionnaire (WLQ), a measure of "presenteeism", to the wellness assessment in 2008. Ideally, this measure would have been included in 2006. However the original focus of the HRI was on measuring changes in direct health care spending. Measurement of costs associated with absenteeism and presenteeism were added at the suggestion of the Peer Review Panel[1]. The pattern of changes for other data from the

[1] This panel was convened by the county executive in the fall of 2006 following the publishing of the first HRI Measurement and Evaluation report. The purpose of this panel of five health care experts was to review the

wellness assessment shows a pattern where the greatest changes occurred between 2006 and 2007, with much smaller or no changes in 2008 and 2009. It is possible that the late introduction of this measure means there may have been one-time gains that showed up in 2007 that were not recorded.

The WLQ is a self-reported measure of absenteeism due to health-related causes. It was developed by Dr. Debra Learner from Tufts University and New England Medical Center. It has proven to be a valid and reliable tool for measuring presenteeism, or on-the-job productivity losses[12]. Raw data from 2008 and 2009 were sent to Dr. Learner's team for evaluation. Overall, the average productivity lost in one hour for employees who answered the WQL questions in both years was 1.2 percent in 2008 and 1.3 percent in 2009. This difference is not statistically significant. Comparatively, previous studies conducted by Dr. Learner for other employers, have shown more than twice that amount at 2.7 percent lost productivity per hour due to presenteeism. These results are shown in Figure 5 above.

Additional Observations

As a part of the overall data analysis, the HRI also checked to see if results were consistent across employees and spouses/domestic partners. There was one rather striking difference between the two groups: medical costs for spouses/domestic partners rose significantly after 2006, while employee costs that were higher pre-HRI, trended downward in 2007 (costs were not adjusted for inflation). Although this observation is not proof of cause and effect, it does suggest that employees may be benefitting from the daily positive health messages and programs in the workplace, and that strategic outreach should be made to spouses and partners to provide them with assistance in changing their health-related behaviors. Figure 6 shows the comparative medical cost trends for employees and their spouses/partners.

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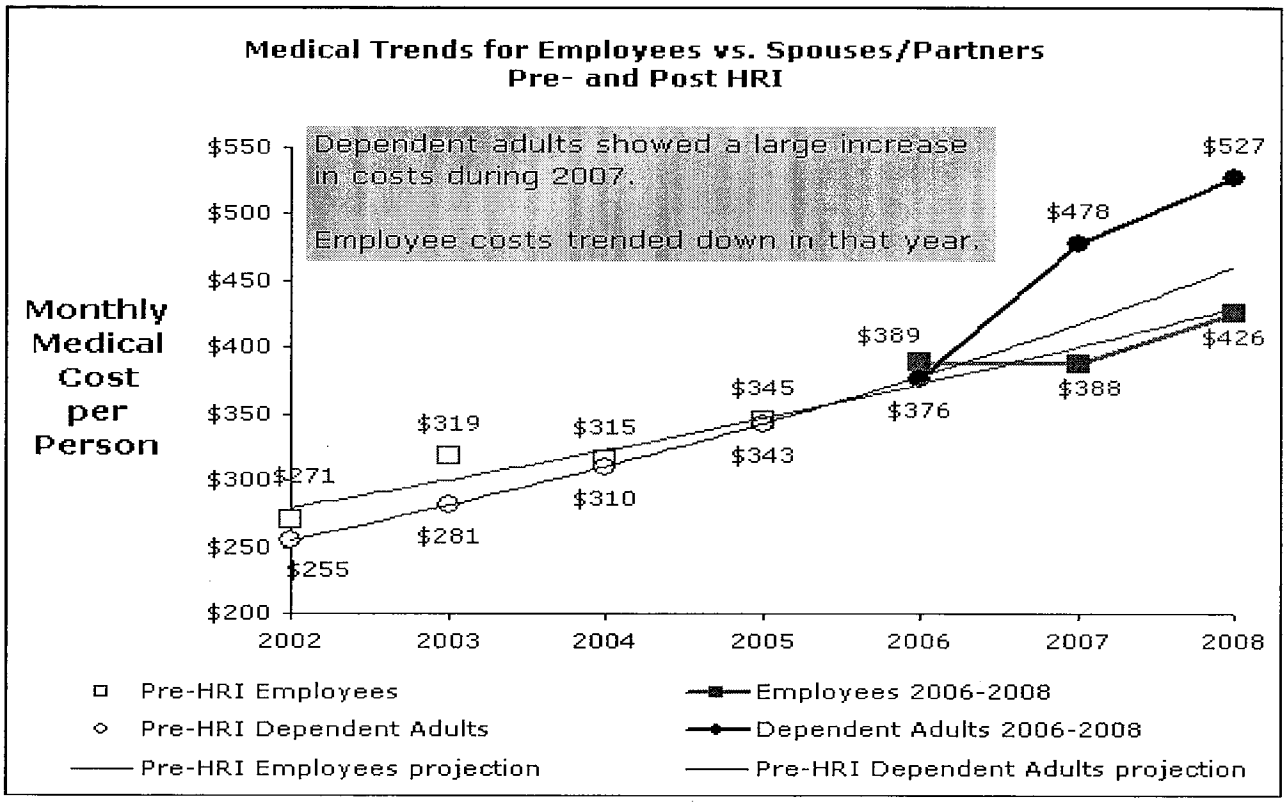
strategies, policies and programs of the HRI and make recommendations on program design, implementation and adjustments needed to maximize results and sustainability. The Panel noted that a number of studies have found that costs for sick leave and replacement wages may be as much as three to four times the direct cost of health care. *See King County Health Reform Initiative Check-Up: Report of the Peer Review Panel, October 2006.*

Figure 6



Data are for costs incurred in KingCare[SM] medical and prescription drug claims for active employees and their families with full benefits; excluded are costs for COBRA, early retirees, LEOFF1 retirees, and Local 587 part-time. Costs have not been adjusted for inflation. Population ranged from 17,241 to 24,235 KingCare[SM] members over that period.

5. Changes in the quality and cost of the health care services employees and families receive are underway

The Puget Sound Health Alliance has made major gains in bringing cost and quality issues into the public eye. To date, the Alliance has established five regularly updated public reports comparing quality and cost between local providers and health plans and is in the process of developing additional public reports on the effectiveness of resource use by providers, provider quality from the patient point of view, and disparities in care received by different sub-populations.

In addition to the internal programs that promote improved employee and family health along with wiser utilization of health care resources, the HRI also works on the "supply" side of the health care challenge. Founded in 2004, following recommendations by the King County Health Advisory Task Force, the Puget Sound Health Alliance is an integral component of the HRI's comprehensive strategy to improve employee and family health, enhance the quality of care provided in the region, and reduce the county's health care costs.

A regional consortium of employers, providers, and health plans, the Puget Sound Health Alliance has a critical role in reducing health care costs for everyone in the region by: coordinating care among providers, encouraging the use of evidence-based treatment guidelines, creating public reports to compare cost and quality, and supporting efforts for payment reform. It is these efforts that will have the most powerful effect on the cost of health services used by King County employees and their families.

To date, the Puget Sound Health Alliance has assembled an extensive set of data sources and infrastructure to produce reports the public can use to compare the quality and cost of local health care providers. The first "Community Checkup" report came out in January 2008 with a review of 14 medical groups and about 70 clinics in our region. As the Alliance produced additional reports, the Community Checkup was expanded to compare even more health care providers. The public report can be found at www.WACommunityCheckup.org.

Patients, doctors, employers and all community members now have the ability to research and compare ratings for care at nearby clinics or hospitals. The ratings include a growing list of chronic conditions (e.g., heart disease), cost-effective care (e.g., use of generic drugs, avoiding inappropriate use of X-rays and MRIs), and systems in place to improve safety (e.g., avoid medication errors and 'never events'). As of mid-2009 the Community Checkup report includes:

- Public comparisons of quality and value for care provided by about 200 medical clinics in the region - comparing care for diabetes, heart disease, depression, low back pain and asthma, as well as adherence to evidence-based guidelines for prevention, appropriate use of antibiotics, and filling prescriptions with generics
- Comparisons for medical clinic care provided to the Medicaid population versus those who are covered by commercial health insurance
- Public comparisons of care provided in about 40 hospitals in the region, with a focus on care that is safer and produces better health outcomes (e.g. heart attacks, pneumonia, surgery, etc.), as well as comparisons of what patients think of their experience in each hospital
- Private, customized reports for large purchasers, including King County, showing results for each of the 21 outpatient (ambulatory) care measures reflecting the care provided to that purchaser's covered employees and dependents. These 21 measures cover outcomes for asthma, depression, diabetes, generic prescriptions and antibiotic use, heart disease, low back pain and prevention.
- In the fall of 2009, a public comparison of health plan services will be added to the report, showing scores from the National Business Coalition on Health's national eValue8 program in areas including consumer engagement, provider measurement, pharmaceutical management, prevention and health promotion, chronic disease management and behavioral health. These measures track health plans' success in improving their member's health.

In addition to adding health plan comparisons, the Alliance is working on expanding the report to measure:

- Use of resources by medical group and hospital, and possibly 'systems' of care that include both inpatient and outpatient providers
- Quality and experience with medical clinic care from the patient's point of view
- Disparities in care received by different sub-populations, based on race, ethnicity and/or primary language

Conclusions

The Health Reform Initiative is now in its fourth year. Given the results discussed above, the following conclusions can be made:

- Employee health has improved and overall cost growth is in line with the council-approved target.
- Employees showed less growth in health care costs for conditions directly affected by modifiable risk factors than spouses/domestic partners suggesting that the supportive environment of the workplace may have contributed to a difference in outcomes.
- Major changes in the way health care is delivered and paid for in the external marketplace should result in significant additional opportunities for health improvements and moderation in cost growth.

Policy Recommendations

Based on the results and conclusions, the HRI recommends that King County:

- Continue intact the package of programs of the Health Reform Initiative through the 2010 – 2012 benefits cycle.
- Continue to play a strong leadership role in the Puget Sound Health Alliance encouraging improvements in the marketplace through cost and quality reporting, payment reform, tools for informed consumer choice, increased transparency, and overall improved value.
- Continue independent evaluation of the Health Reform Initiative's impact for the duration of the effort.

I. Introduction

Background

When King County prepared to negotiate a three-year health benefits package with its 92 union bargaining units in 2004, the picture was dismal. Health care costs were rising at rates three times the Consumer Price Index (CPI), threatening to double the cost of the benefits plan in less than seven years. The county recognized that efforts to control sharply increasing costs by limiting access to providers and health services through "gate-keeper" managed care plans, contracting with providers for reduced fees, and after-the-fact claims review would not be enough. A more comprehensive approach was needed to:

- Moderate the demand for health care services by making employees and their families healthier and more thoughtful consumers of health care services
- Control cost on the supply side of health care by increasing the quality and efficiency of health care delivery by providers.

In 2005, King County launched the Health Reform Initiative (HRI), a comprehensive, integrated effort to tackle both the problems in the health care system itself and the ever-increasing utilization of health services by county employees and their families. At its inception, the two key goals of the HRI were to 1) improve the health of employees and their families, and 2) reduce the rate of cost increases for health care. A third goal was added in 2007—measure the improvement in productivity ("healthy hours at work") resulting from the improved health of employees. From the outset, the HRI has resisted the "easy", short-term fix of shifting additional costs to employees through premiums; choosing instead to craft a comprehensive solution that addresses both the supply and demand side of the health care cost equation. The goal has been to reduce costs for everyone—employees and the county—rather than to simply shift costs to employees.

The HRI's comprehensive approach provides resources and programs at three levels. At the center is the Healthy Incentives^{SM} benefits plan that focuses on helping employees and their families build good health behaviors and manage chronic conditions more effectively. Supporting the benefits plan is an organizational philosophy that creates a healthy workplace, including a set of programs to educate employees about health and the wise use of health care resources, as well as workplace activities to support physical wellness, healthy eating and preventive care (such as annual flu shots). The focus of these two levels is moderating *demand* for health care.

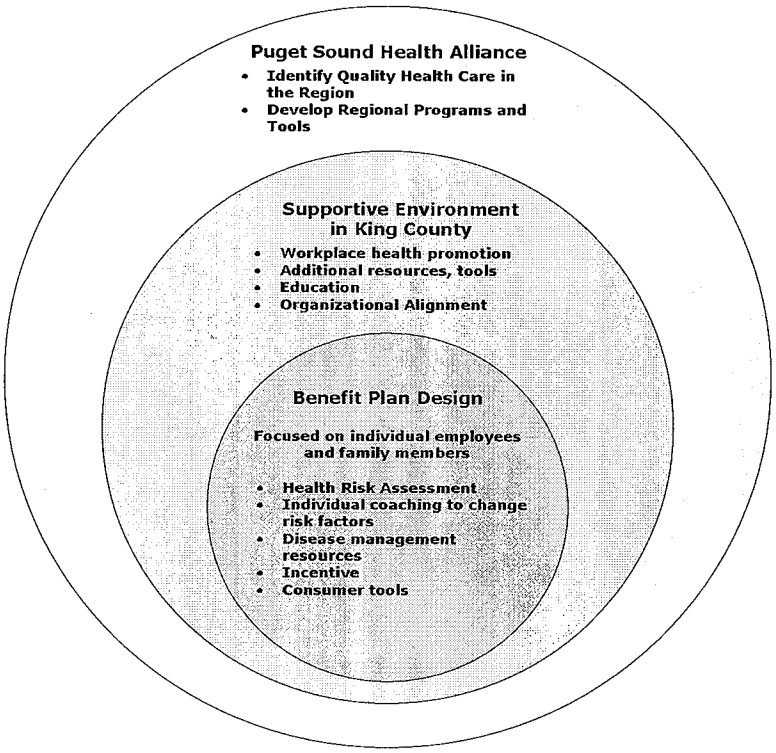
The third level of the HRI is the Puget Sound Health Alliance, created in collaboration with other health care purchasers, providers, and plans to address the cost and quality issues in health care across the Puget Sound region. Key programs of the Alliance focus on changes needed in the external marketplace to improve the quality of care and reduce health care costs through more efficient and effective delivery of services to individual patients. The Alliance promotes coordinating care across providers, encouraging the use of evidence-based treatment guidelines, and creating a system of quality measurement used by all providers, health plans and health plan sponsors in the

region. The focus of the third level of the HRI is moderating costs on the *supply* side of health care.

The conceptual framework of the HRI is presented in Figure 7 below:

Figure 7

King County Health Reform Initiative



Detailed information about the history, goals and objectives and previous reports on the measurement and evaluation of the Health Reform Initiative are available at http://www.kingcounty.gov/employees/HealthMatters/Visitors/HRIToolkit.aspx .

Evaluation timeline

The county ramped-up its HRI intervention strategies over a period of three years. In 2005, the five "care intervention" programs (nurse advice line, disease management programs, case management, provider best practice, and performance provider network) were implemented on a *pilot* basis. The HRI also started education programs showing how employees' health behavior and health care choices have a direct effect

on both their own costs and the county's costs; e.g. using Focus on Employees website, monthly mailing of the *Health Matters* newsletter to employees' homes, and live presentations in the workplace

In 2006, employees and their spouses/domestic partners participated in the first annual wellness assessment and individual action plan cycle. A large number of healthy workplace programs were also launched or expanded, including the "Eat Smart, Move More" campaign, Live Well Challenge, Weight Watchers at Work®, Choose Generics campaign, and Healthy Workplace Funding Initiative In 2007, the bronze, silver and gold out-of-pocket expense levels of the health plans went into effect, and participation in the worksite health promotion programs intensified.

The key elements of the HRI are now in place and some fine tuning has been done as the HRI gains experience. In spite of the programs' varying start dates, HRI has now been in operation long enough to see emerging trends for its initial goals of improving employee health and reducing the rate of health care cost growth. The general timeline for measurement and evaluation for the HRI is described as shown in Figure 8 below.

Figure 8

Evaluation Timeline

Results	Period	Comment	Report
Baseline	2005	Establishes reference point for measuring changes	August 2006
Indicative Findings	2006	Early point estimates too preliminary to signal directional change	August 2007
Directional Guidance	2007	Initial indications of serial results that could represent emerging trends	August 2008
Early Trends	**2008**	**Likely emerging trends**	**August 2009**
Program Trends	2009-2010	Statements of cumulative change, 2005-2009	August 2010

II. Data Sources and Confidentiality

In order to accurately measure the results of the HRI, King County is collecting and storing insurance claims for medical and pharmacy in both the KingCare℠ and Group Health plans. Slightly more than 80 percent of all employees (and their families) are covered by the KingCare℠ plan, with the remaining 20 percent covered by the Group Health plan.

The county strictly adheres to the Health Insurance Portability and Accountability Act of 1996 (HIPAA) to ensure confidentiality of individual employee and dependent

information. The county uses an external data integrator service to "de-identify" individual records and assign a new, random identifier that cannot be traced back to the original employee/dependent. This process allows all of an employee's household's medical and pharmacy claims to be combined without identifying which employee or dependent is involved.

Some analyses are not possible with HIPAA de-identified data. For this reason, some of the data used in this report were collected from online reports of aggregated data from the external third party claims administrators for the county's medical and prescription drug benefits.

In addition to claims data, the county is collecting de-identified individual responses for each question in the wellness assessment. Participants were aware that their answers on the wellness assessment would be treated as confidential medical information so that staff at HealthMedia and Healthways would be able to see their responses; however, the staff at King County would not be able to see how any specific person answered the questions. Participants were also aware that their individual action plan and coaching would be determined by their answers on the wellness assessment.

The claims data and responses to the wellness assessment are de-identified by an outside vendor and integrated as described in the next section. This data collection is the foundation of the analyses reported here, and will support future analyses to determine which current and future interventions can improve employee health, increase the quality of care in the health care market, and reduce the county's health-related costs.

Another data source for the HRI is summary information from Healthways (the vendor providing individual action plan services) about progress in reducing or eliminating risk factors reported by participants during the course of their individual action plan activities.

Technical Appendix

The detailed Technical Appendices prepared by the HRI Health Care Statistician is available for review by contacting the HRI at http://metrokc.gov/employees/hri_toolkit/contact.htm.

III. Results

No program can be successful if participation does not reach a critical mass. The HRI has achieved participation rates that approach "best in class" as defined by D.W. Edington, Ph.D., Director of the Health Management Research Center at the University of Michigan. Dr. Edington has been conducting longitudinal studies of twenty corporate health promotion and wellness programs covering over two million persons for more than 30 years. "Best in class" programs achieve participation in at least one program

activity by 95 percent of all eligible people[13]. As noted below, the HRI is seeing participation rates of 90 percent in the Healthy Incentives[SM] program alone; this does not include people who may choose to do only the worksite health promotion activities.

Participation in the annual wellness assessment is consistently 90 percent of eligible employees and their spouses/domestic partners. The number of people who then follow up with an individual action plan that addresses their health risks has increased from 88 percent in 2006 to 92 percent in 2008. These rates are summarized in Figure 9 below.

Figure 9

Percent of Eligible Employees and Spouses/Domestic Partners Who Have Completed the Wellness Assessment and Individual Action Plan 2006 Through 2009

Year	Number Eligible	Number Completing Wellness Assessment	Percent of Eligible Completing WA	Number Completing Individual Action Plan	Percent of WA Takers Completing Action Plans
2006	19,702	17,844	90.56%	15,703	88.01%
2007	19,377	17,772	91.72%	15,913	89.53%
2008	19,495	17,410	89.30%	16,074	92.37%
2009	21,085	18,788	89.11%	Pending	Pending

Data are for all active employees and their spouses/partners who are in the KingCare[SM] and Group Health plans.

In addition to participation in the HRI's interventions, in 2007 the program began closely monitoring four key results that indicate whether the effort is producing the intended changes. These key measures include:

1. Modifiable health risk factors for the population
2. Costs for health conditions that would likely improve within a few months of improvement in health-related behavior
3. Overall health care costs
4. Healthy hours worked (reductions in illness-related absenteeism and presenteeism)

Analysis and discussion of the evaluation results for each of these measures appear in the numbered sections below.

1. Changes in modifiable risk factors 2006 -2009: *Employees improved many behaviors that put them at risk*

The risk profile for the King County population is a roll-up of the individual self-reported information from the wellness assessment about modifiable health risk factors, lifestyle behaviors, and biometric measures that potentially indicate a danger to health. These include nine behavioral measures—alcohol use, depression management, injury prevention, mental health practices, nutrition, exercise, sun exposure, tobacco use, and behavior in response to stress; and five biometric measures—body mass index (BMI—

the ratio of weight to height), blood sugar, cholesterol, systolic blood pressure, and diastolic blood pressure.

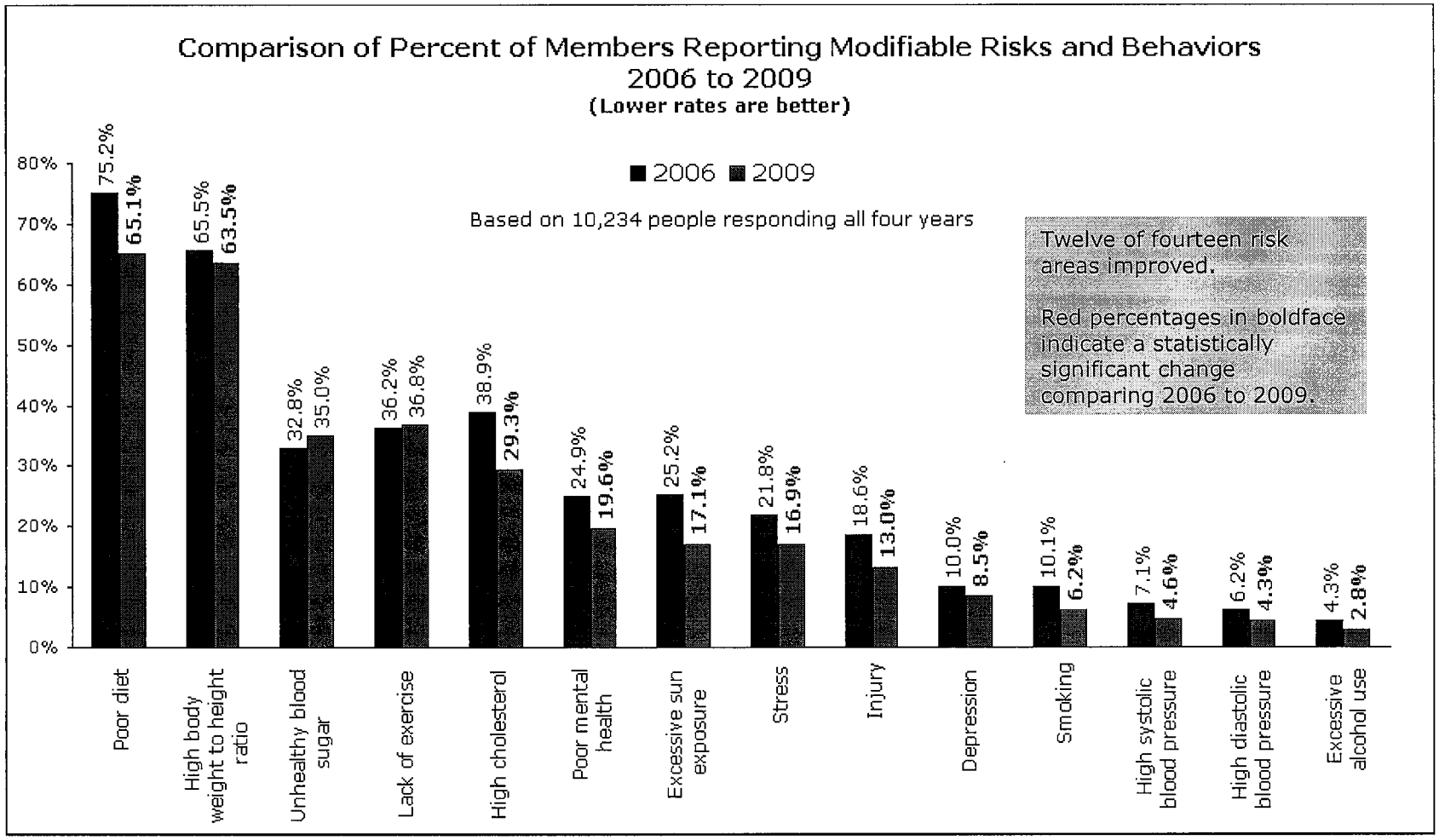
The greatest reductions in health risks occurred between the first and second years of the program (2006-2007). Additional, though less dramatic improvements occurred in 2008 and 2009. This pattern of immediate risk reduction, followed by a regression to previous levels, is typical for many health promotion programs whereby initial improvements in health risks are achieved the first year and additional effort is required to sustain these improvements over time. Research conducted by Dr. Edington has shown that without intervention the risk level in populations tends to rise, leading to greatly increased health care costs. He has further shown that just keeping the risk level constant over time mitigates the growth in resultant health care costs[14].

Comparing 2009 to 2006, employees and their spouses/domestic partners reported improvements in 12 out of 14 health-related behaviors and risk factors as measured in the annual health risk assessment. For two measures—physical activity and blood glucose—the changes are inconclusive and not statistically significant. Figure 10 on page 18 shows the overall change in these results 2006 to 2009.

In addition to showing the level of risk for each individual factor, results for each person taking the wellness assessment can also be expressed as an overall risk score for that person. The number of people taking the wellness assessment, categorized as high risk, has dropped from 44 percent in 2006 to 34 percent in 2009. The number of low risk people has increased from 51 in 2006 to 60 percent in 2009.

These health improvements, although self-reported, are particularly notable given the county's stable employee base with an average age of 47. Without effective intervention, an aging population would expect to see a worsening of health indicators year-over-year. King County has been successful, not only in keeping the healthy people healthy, but in actually motivating positive health changes. Improvements in body mass index and smoking are particularly notable as these changes are very difficult for individuals to make, and they carry proven return on investment in medical claims. Body mass index (body weight to height ratio) risk for the King County population has gone down from 67.8 percent in 2006 to 65.4 percent in 2009. Smoking has dropped from 10.4 percent to 6.2 percent. Most corporate health studies see a rise in obesity and blood glucose levels over time as populations age.[15,16,17,18,19,20,21,22,23]

Figure 10



Data are for employees and spouse/domestic partners who completed the wellness assessment in both 2006 and 2009.

2. **Changes in utilization of health care for conditions directly affected by changes in risk factors:** ***Employees improved many behaviors that lead to expensive conditions***

Risk factors such as poor nutrition, lack of exercise and smoking affect a long list of health problems, some of which respond quickly to changes and some that may take several years or more. For example, people who stop smoking will experience an immediate decrease in symptoms related to bronchitis, asthma, pneumonia and other respiratory infections. The HRI consulted with external experts[24] to determine a list of diseases and health conditions that would show improvement within a period of a few months following changes in the health behavior measured by the wellness assessment. Comparing the unadjusted costs per member, per month, for these conditions in 2006 to costs in 2009 (costs were not adjusted for inflation), the HRI saw improvements in three out of five of the condition groupings (conditions related to smoking, obesity, and alcohol abuse); no statistically significant change in one grouping (uncontrolled high blood sugar and cholesterol); and an increase in per member for common mental health conditions (stress/anxiety, depression and insomnia.)

It is important to note that the Washington State Mental Health Parity Act went into effect in 2006. This law requires plans that offer mental health benefits to provide them with the same level of coverage (*e.g.* co-pays) and restrictions (*e.g.* annual or lifetime maximum benefits) as the non-mental health benefits in the plan. As members became aware of this change in benefits the county saw a significant increase in both the number of claims and the cost per claim (unadjusted) for mental health related conditions. In many respects this increase in costs for common mental health conditions is actually a good sign that members are now seeking assistance for problems that can have a very high impact on both their ability to work productively and their overall quality of life.

Figures 11—24 provide detail regarding the specific categories of conditions related to smoking, uncontrolled high blood sugar and cholesterol, obesity, alcohol abuse and common mental health conditions and the year-over-year changes in claims for each. The numbers of members (employees and spouses/domestic partners) included in Figures 11 through 25 ranged from year to year from 11,120 to 12,732 (see Technical Appendix for details.)

Smoking

From 2006 to 2009 the self-reported rate of smoking decreased 3.9 percentage points from 10.1 percent to 6.2 percent (Figure 11). This change was statistically significant. Overall, costs for smoking-exacerbated conditions (unadjusted) are lower than they would have been had smokers not quit (Figure 12.) Rates of bronchitis, asthma, respiratory infection, pneumonia, and flu are reduced in populations with lower smoking rate (Figure 13.)

Figure 11

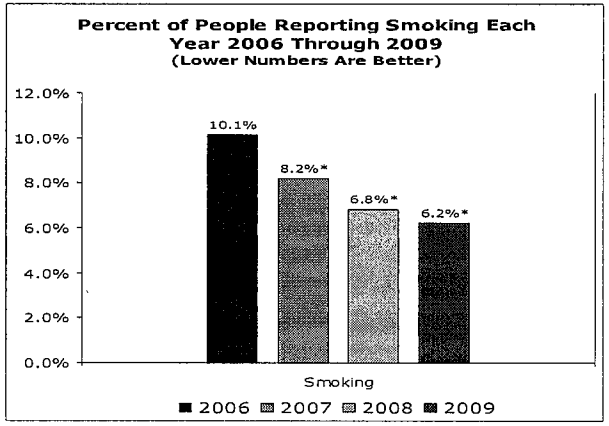


Figure 13

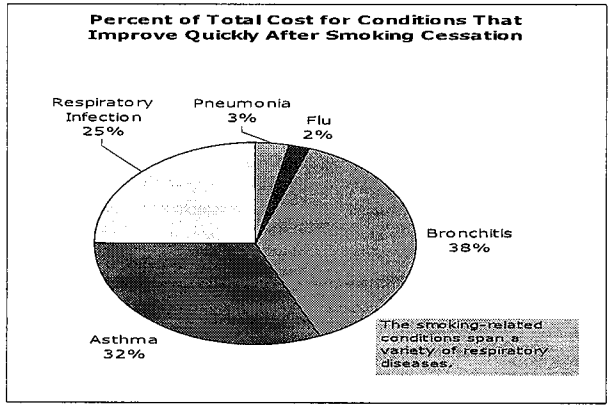
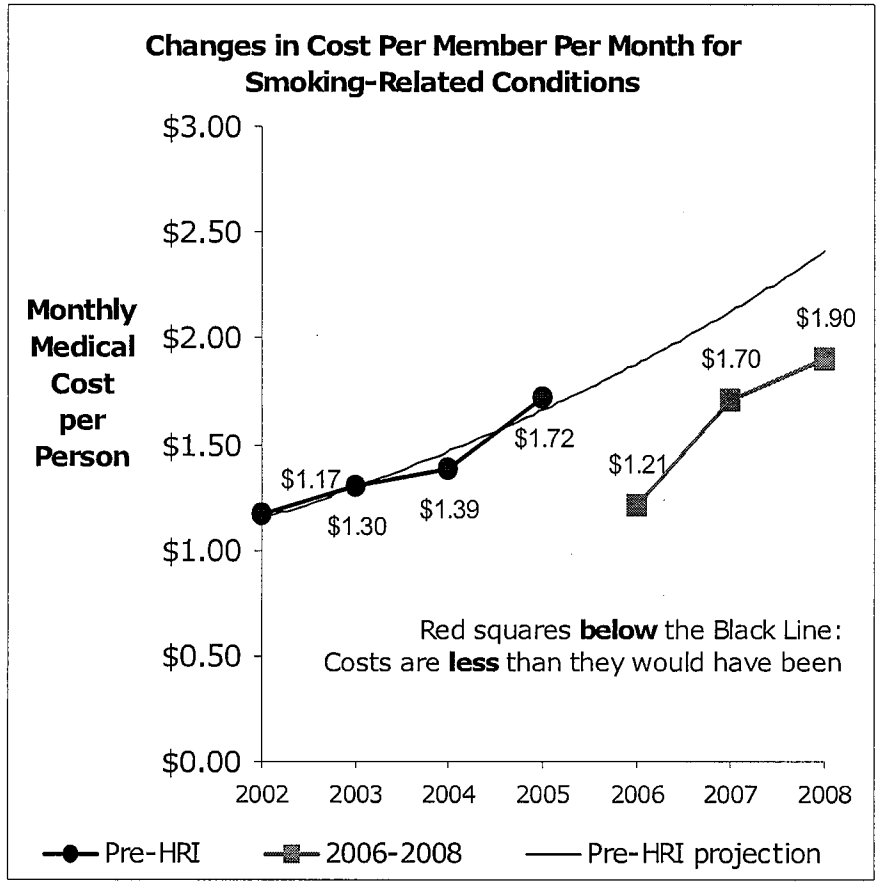


Figure 12



Uncontrolled high blood sugar and cholesterol

High blood sugar, high cholesterol and high blood pressure are closely associated (Figure16.) The self-reported number of participants who had high cholesterol dropped a statistically significant 9.6 percentage points between 2006 and 2009, and the number with high blood sugar rose 2.2 percentage points. The change in the number of people reporting high blood sugar is not statistically significant (Figure14.) Costs for these conditions (unadjusted) dropped in 2006 before rising faster than the trend in 2007 (Figure 15.)

Figure 14

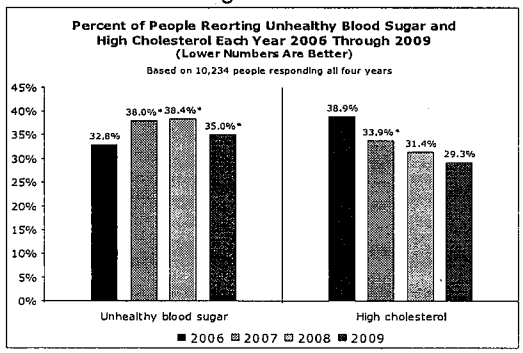


Figure 16

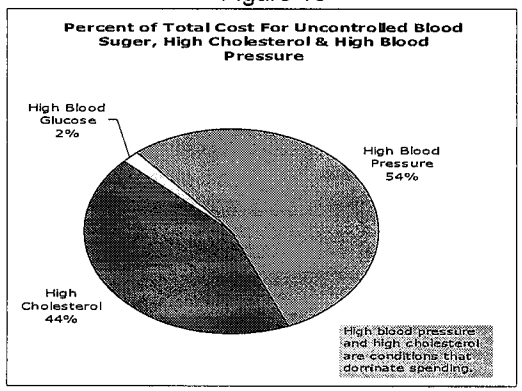
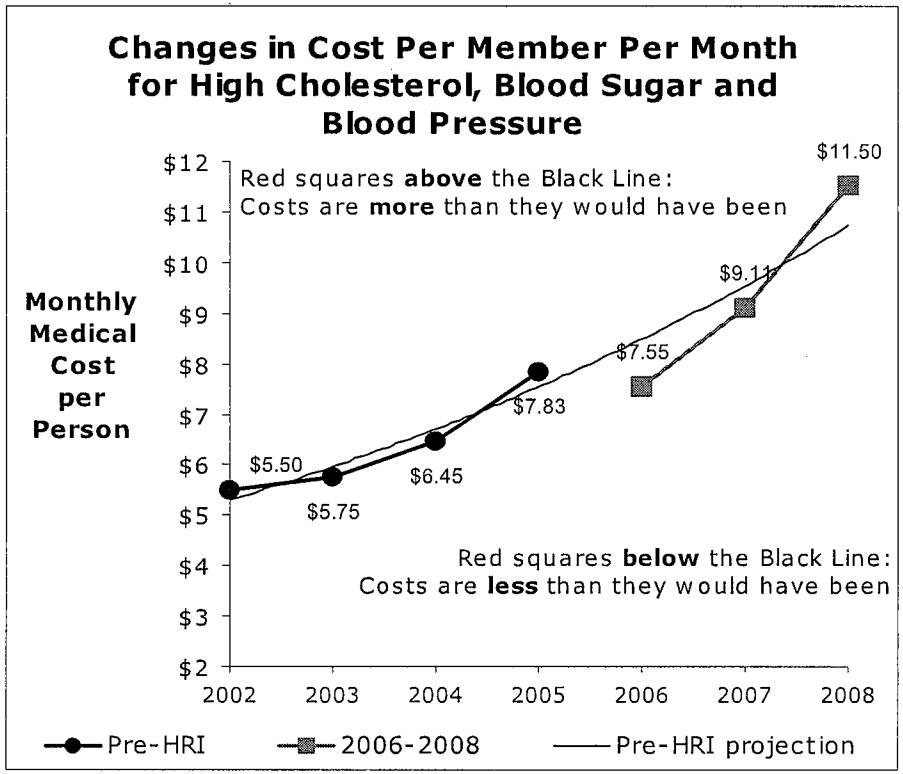


Figure 15



Obesity

Spending is tracked for patients whose primary diagnosis is obesity. Many obese patients are diagnosed for conditions related to obesity without the diagnosis code for obesity being used; only people who have an actual diagnosis of obesity are included in this analysis, and thus only "obesity" is shown in Figure 19. People diagnosed as "obese" are a subset of the total number of people reporting high body weight to height. The percentage of participants self-reporting a high weight to height ratio dropped a statistically significant 2.0 percentage points from 2006 to 2009 (Figure 17.) Costs for treating obesity (unadjusted) dropped in 2006 and 2007, and rose sharply in 2008 (Figure 18.) This rise may be related to expanded communication regarding a medically-supervised weight management program available to KingCare[SM] members who are obese and requesting bariatric surgery.

Figure 17

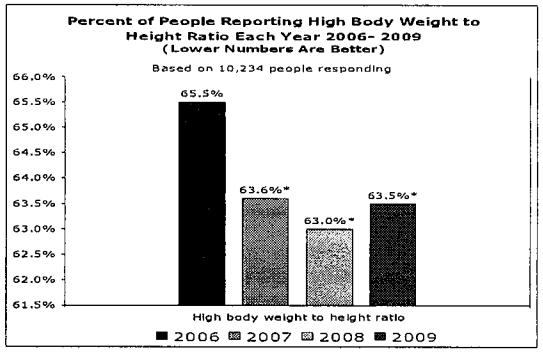


Figure 18

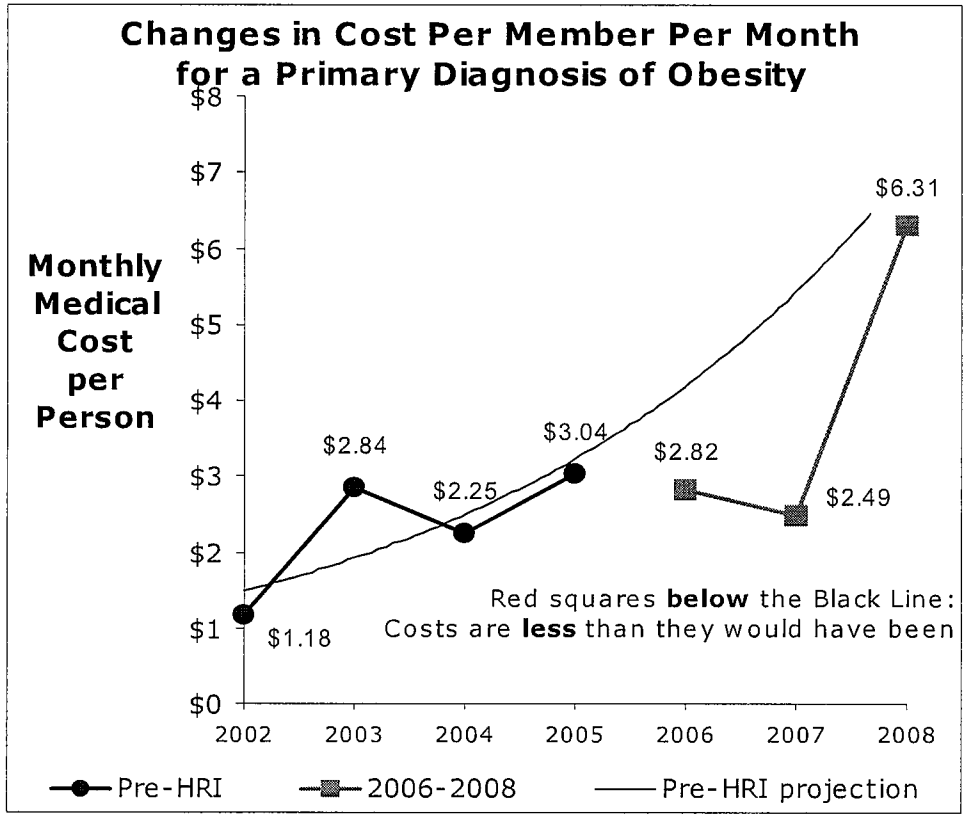
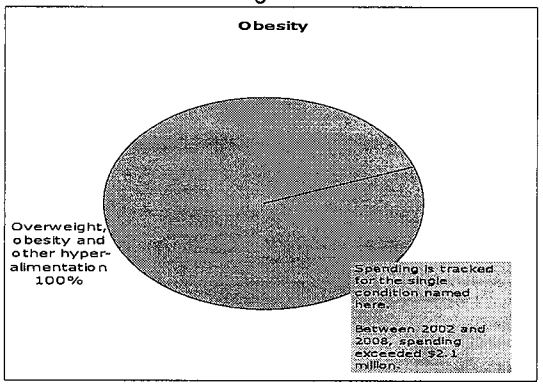


Figure 19



Alcohol Abuse

Rates of gastro-intestinal hemorrhage, gastritis and other conditions are higher in populations who abuse alcohol (Figure 22.) There was a statistically significant drop of 1.5 percentage points in the number of people self-reporting alcohol abuse on the wellness assessment from 2006 to 2009 (Figure 20.) Costs for conditions related to excessive alcohol (unadjusted) are lower than they would have been based on pre-HRI projections (Figure 21.)

Figure 20

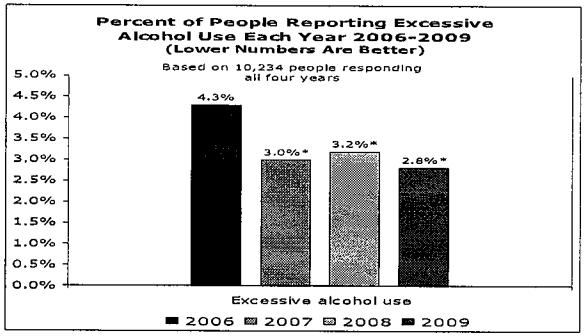


Figure 22

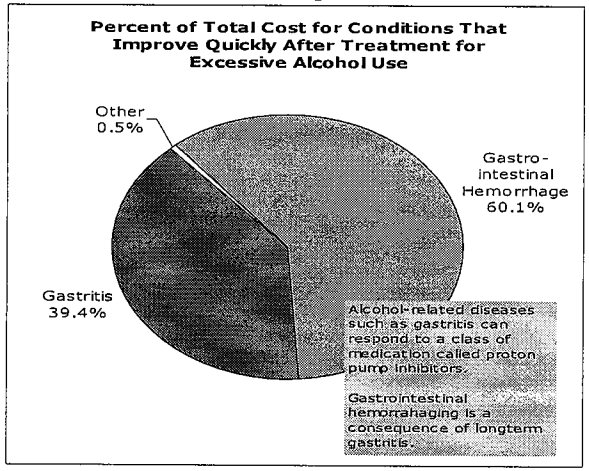
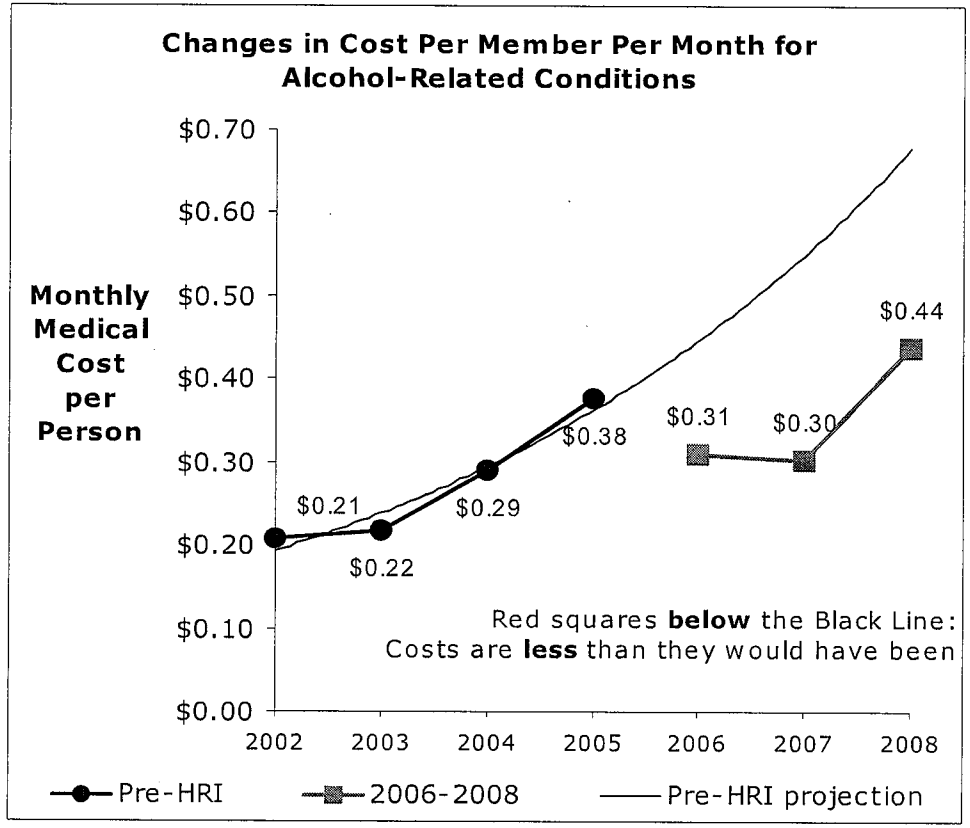


Figure 21



Common Mental Health Conditions

There are three sections of questions on the wellness assessment related to mental health. Between 2006 and 2009 the number of people reporting problems in these three areas showed statistically significant drops as follows: depression—1.5 percentage points, stress—4.9 percentage points and mental health—5.3 percentage points (Figure 23.) After remaining on the on the 2003-2004 trend in 2005, costs (unadjusted) rose rapidly in 2006 and 2007 (Figure 24.) It is important to note that the Washington State Mental Health Parity Act went into effect in 2006. This law requires plans that offer mental health benefits to provide them with the same level of coverage (*e.g.* co-pays) and restrictions (*e.g.* annual or lifetime maximum benefits) as the non-mental health benefits in the plan. As members became aware of this change in benefits the county saw a significant increase in both the number of claims and the cost per claim for mental health-related conditions. In many respects this increase in costs for common mental health conditions is actually a good sign that members are now seeking assistance for problems that can have a very high impact on both their ability to work productively and their quality of life overall. Figure 25 shows the proportion of common mental health costs for depression, anxiety and insomnia.

Figure 23

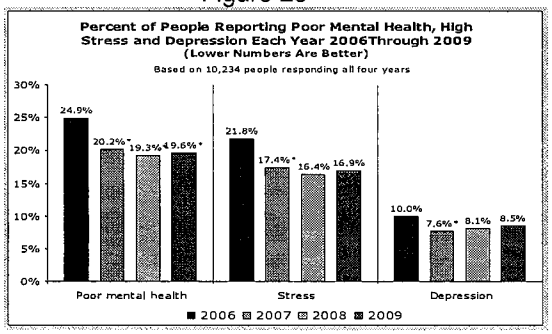


Figure 25

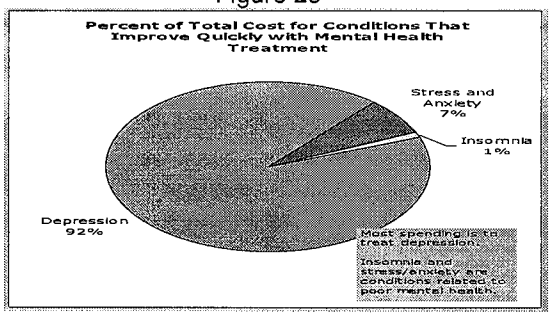
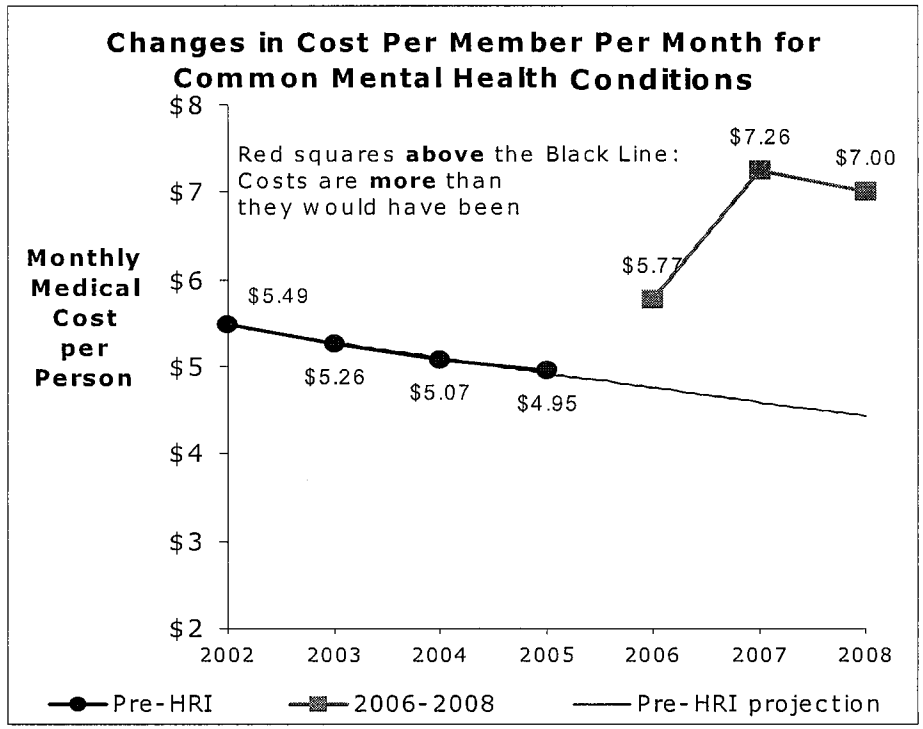


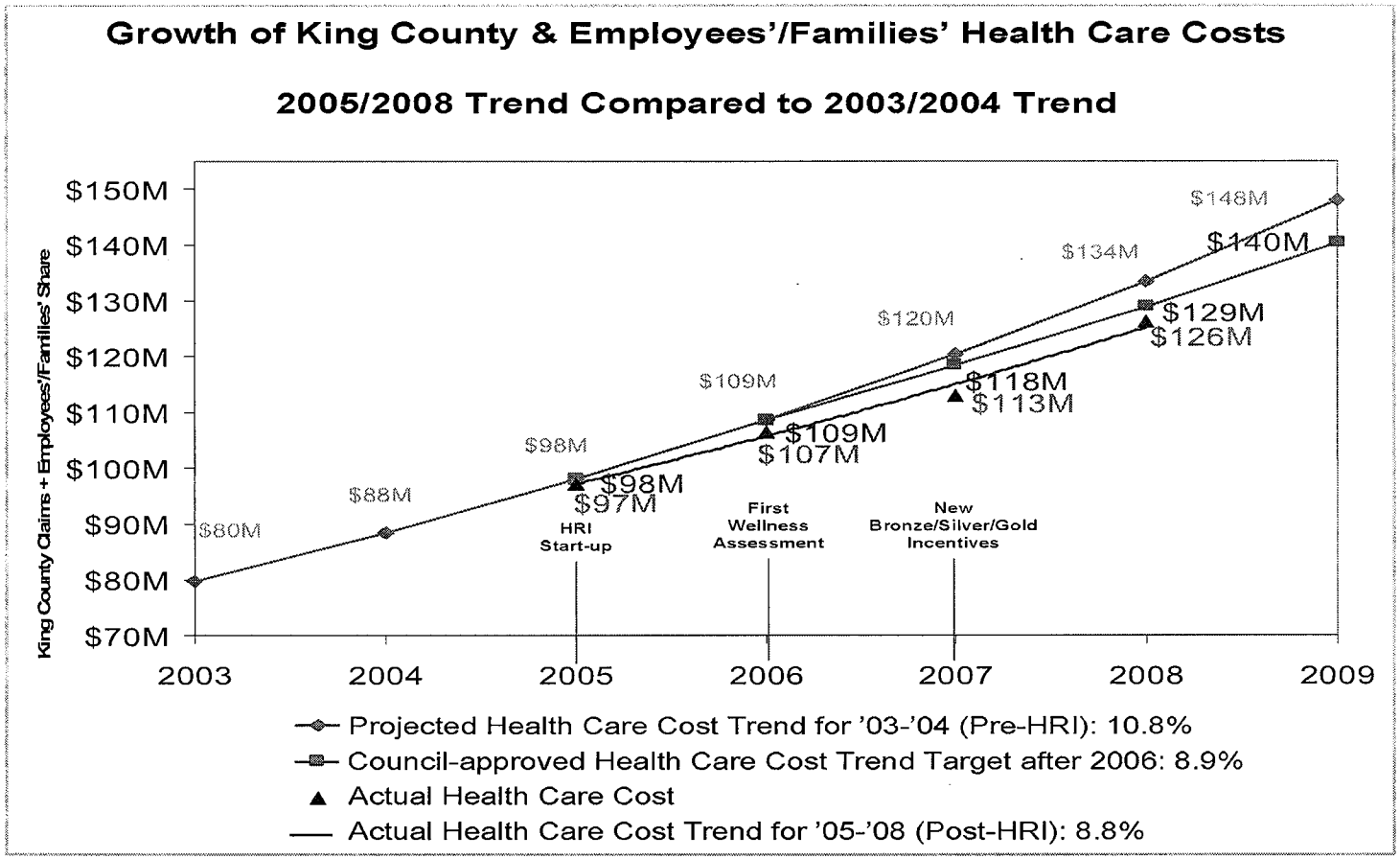
Figure 24



3. Financial impacts: *The county's health care cost increases have slowed*

While the HRI has multiple objectives, perhaps the most closely watched key indicator of the HRI is its related effect on the health care costs county employees and their families incur. The expectation was that the HRI's comprehensive approach would reduce the unadjusted claims trend growth from 10.8 percent to below the 8.9 percent target established for the 2005 to 2009 period. As Figure 26 shows, the actual medical and prescription drug claims have dropped slightly more than the council-approved target. This lower increase in year-over-year costs has resulted in the county and employees spending an estimated $18 million less for employee and family health care costs for 2005 through 2008 than was projected from the 2003—2004 cost trend.

Figure 26



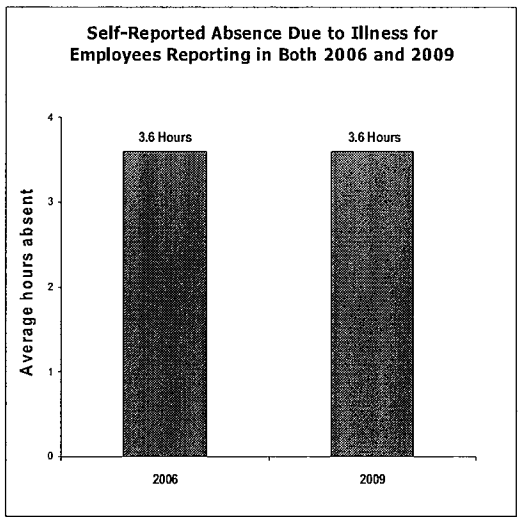
Data are for costs incurred KingCare[SM] medical and prescription drug claims for active employees and their families with full benefits; excluded are costs for COBRA, early retirees, LEOFF1 retirees, and Local 587 part-time. Costs have not been adjusted for inflation. Population ranged from 17,241 to 24,235 KingCare[SM] members over that period.

4. Increasing Healthy Hours Worked: *Employees have maintained the annual number of healthy hours worked*

Health conditions not only affect health care claims costs, they also affect an employee's absence from work and ability to perform at full capacity when at work. In 2006, the HRI started collecting self-reported information from employees about the number of hours they are absent due to their own personal health conditions, and in 2008 started collecting self-reported information from employees about the number of hours they come to work, but perform at less than full capacity, due to a health condition (presenteeism).

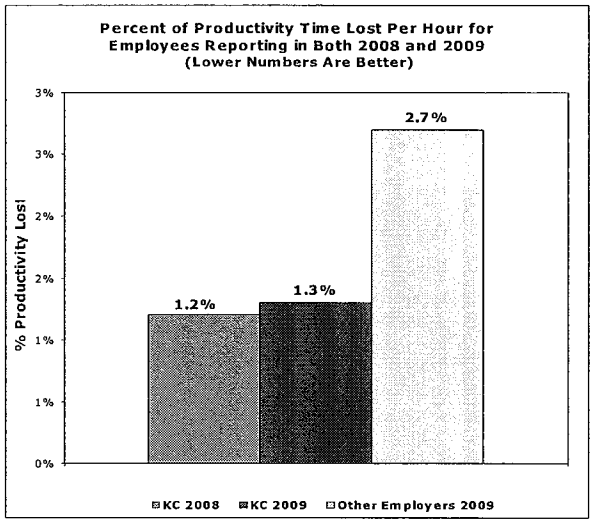
Absenteeism: There was no change in the self-reported hours of absence for employees due to illness in the four weeks prior to taking the wellness assessment for employees who took the assessment in both 2006 and 2009. Figure 27 below shows this comparison.

Figure 27



Data are for employees who answered absenteeism questions in both 2006 and 2009; N=4,642

Figure 28



Data are for employees who answered presenteeism questions in both 2008 and 2009; N=4,642

Presenteeism: The HRI added the eight-question version of the Work Limitations Questionnaire (WLQ), a measure of "presenteeism", to the wellness assessment in 2008. Ideally this measure would have been included in 2006. However the original focus of the HRI was on measuring changes in direct health care spending. Measurement of costs associated with absenteeism and presenteeism were added at the suggestion of the peer review panel[2].

[2] This panel was convened by the county executive in the fall of 2006 following the publishing of the first HRI Measurement and Evaluation report. The purpose of this panel of five health care experts was to review the strategies, policies and programs of the HRI and make recommendations on program design, implementation and adjustments needed to maximize results and sustainability. The Panel noted that a number of studies have found that costs for sick leave and replacement wages may be as much as three to four times the direct cost of health care. *See King County Health Reform Initiative Check-Up: Report of the Peer Review Panel, October 2006.*

The pattern of changes for other data from the wellness assessment shows a pattern where the greatest changes occurred between 2006 and 2007, with much smaller, or no changes, in 2008 and 2009. It is possible that the late introduction of this measure means there may have been one-time gains that occurred in 2007 that were not recorded.

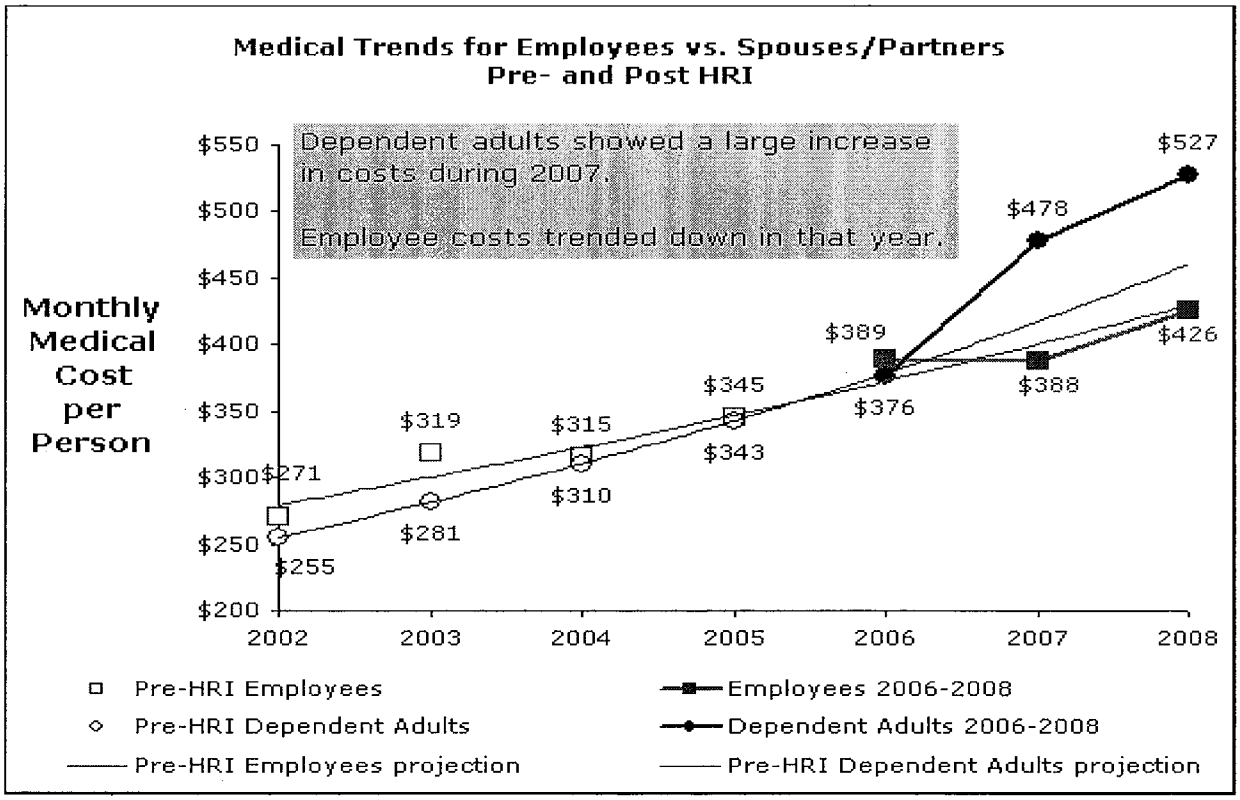
The WLQ is a self-reported measure of absenteeism due to health related causes. It was developed by Dr. Debra Learner from Tufts University and the New England Medical Center. It has proven to be a valid and reliable tool for measuring presenteeism, or on-the-job productivity losses[25]. Raw data from 2008 and 2009 were sent to Dr. Learner's team for evaluation. Overall, the average productivity lost in one hour for employees who answered the WQL questions in both years was 1.2 percent in 2008 and 1.3 percent in 2009. This difference is not statistically significant. Comparatively, previous studies for other employers conducted by Dr. Learner have shown more than twice that amount at 2.7 percent lost productivity per hour due to presenteeism. These results are shown in Figure 28 above.

The overall score for presenteeism is a weighted sum of four sub-components relating to time (how difficult is it for the employee to get started at the beginning of the day), physical abilities (ability to sit or stand in one position and perform repeated tasks), mental-interpersonal (difficulty in concentration on work and contact with other people), and output (ability to complete tasks.) Looking at the specific sub-components of presenteeism for 2009, 5.4 percent of employees had illness-related problems with time management, 4.9 percent had problems on physical aspects, 5.2 percent had problems with the mental-interpersonal aspects, and 4.1 percent had problems with output. There was no significant change in results from 2008 to 2009.

Additional Observations

As a part of the overall data analysis, the HRI also checks to see if results are consistent across both employees and spouses/domestic partners. In doing this analysis there was one rather striking difference between the two groups: medical costs (unadjusted) for spouses/domestic partners rose significantly after 2006, while employee costs that were higher, pre-HRI, trended downward in 2007. Although this observation is not proof of cause and effect, it does suggest that employees may be benefiting from the daily positive health messages and programs in the work place, and that strategic outreach should be made to spouses and partners to provide them assistance in changing their health-related behaviors. Figure 29 shows the comparative medical cost trends (unadjusted) for employees and their spouses/partners.

Figure 29



Data are for costs incurred in KingCare[SM] medical and prescription drug claims for active employees and their families with full benefits; excluded are costs for COBRA, early retirees, LEOFF1 retirees, and Local 587 part-time. Costs are not adjusted for inflation. Population ranged from 17,241 to 24,235 KingCare[SM] members over that period.

5. The Puget Sound Health Alliance: *Changes in the quality and cost of the health care services employees and families receive are underway*

The Puget Sound Health Alliance has made major gains in bringing cost and quality issues into the public eye. To date, the Alliance has established five regularly updated public reports comparing quality and cost among local providers and health plans and is in the process of developing additional public reports on the effectiveness of resource use by providers, provider quality from the patient point of view, and disparities in care received by different sub-populations.

In addition to the internal programs that promote improved employee and family health and wiser utilization of health care resources, the HRI also works on the "supply" side of the health care challenge. Founded in 2004, following recommendations by the King County Health Advisory Task Force, the Puget Sound Health Alliance is an integral component of the HRI's comprehensive strategy to improve employee and family health, enhance the quality of care provided in the region, and reduce the county's health care costs.

A regional consortium of employers, providers, and health plans, the Puget Sound Health Alliance has a critical role in reducing health care costs for everyone in the region by coordinating care among providers; encouraging the use of evidence-based treatment guidelines; creating public reports to compare cost and quality; and supporting efforts for payment reform. It is these efforts that will have the most powerful effect on the cost of health services used by King County employees and their families.

To date, the Puget Sound Health Alliance has assembled an extensive set of data sources and infrastructure to produce reports the public can use to compare the quality and cost of local health care providers.. The first "Community Checkup" report came out in January 2008 with a review of 14 medical groups and about 70 clinics in our region. As the Alliance produced additional reports, the Community Checkup was expanded to compare even more health care providers. The public report can be found at www.WACommunityCheckup.org.

Patients, doctors, employers, and all community members now have the ability to research and compare ratings for care at nearby clinics or hospitals for a growing list of chronic conditions (e.g., heart disease), cost-effective care (e.g., use of generic drugs, avoiding inappropriate use of X-rays and MRIs), and systems in place to improve safety (e.g., avoid medication errors and 'never events'). As of mid-2009 the Community Checkup report includes:

- Public comparisons of quality and value for care provided by about 200 medical clinics in the region - comparing care for diabetes, heart disease, depression, low back pain and asthma, as well as adherence to evidence-based guidelines for prevention, appropriate use of antibiotics, and filling prescriptions with generics
- Comparisons for medical clinic care provided to the Medicaid population versus those who are covered by commercial health insurance
- Public comparisons of care provided in about 40 hospitals in the region, with a focus on care that is safer and produces better health outcomes (e.g., for heart attacks, pneumonia, surgery, etc.), as well as comparisons of what patients think of their experience in each hospital
- Private customized reports for large purchasers, including King County, showing results for each of the 21 outpatient (ambulatory) care measures reflecting the care provided to that purchaser's covered employees and dependents. These 21 measures cover outcomes for asthma, depression, diabetes, generic prescriptions and antibiotic use, heart disease, low back pain, and prevention.
- In the fall of 2009, a public comparison of health plan services will be added to the report, showing scores from the National Business Coalition on Health's national eValue8 program in areas including consumer engagement, provider measurement, pharmaceutical management, prevention and health promotion, chronic disease management and behavioral health. These measures track health plans' success in improving their member's health.

In addition to adding health plan comparisons, the Alliance is working on expanding the report to measure:

- Use of resources by medical group and hospital, and possibly 'systems' of care that include both inpatient and outpatient providers
- Quality and experience with medical clinic care from the patient's point of view
- Disparities in care received by different sub-populations, based on race, ethnicity and/or primary language

IV. Conclusions

The Health Reform Initiative is now in its fourth year. Given the results discussed above, the following conclusions can be made:

- Employee health has improved and overall cost growth is in line with the council-approved target.
- Employees showed less growth in health care costs for conditions directly affected by modifiable risk factors than spouses/domestic partners suggesting that the supportive environment of the workplace may have contributed to a difference in outcomes.
- Major changes in the way health care is delivered and paid for in the external marketplace should result in significant additional opportunities for health improvements and moderation in cost growth.

V. Policy Recommendations

Based on the results and conclusions, the HRI recommends that King County:

- Continue intact the package of programs of the Health Reform Initiative through the 2010 – 2012 benefit cycle.
- Continue to play a strong leadership role in the Puget Sound Health Alliance encouraging improvements in the marketplace through cost and quality reporting, payment reform, tools for informed consumer choice, increased transparency and overall improved value.
- Continue independent evaluation of the Health Reform Initiative's impact for the duration of the effort.

Endnotes

[1] Edington, DW. 2001. Emerging research: A view from one research center. *American Journal of Health Promotion* 15(5):341-349.

[2] Presenteeism is defined as lost productivity that occurs when employees come to work but perform below par due to any kind of illness

[3] Breslow L, Fielding, J., Herman, A.A., et al. Worksite health promotion: its evolution and the Johnson and Johnson experience. Prev Med. 1994;9:13-21.

[4] Centers for Disease Control and Prevention's Task Force on Community Preventive Services. The Community Guide.
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[5] Goetzel RZ, DeJoy DM, Wilson MG, Ozminkowski RJ, Roemer EC, White JM, Tully KJ, Billotti GM, Baase CM, Bowen H, Mitchell SG, Wang S, Tabrizi MJ, Bowen JD, Short M, Liss-Levinson RC, Christaldi J, Baker K. (2007). Environmental approaches to obesity prevention and management at The Dow Chemical Company: second year results. American Heart Association Annual Scientific Sessions, Orlando, FL, November 2007.

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[7] Ostbye T, Dement JM, Krause KM. Obesity and workers' compensation: results from the Duke Health and Safety Surveillance System. Arch Intern Med. 2007 Apr 23;167(8):766-73.

[8] Ozminkowski, R.J., Dunn, R.L., Goetzel, R.Z., Cantor, R.I., Murnane, J., & Harrison, M. (1999). A return on investment evaluation of the Citibank, N.A., Health Management Program. Am J Pub Health, 44(1), 31-43.

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[10] Wang F, McDonald T, Bender J, Reffitt B, Miller A, Edington DW. Association of healthcare costs with per unit body mass index increase. J Occup Environ Med. 2006 Jul;48(7):668-74.

[11] Aetna Informatics Team in an email February 24, 2009.
[12] Lerner D., Amick III, B.C., Rogers, W.H., Malspeis, S., Bungay, K., and Cynn, D (2001). The Work Limitations Questionnaire. *Medical Care,* 39(1): 72-85.

[13] Edington, DW. 2006. *Towards Champion Worksites* checklist sent to the County by the author in May, 2007. Dr. Edington also covered these points in two presentations at the county—the Health Leadership Forum, May 17, 2007, and the Labor Summit, June 11, 2007.

Endnotes

[14] Edington, DW. 2001. Emerging research: A view from one research center. *American Journal of Health Promotion* 15(5):341-349.

[15] Presenteeism is defined as lost productivity that occurs when employees come to work but perform below par due to any kind of illness

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[17] Centers for Disease Control and Prevention's Task Force on Community Preventive Services. The Community Guide.

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[19] Goetzel RZ, Ozminkowski, R.J., Baase, C.M., Billotti, G.M. Estimating the return-on-investment from changes in employee health risks on the Dow Chemical Company's health care costs. J Occup Environ Med. 2005;47(8):759-768.

[20] Ostbye T, Dement JM, Krause KM. Obesity and workers' compensation: results from the Duke Health and Safety Surveillance System. Arch Intern Med. 2007 Apr 23;167(8):766-73.

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[23] Wang F, McDonald T, Bender J, Reffitt B, Miller A, Edington DW. Association of healthcare costs with per unit body mass index increase. J Occup Environ Med. 2006 Jul;48(7):668-74.

[24] Aetna Informatics Team in an email February 24, 2009.

[25] Lerner D., Amick III, B.C., Rogers, W.H., Malspeis, S., Bungay, K., and Cynn, D (2001). The Work Limitations Questionnaire. *Medical Care,* 39(1): 72-85.

Technical Appendix

For the Fourth Annual

King County Health Reform Initiative

Measurement and Evaluation Report

August 10, 2009

Nick Maxwell
King County Office of Management & Budget
Nick.Maxwell@KingCounty.Gov
(206) 263-9709

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Introduction

This appendix follows the order of materials in the Fourth Health Reform Initiative Measurement and Evaluation Report (the HRI M&E report). After details related to each section of the M&E report, this appendix includes utilization statistics, a timeline of Health Reform Interventions, and notes on the de-identified data in the King County healthcare database.

Preparation of the fourth annual King County Health Reform Initiative measurement and evaluation report was reviewed by the HRI Measurement and Evaluation steering committee: Karleen Sakumoto (HRD), Kerry Schaeffer (HRD), Wendy Soohoo (Council), David Solet (Public Health), Judy Clegg (Clegg & Assoc.), Jim Andrianos (Clegg & Assoc.), and Nick Maxwell (OMB). Decisions about what materials to include in this technical appendix were guided by Karleen Sakumoto, Kerry Schaefer, Jim Andrianos, Judy Clegg, and Nick Maxwell, with guidance from Ron Goetzel (Thomson Reuters).

1. Changes in Modifiable Risk Factors 2006-2009

Percent of Members Reporting Modifiable Risks & Behaviors 2006-2009

The *changes in modifiable risk factors* section of the fourth annual HRI M&E report includes a bar chart showing the percent of employees and spouses/partners who reported having high-to-moderate risk (figure 10 in the M&E report). The following provides details related to the statistics shown in figure 10 of the HRI M&E.

Fourteen Risks

The 14 "modifiable risks" reported on in the HRI M&E report are all calculated from answers provided on the annual King County wellness assessment. The risks include 9 behavioral risks that are each measured by multiple questions about respondents' health related behaviors. Another five risks are biometric, each measured by asking respondents to report results of biometric measurement.

King County offers the wellness assessment to all employees and their spouses/partners in January of each year. As new employees are hired, to obtain Gold-level healthcare benefits, they and their spouses/partners must complete the wellness assessment in the first months of their employment. The result is that most wellness assessments are completed in January through March, and wellness assessments completed after those months are completed by employees who are new to King County. All analyses reported here reflect only data from wellness assessment completed in January through March of each year.

Respondents reporting that they were pregnant were excluded from the analysis.

Behavioral Risks

The wellness assessment used at King County in 2006-2009 is Health Media Inc.'s *Succeed* assessment. Health Media, Inc. (HMI) has developed this assessment to provide optimal guidance to health coaches, and the risk areas included in the assessment are a list developed by HMI with two exceptions. After reviewing the wellness assessment with labor representatives, the decision was made to omit questions related to dangerous sexual behavior and dangerous drug use. The remaining nine risk areas are as follows:

1. Poor diet
2. Lack of exercise
3. Poor mental health
4. Excessive sun exposure
5. Stress
6. Injury
7. Depression
8. Smoking
9. Excessive alcohol use

For each of HMI's risk areas, HMI provides a risk score for each respondent who answered all of the questions related to the risk area. Some respondents participated in the wellness assessment without answering all questions, and such incomplete data produced assessments that lacked some of the risk scores.

In the fourth HRI measurement and evaluation, any risk score that HMI flagged as "high" or "moderate" risk is reported in this analysis as "at risk." King County's coaching contract with Healthways arranged for telephone coaching to be offered to all "at risk" employees, spouses, and domestic partners. As shown in figure 10 of the HRI M&E report, the portion of respondents flagged by HMI as "at risk" varies across risks.

Biometric Risks

Another five risk areas were defined by reports of biometric measures. Table 1 below lists the five risk areas with definitions of what was flagged as "at risk". The definitions used here match the definitions used in the third HRI M&E in 2008, with the exception of "High Cholesterol". These definitions reflect current medical guidelines.

Table 1

Biometric Risks, Definitions, Inclusion Criteria

Risk	Definition	Answers coded as "missing"
High body weight to height ratio	BMI >= 25	Height feet > 8 Height inches >= 12
Unhealthy blood sugar	Blood glucose >= 100	Blood glucose < 60 Blood glucose >= 300
High systolic blood pressure	Pressure >= 140	Pressure < 100 Pressure > 200
High diastolic blood pressure	Pressure >= 90	Pressure < 60 Pressure > 142
High cholesterol	Cholesterol >= 200	Cholesterol < 110 Cholesterol test more than 5 years old

Table 1 includes criteria used to exclude some responses from the analysis. For example, any BMI at 25 or above was flagged as "at risk." The BMI values are calculated from three questions: a question asking for height in feet, a second question asking for inches of height, and

a question about weight. Any respondent reporting more than 8 feet or 12 inches was coded as having a missing value for BMI.

Cohort Population

The fourth HRI M&E report includes health risk data from a cohort sample. This ("longitudinal" or "panel") sample includes all respondents who participated in the wellness assessment each year. Because of changes in missing data, results are not purely longitudinal. That is, a respondent could have filled out a wellness assessment all four years, but only known her cholesterol levels in 2009. Following methods used in the third HRI M&E, the results reported here would include that respondent in the summaries of high cholesterol risk. This appendix provides further statistics on the cohort sample and then provides statistics on the full ("aggregate") set of respondents filling out the wellness assessment in each year.

Year-to-Year Patterns

The focus of the HRI M&E report is on the full impact of the HRI over the years it was in effect, so the report includes statistics from the last wellness assessment (in 2009) compared to the first wellness assessment (in 2006). Table 2 here shows data from the intervening years.

Table 2

Percent of Members Reporting Modifiable Risks and Behaviors by Year (N=10,234)

Risk	2006	2007	2008	2009	Significant Changes from 2006 to 2007	Significant Changes from 2007 to 2008	Significant Changes from 2008 to 2009
Poor diet	75.2%	61.5%*	66.7%*	65.1%*	**Improved**	Worsened	**Improved**
High body weight to height ratio	65.5%	63.6%*	63.0%	63.5%	**Improved**		
Unhealthy blood sugar	32.8%	38.0%*	38.4%	35.0%*	Worsened		**Improved**
Lack of exercise	36.2%	32.9%*	37.6%*	36.8%	**Improved**	Worsened	
High cholesterol	38.9%	33.9%*	31.4%*	29.3%	**Improved**	**Improved**	
Poor mental health	24.9%	20.2%*	19.3%	19.6%	**Improved**		
Excessive sun exposure	25.2%	18.3%*	17.6%	17.1%	**Improved**		
Stress	21.8%	17.4%*	16.4%	16.9%	**Improved**		
Injury	18.6%	14.5%*	13.5%*	13.0%	**Improved**	**Improved**	
Depression	10.0%	7.6%*	8.1%	8.5%	**Improved**		
Smoking	10.1%	8.2%*	6.8%*	6.2%	**Improved**	**Improved**	
High systolic blood pressure	7.1%	4.8%*	4.8%	4.6%	**Improved**		
High diastolic blood pressure	6.2%	4.4%*	4.6%	4.3%	**Improved**		
Excessive alcohol use	4.3%	3.0%*	3.2%	2.8%	**Improved**		
Average	26.9%	23.5%	23.7%	23.1%	**Improved**		**Improved**

* Statistically significantly different from proportion in previous year by t-tests of changes.

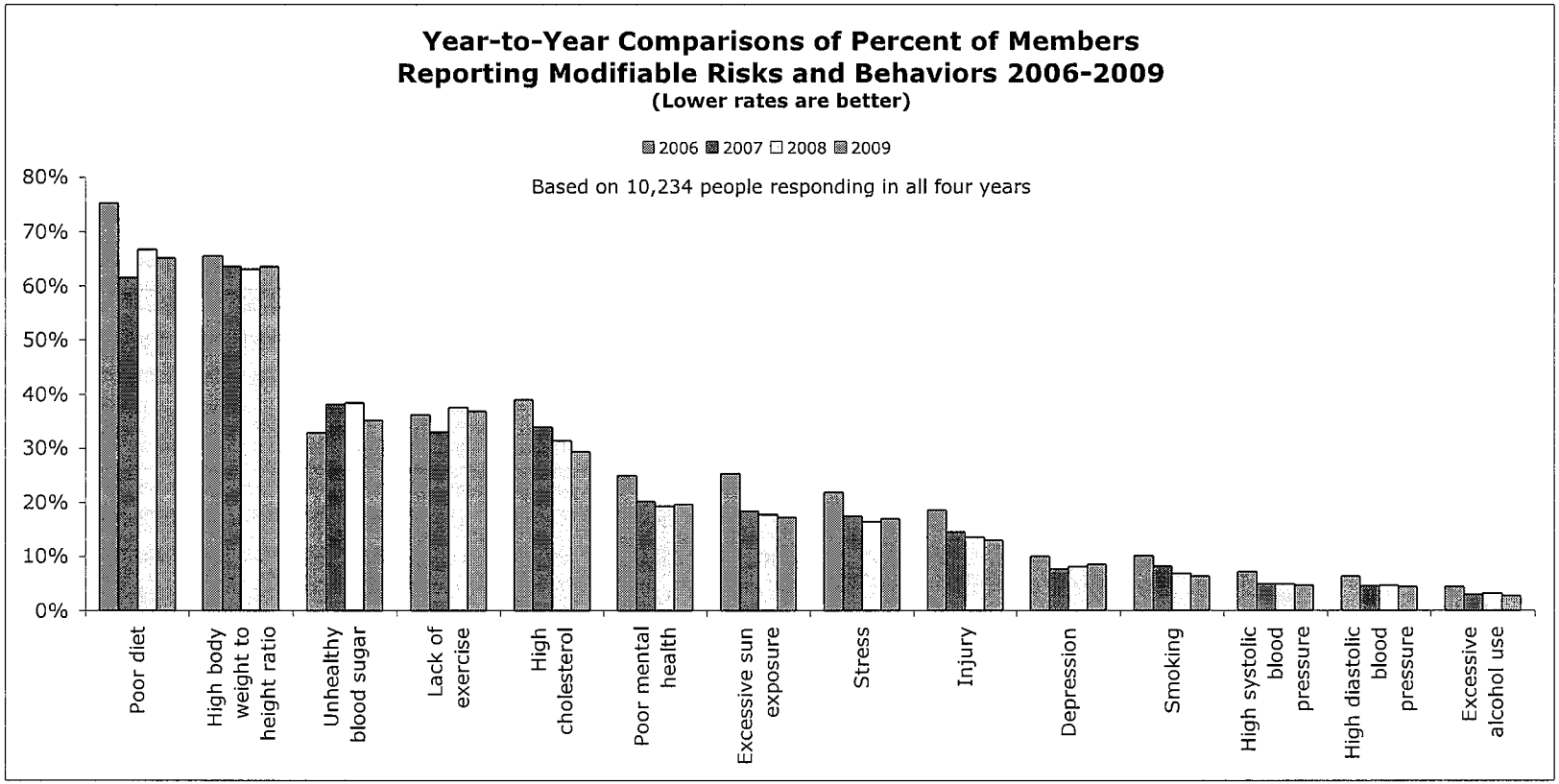
Table 2 flags statistically significant changes from a previous year with asterisks and in the right three columns. All risk proportions dropped statistically significantly from 2006 to 2007. From

2007 to 2008, poor diet and lack of exercise became statistically significantly more common, and both showed statistically significant improvements from 2008 to 2009. From 2007 to 2008, there were statistically significant improvements in High cholesterol, Injury prevention, and smoking.

Significance testing shown here was performed by coding the presence of a risk in a year as 1 and absence as zero. Differences were then calculated, so possible measures were -1 (improve), 0 (stay the same), and 1 (worsen). The question was whether the average change was significantly different from zero. T-tests were used to check whether the average difference differed significantly from zero. Previously, these tests were performed with McNemar's chi-square test. McNemar's chi-square starts by discarding data from everyone who doesn't change (either stays at risk, or stays at no risk). So McNemar's chi-square answers the question, "*if someone changes*, are the chances of an improvement different from the chances of worsening?" A t-test was preferred due to it asking whether an average calculated from all respondents was a change. Because of the sample size, a normal approximation can be relied on and the results are unlikely to differ from what would be seen with a McNemar's test.

Figure 1 (below) shows graphically the same data as table 2.

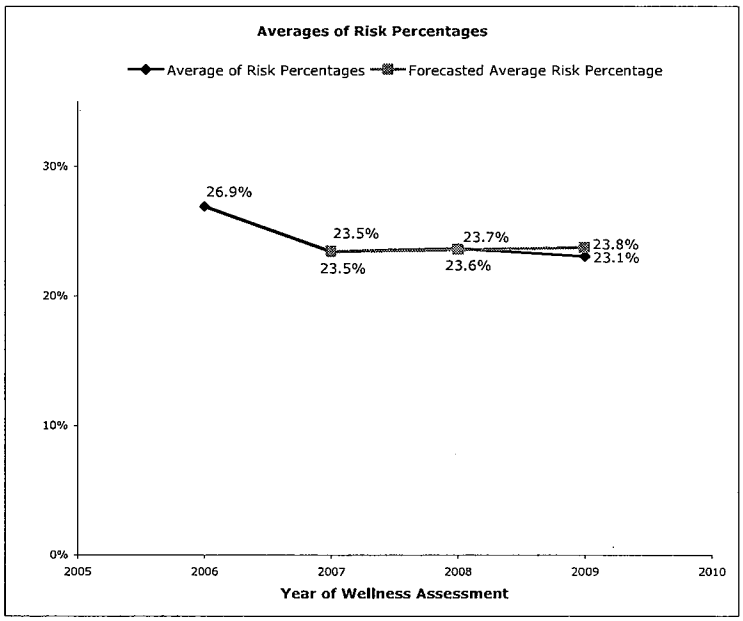
Figure 1



Statistically significant changes from the previous year flagged with asterisks.
Statistically significant *improvements* flagged by in red.

Table 2 and figure 1 show a general pattern of changes that appears in many of the risks: risks dropped more from 2006 to 2007 than they did after 2007, as shown in figure 2.

Figure 2



Aging & Risks

Figure 2 includes a "forecasted average risk percentage" (plotted as squares). Here is what that forecast is: Because these data are from a cohort sample, during the three years from 2006 to 2009, the respondents whose data are reflected in figure 2 grew three years older. To see how the changes shown here reflect the change in age, figure 3 (below) shows the same statistic as figure 2, but in figure 3 all of the risk proportions were calculated from the 2006 wellness assessment only. What varies in figure 3 is the age of the respondents. For figure 3, the respondents were divided into quartiles by age and the results are shown by quartile.

Figure 3

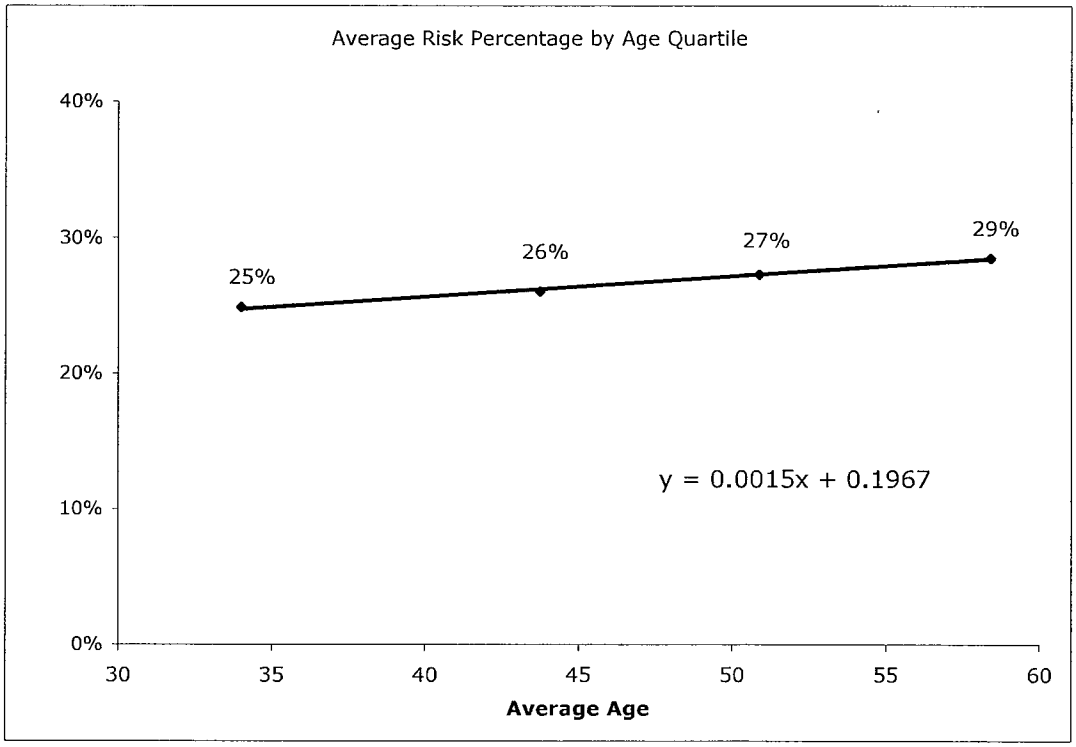


Figure 3 includes a linear regression line fit to the observations, showing that the average respondent adds 0.15% to the average risk percentage with each additional year of age. (The data in figure 3 show a clear but very weak non-linear relationship, so a linear fit closely matches the observations, R^2=.992.) The forecasts included in figure 2 are that 0.15% added to the 2007 average risk percentage for each subsequent year. They show that the worsening seen from 2007 to 2008 very closely matched the worsening that would have been expected from the aging of this cohort. And the 0.5% drop from 2008 to 2009 could be considered a 0.7% improvement over what would have been seen had the cohort shown the effect of aging from 2008 to 2009.

Aggregate Population

Table 3 (below) shows at-risk prevalences for all of the wellness assessment participants in each year. Table 3 shows updates to statistics provided in tables 13 and 15 in the third HRI M&E report. Table 3 reflects the "aggregate" (or "cross-sectional") sample. Unlike the cohort data shown above, the participants whose data are reflected in table 3 are a shifting population that includes new hires and loses people retiring or leaving the County. If new hires have different risks than the respondents who answered in previous years, that is not a reflection on the HRI. That would only reflect demographics related to hiring. For that reason, comparisons from one year to another in table 3 do not reflect the impact of the HRI as cleanly as do the cohort-based statistics. The aggregate sample data are provided here only to provide more comprehensive reporting. As is shown below, the patterns seen in aggregate statistics closely match those seen in the cohort analysis.

Table 3
Percents of Wellness Assessment Respondents Reporting Risks:
Aggregate (Cross-Sectional) Sample – All Respondents in Each Year

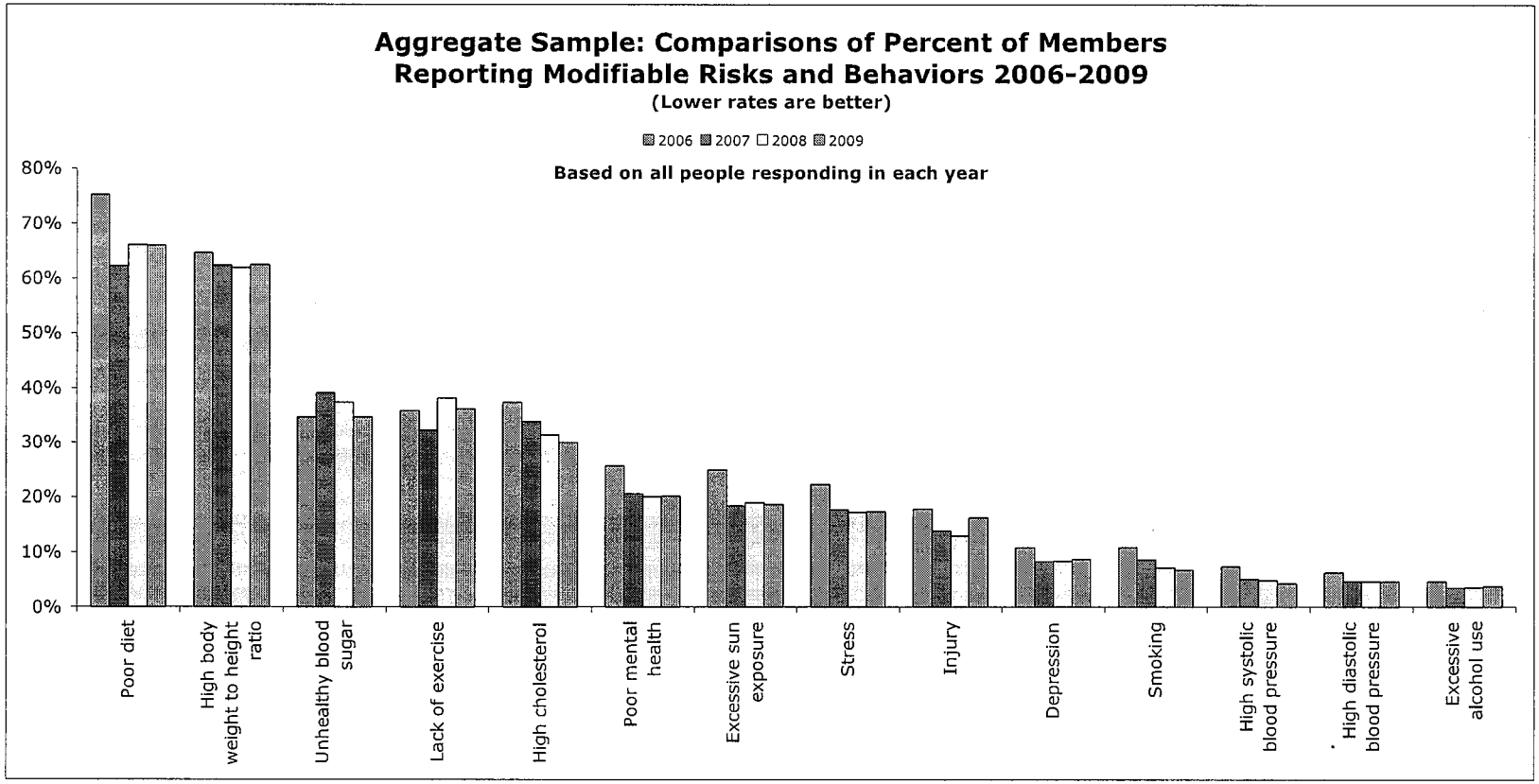
Aggregate All Respondents Risk Factor	2006			2007			2008			2009		
	N	%^	Missing (%)	N	%^	Missing (%)	N	%^	Missing (%)	N	%^	Missing (%)
Alcohol Use	767	4.6	228 (1.4)	584	3.4	207 (1.2)	603	3.5	156 (0.9)	685	3.7	144 (0.8)
Depression	1,611	10.9	2,164 (12.8)	1,293	8.3	2,015 (11.4)	1,303	8.4	1,864 (10.8)	1441	8.7	1,966 (10.6)
Injury Prevention	2,924	17.9	568 (3.4)	2,381	13.9	503 (2.9)	2,172	12.9	431 (2.5)	2929	16.2	494 (2.7)
Mental Health	4,119	25.7	881 (5.2)	3,463	20.6	834 (4.7)	3,328	20.1	787 (4.5)	3576	20.2	884 (4.8)
Nutrition	12,393	75.1	395 (2.3)	10,704	62.2	447 (2.5)	11,218	66.1	366 (2.1)	11957	66	436 (2.4)
Physical Activity	4,843	35.8	3,384 (20.0)	4,860	32.3	2,592 (14.7)	6,168	38.1	1,145 (6.6)	6204	36.1	1,354 (7.3)
Sun Damage Behavior	4,005	25.0	872 (5.2)	3,145	18.4	569 (3.2)	3,282	19.1	118 (0.7)	3449	18.8	168 (0.9)
Smoking Behavior	1,735	10.9	961 (5.7)	1,430	8.6	957 (5.4)	1,167	7.1	978 (5.6)	1165	6.7	1,085 (5.9)
Stress Behavior	3,713	22.4	350 (2.1)	3,088	17.8	332 (1.9)	2,938	17.3	338 (2.0)	3157	17.4	385 (2.1)
BMI Risk	10,694	64.6	338 (2.0)	10,739	62.3	402 (2.3)	10,485	61.9	392 (2.3)	11309	62.5	451 (2.4)
Cholesterol	2,303	37.3	10,720 (63.4)	1,698	33.8	12,614 (71.5)	1,637	31.5	12,123 (69.9)	1664	30	12,989 (70.0)
Blood Glucose	1,426	34.7	12,787 (75.7)	1,204	39.0	14,560 (82.5)	1,237	37.4	14,024 (80.9)	1347	34.7	14,664 (79.1)
Systolic BP	706	7.3	7,200 (42.6)	442	5.1	8,996 (51.0)	453	4.8	7,841 (45.2)	431	4.2	8,354 (45.0)
Diastolic BP	610	6.2	7,031 (41.6)	401	4.6	8,829 (50.0)	448	4.6	7,684 (44.3)	472	4.5	8,159 (44.0)

Table 3b [Table 3 continued]

Aggregate All Respondents Risk Factor	% Change (2006-2007)	% Change (2007-2008)	% Change (2007-2009)	% Change (2008-2009)
Alcohol Use	-1.2*	0.1	0.3	0.2
Depression	-2.6*	0.1	0.4	0.3
Injury Prevention	-4.0*	-1.0*	2.3*	3.3*
Mental Health	-5.1*	-0.5	-0.4	0.1
Nutrition	-12.9*	3.9*	3.8*	-0.1
Physical Activity	-3.5*	5.8*	3.8*	-2.0*
Sun Damage Behavior	-6.6*	0.7	0.4	-0.3
Smoking Behavior	-2.3*	-1.5*	-1.9*	-0.4
Stress Behavior	-4.6*	-0.5	-0.4	0.1
BMI Risk	-2.3*	-0.4*	0.2	0.6
Cholesterol	-3.5*	-2.3*	-3.8*	-1.5
Blood Glucose	4.3*	-1.6	-4.3*	-2.7*
Systolic BP	-2.2*	-0.3	-0.9*	-0.6
Diastolic BP	-1.6*	0.0	-0.1	-0.1

*p-value < .05, by chi square test

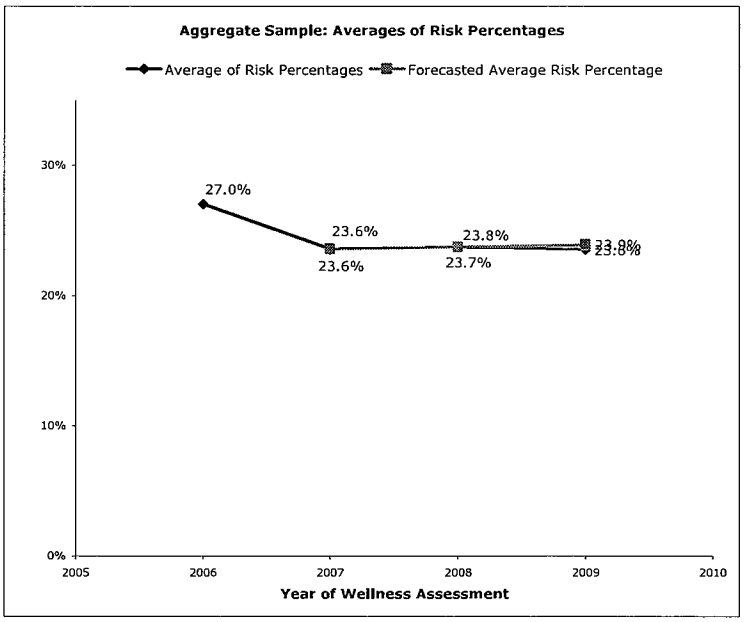
Figure 4



*Statistically significant changes flagged with asterisks.
Statistically significant improvements flagged in red.
Significance testing by chi square tests.

Figure 5 shows the average risk scores calculated for the aggregate sample over the 14 risk areas.

Figure 5



2. Utilization Related to Conditions Directly Affected by Changes in Risk Factors

Purpose of the Analysis

Analysis based on the King County wellness assessments indicates that the HRI has prompted employees and spouses/partners to change their behaviors to reduce their health risks. This analysis tested whether an examination of medical healthcare claims would confirm or cast doubt on the conclusions drawn from the wellness assessment. If there were no changes in medical care reflected around the period when the health risk improvements reported on the wellness assessments, that would be grounds for doubting that the HRI's apparent success (based on the wellness assessment) was associated with actual improvements related to the HRI's goal of reducing healthcare costs by improving employee health and healthcare. If the improvements seen in the wellness assessment could be seen in medical healthcare claims as well, that would be grounds for having more confidence in the conclusions drawn from the wellness assessment.

Strategy of the Analysis

Not every medical cost can be reduced on the same time scale by the HRI. An example of this is smoking. A smoker who quits after a 20-year habit will have immediate results and results that are going to take longer to appear. Immediate results are related to immediate reductions in blood carbon monoxide levels. Within months, lung capacity will improve. It may take a decade before the smoker's risk of lung cancer has dropped to the level of a non-smoker. For that reason, the HRI's success in fostering quitting smoking in 2006 would have shown up in diseases related to lung functioning – such as bronchitis – within a year. The full impact of that quitting on lung cancer should not be expected until 2016. A measure of impact in the fourth year that mixes bronchitis and lung cancer is diluting an indicator (bronchitis) that could reveal HRI successes with an indicator (lung cancer) that will produce savings for King County in the

future. To avoid such dilution, this analysis works with medical care for conditions that can respond quickly to interventions like the HRI.

This analysis looks at medical healthcare costs for sets of diagnoses. The sets were created by Aetna staff in response to a request for diagnoses for illnesses that would respond quickly to lifestyle interventions. Those diagnoses are here referred to as "early indicator" diagnoses. They do not completely account for savings associated with the HRI interventions. They are indications of what impact the interventions have had and they indicate the direction of later savings. For example, if no savings are found in an early-indicator area, it indicates that the HRI is not successful in that area, and it is reasonable to project that the savings from that area will not appear later in that area. Conversely, an area showing apparent impacts can be reasonably expected to produce larger savings later, unless the impacts only appear for employees, spouses, and partners who will leave King County healthcare coverage.

Diagnoses Related to Early Indicator Medical Care

The early-indicator diagnoses and their ICD-9 diagnostic codes appear in table 4.

Table 4
Early Indicator Diagnoses

Risk Area	Disease Group	Diagnosis	ICD-9 Diag-nostic Code
Alcohol Abuse	Gastritis	Gastritis and duodenitis	535
Alcohol Abuse	Gastritis	Atrophic gastritis	535.1
Alcohol Abuse	Gastritis	Hypertrophic gastritis	535.2
Alcohol Abuse	Gastritis	Alcoholic gastritis	535.3
Alcohol Abuse	Gastritis	Alcoholic gastritis with hemorrhage	535.31
Alcohol Abuse	Gastrointestinal Hemorrhage	Acute gastritis with hemorrhage	535.01
Alcohol Abuse	Gastrointestinal Hemorrhage	Atrophic gastritis with hemorrhage	535.11
Alcohol Abuse	Gastrointestinal Hemorrhage	Gastric mucosal hypertrophy with hemorrhage	535.21
Alcohol Abuse	Gastrointestinal Hemorrhage	Gastrointestinal hemorrhage	578.9
Alcohol Abuse	Other	Alcoholic psychoses	291.89
Alcohol Abuse	Other	Pathological Dislocation or displacement of joint	718.2
Alcohol Abuse	Other	Closed fracture of vault of skull without mention of intracranial injury	800
Alcohol Abuse	Other	Closed fracture of vault of skull without mention of intracranial injury	800.01

Table 4
Early Indicator Diagnoses

Risk Area	Disease Group	Diagnosis	ICD-9 Diag-nostic Code
Alcohol Abuse	Other	Closed fracture of vault of skull without mention of intracranial injury	800.02
Alcohol Abuse	Other	Motor vehicle traffic accident involving re-entrant collision with another motor vehicle	E811
Alcohol Abuse	Other	Motor vehicle traffic accident involving re-entrant collision with another motor vehicle	E812
Alcohol Abuse	Other	Motor vehicle traffic accident involving re-entrant collision with another motor vehicle	E813
Alcohol Abuse	Other	Motor vehicle traffic accident involving collision with pedestrian	E814
Alcohol Abuse	Other	Other motor vehicle traffic accident involving collision on the highway	E815
Alcohol Abuse	Other	Motor vehicle traffic accident due to loss of control, without collision on the highway	E816
Alcohol Abuse	Other	Noncollision motor vehicle traffic accident while boarding or alighting	E817
Alcohol Abuse	Other	Noncollision motor vehicle traffic accident	E818
Alcohol Abuse	Other	Motor vehicle traffic accident of unspecified nature	E819
Alcohol Abuse	Other	Nontraffic Accident Involving Motor-driven Snow Vehicle	E82
Alcohol Abuse	Other	Accident to watercraft causing submersion	E83
Alcohol Abuse	Other	Accident to powered aircraft at takeoff or landing	E840
Alcohol Abuse	Other	Accident to powered aircraft, other and unspecified	E841
Alcohol Abuse	Other	Accident to unpowered aircraft	E842
Alcohol Abuse	Other	Fall in, on, or from aircraft	E843
Alcohol Abuse	Other	Other specified air transport accidents	E844
Alcohol Abuse	Other	Home accidents	E849.0

Table 4
Early Indicator Diagnoses

Risk Area	Disease Group	Diagnosis	ICD-9 Diag-nostic Code
Alcohol Abuse	Other	Fall from one level to another	E884
Common Mental Health Conditions	Depression	Major depressive disorder, single episode	296.2
Common Mental Health Conditions	Depression	Major depressive disorder, single episode	296.21
Common Mental Health Conditions	Depression	Major depressive disorder, single episode	296.22
Common Mental Health Conditions	Depression	Major depressive disorder, single episode	296.23
Common Mental Health Conditions	Depression	Major depressive disorder, single episode	296.24
Common Mental Health Conditions	Depression	Major depressive disorder, single episode	296.25
Common Mental Health Conditions	Depression	Major depressive disorder, single episode	296.26
Common Mental Health Conditions	Depression	Neurotic disorders - Neurotic depression	300.4
Common Mental Health Conditions	Depression	Depressive disorder, not elsewhere classified	311
Common Mental Health Conditions	Depression	Special screening for mental disorders and developmental handicaps - Depression	V79.0
Common Mental Health Conditions	Stress and Anxiety	Transient organic psychotic conditions	293.84
Common Mental Health Conditions	Stress and Anxiety	Other nonorganic psychoses. Includes: psychotic conditions due to or provoked by: emotional stress	298
Common Mental Health Conditions	Stress and Anxiety	Neurotic disorders	300
Common Mental Health Conditions	Stress and Anxiety	Neurotic disorders - Phobic disorders	300.2
Common Mental Health Conditions	Stress and Anxiety	Special symptoms or syndromes, not elsewhere classified	307.42
Common Mental Health Conditions	Stress and Anxiety	Special symptoms or syndromes, not elsewhere classified	307.44
Common Mental Health Conditions	Stress and Anxiety	Acute reaction to stress	308
Common Mental Health Conditions	Stress and Anxiety	Acute reaction to stress. Includes: catastrophic stress - combat	308

Table 4
Early Indicator Diagnoses

Risk Area	Disease Group	Diagnosis	ICD-9 Diag-nostic Code
		fatigue - gross stress reaction (acute)	
Common Mental Health Conditions	Stress and Anxiety	Adjustment reaction: Separation anxiety	309.21
Common Mental Health Conditions	Stress and Anxiety	Adjustment reaction to chronic stress.	309.24
Common Mental Health Conditions	Stress and Anxiety	Adjustment reaction. Includes: adjustment disorders - reaction (adjustment) to chronic stress.	309.28
Obesity	Obesity	Overweight, obesity and other hyperalimentation	278
Obesity	Obesity	Overweight, obesity and other hyperalimentation	278.01
Obesity	Obesity	Overweight, obesity and other hyperalimentation	278.02
Smoking	Asthma	Asthma	493.9
Smoking	Asthma	Asthma, Unspecified type	493.91
Smoking	Asthma	Asthma, Unspecified type	493.92
Smoking	Asthma	Special screening for cardiovascular, respiratory, and genitourinary diseases - Chronic bronchitis and emphysema	V81.3
Smoking	Bronchitis	Acute bronchitis and bronchiolitis	466
Smoking	Bronchitis	Acute bronchitis and bronchiolitis	466.1
Smoking	Bronchitis	Acute bronchitis and bronchiolitis	466.11
Smoking	Bronchitis	Acute bronchitis and bronchiolitis	466.19
Smoking	Bronchitis	Bronchitis, not specified as acute or chronic	490
Smoking	Bronchitis	Chronic bronchitis	491
Smoking	Bronchitis	Chronic bronchitis	491.1
Smoking	Bronchitis	Chronic bronchitis	491.2
Smoking	Bronchitis	Chronic bronchitis	491.22
Smoking	Bronchitis	Chronic bronchitis	491.8
Smoking	Bronchitis	Chronic bronchitis	491.9
Smoking	Flu	Influenza	487.1
Smoking	Pneumonia	Pneumonia due to adenovirus	480
Smoking	Pneumonia	Pneumonia due to respiratory syncytial virus	480.1
Smoking	Pneumonia	Pneumonia due to parainfluenza virus	480.2

Table 4
Early Indicator Diagnoses

Risk Area	Disease Group	Diagnosis	ICD-9 Diag-nostic Code
Smoking	Pneumonia	Pneumonia due to other virus not elsewhere classified.	480.8
Smoking	Pneumonia	Viral pneumonia, unspecified	480.9
Smoking	Pneumonia	Pneumococcal pneumonia	481
Smoking	Pneumonia	Pneumonia due to Klebsiella pneumoniae	482
Smoking	Pneumonia	Pneumonia due to Pseudomonas	482.1
Smoking	Respiratory Infection	Acute upper respiratory infections of multiple or unspecified sites	465
Smoking	Respiratory Infection	Acute upper respiratory infections of multiple or unspecified sites	465.8
Smoking	Respiratory Infection	Acute upper respiratory infections of multiple or unspecified sites	465.9
Smoking	Respiratory Infection	Upper respiratory tract hypersensitivity reaction, site unspecified.	478.8
Smoking	Respiratory Infection	Other and unspecified diseases of upper respiratory tract	478.9
Uncontrolled high blood sugar and cholesterol	High Blood Glucose	Impaired fasting glucose	790.21
Uncontrolled high blood sugar and cholesterol	High Blood Pressure	Essential hypertension	401.01
Uncontrolled high blood sugar and cholesterol	High Blood Pressure	Essential hypertension	401.9
Uncontrolled high blood sugar and cholesterol	High Cholesterol	Disorders of lipoid metabolism	272
Uncontrolled high blood sugar and cholesterol	High Cholesterol	Pure hyperglyceridemia	272.1
Uncontrolled high blood sugar and cholesterol	High Cholesterol	Mixed hyperlipidemia	272.2

Target Sample

This analysis works with data from a subset of King County employees and their dependents. The analysis works with medical claims for employees and their spouses/partners who are covered in KingCare[SM], King County's self-insured program that is administered by Aetna. Children are not included; nor are Group Health members.

Dropped Spouses/Partners Excluded

In 2007, King County began charging a benefit access fee for medical coverage for spouses/partners who had other medical coverage. That change inspired roughly 600 employees to have their spouses/partners dropped from KingCare coverage. Those partners were members who had lower costs to King County, partly due to their additional medical coverage. The result is that the average costs per member rose in January 2007. That rise was unrelated to increased medical care. To avoid the misleading impact of these dropped spouses/partners, claims from those spouses/partners were excluded from all years for this analysis.

Pacificare Members Excluded

In 2003, King County stopped a contract with the Pacificare HMO, prompting the addition of several thousand members to KingCare. These new members were, on the average, younger than members who had been covered in KingCare[SM] earlier, and their costs at the start of 2003 were reduced partly due to bureaucratic difficulties related to the transition to KingCare[SM].

The members remaining in the population being studied are a clean sample that has less misleading year-to-year changes in medical care costs.

Allowed Claims

This analysis works with "allowed" claims that include the employees' costs, King County's costs, and any costs covered by other insurance. The reason for this is that deductibles and copays were changed in 2003 and then changed again for some members in 2007. If the analysis looked only at King County's costs, the changes in 2003 and 2007 would produce drops in costs, but the drops would not reflect drops in medical care. Allowed claims provide a cleaner measure of quantity of medical care used.

Per Member Per Month (PMPM)

The costs shown are average costs per member per month. The statistics shown average over variation between members and across months within each year.

Incurred Basis

The costs shown are reported on an "incurred" basis. That is, costs in 2006 reflect healthcare provided in 2006, whether it was invoiced to King County in 2006 or later, and likewise for the other years. Because claims for some healthcare in 2008 and before will appear in coming months, the allowed amounts reported are adjusted using an actuarial completion method so that they are best estimates of what was spent on medical care in each year.

Projection

For each risk area, costs from 2002 through 2006 are projected forward using an inflationary regression model. This model is the "exponential" trend line built into Microsoft Excel, and is based on the following model:

$$\ln(\text{PMPM}) = b_0 + b_1 \text{year} + e$$

So the forecasts are exponentiated outputs of a linear function of year. Such a model assumes that costs grow in an inflationary manner and fits medical costs better than alternatives.

Pre-HRI: 2002-2006

The baseline ("Pre-HRI") for the projections is 2002 through 2006. The first HRI programs began in 2005 with five pilot programs. 2006 included the start of the wellness assessment and individualized action plans with telephone coaching. One of the initial five programs has been dropped due to ineffectiveness, and in October, 2007, the remaining programs were overhauled. Including 2006 in the baseline is based on a conclusion that the initial five programs as they were initially set up had negligible impact and other supportive environment programs were not yet operationalized, so that it is best to say that the first HRI program of consequence was the wellness assessment that began in January 2006.

Timing of Impacts

When respondents report having a risk in 2006 and not having that risk in 2007, it is expected that the impact of their changing their behavior will show up in 2006 compared to 2005. The reason for this is that they reported the risk in January of 2006. Almost all then participated in telephone coaching in the early months of 2006. If they made a change, it is likely that they made it at the beginning of 2006 and that their costs in 2006 were reduced, even though their change would not show up in a wellness assessment until the following January.

Smoking

In the 4th HRI M&E report, figures 11-13 show several things. First, according to the wellness assessment responses, smoking dropped from 10.1% in 2006 to 8.2% in 2007. That drop on the wellness assessment was associated with a drop from a PMPM cost of $1.72 in 2005 to $1.21 in 2006 in smoking related illness. That drop appears after three consecutive years of cost growth and is followed by two consecutive years of cost growth, as if the cost trend were starting up again on a lower version of the prior cost trend. This is roughly the impact pattern seen in the wellness assessment data overall – a change in 2006-2007, followed by much less change in later years.

In the 4th HRI M&E report, figure 11 and figure 12 are shown with a pie chart that gives some idea of how much each of the diagnoses contributes to the PMPM costs. In the case of smoking, the PMPM costs are pretty much 1/3rd–1/3rd–1/3rd bronchitis, asthma, and respiratory infections. This analysis is not saying that all of the bronchitis, asthma, and respiratory infections are related to smoking. It is only saying that, if smoking were reduced in 2006, then the costs associated with these illnesses would show a drop in 2006. That drop appeared, providing support beyond the wellness assessment data for the conclusion that smoking was reduced in 2006.

Because the HRI was not instituted in an experimental design, it is not possible to rule out the possibility that changes that are coincident with HRI program starts are due to other factors. For smoking, at least part of the impact is probably due to the commencement of new Washington State workplace smoking restriction laws that began in 2006 that prohibited smoking in places of employment or within 50 feet of their entrances.

Uncontrolled high blood sugar and cholesterol

In the M&E report, figure 16 shows that the early-indicators list of diagnoses includes costs for blood health that are roughly a half high blood pressure and a half high cholesterol. Both of these would respond to improved exercise and diet as well as other risks with changes shown in figure 1 above. In the M&E report, figure 15 shows that costs associated with high cholesterol

and high blood pressure dropped from 2005 to 2006 from $7.83 to $7.55. As with smoking, that initial drop is followed by a renewed trend upward.

Obesity

In the M&E report, figure 19 shows that all of the Obesity-related costs are associated with diagnoses of obesity. This risk area is not a combination of diseases – it is just obesity diagnoses. During the baseline, the changes in obesity costs are highly variable and all of the post-baseline measures are well within a margin of error of what would have been predicted from the baseline.

Alcohol Abuse

In the M&E report, figure 22 shows that all of the early indictors for success at reducing excessive alcohol consumption are related to gastritis. For that reason, any changes related to increased use or effectiveness of proton pump inhibitors (a recently developed and highly effective treatment for gastritis) would be an important confounding factor. Figure 21 shows that gastritis costs rose at a fairly steady trend before 2006 and that 2006-2008 costs are below a margin of error for projections from the baseline.

Common Mental Health Conditions

In the M&E report, figure 25 shows that the mental health costs are almost all depression. Depression may respond to a variety of the reduced risks. Figure 24 shows that depression costs dropped on a very steady trend from 2002 to 2006, and rose to a new level in 2007. This rise is mostly due to the appearance of mental-health parity in 2006. Not all potential demand related to mental health parity was expressed in 2006. It may take more than a year for such a benefit plan change to fully affect the plan members.

3. Financial Impacts

Growth of King County & Employees'/Families' Health Care Costs

The financial impacts section of the M&E report starts with an update on a graph provided in both 2007 and 2008. The graph (figure 26) shows "allowed" medical and pharmacy claims for full-time active employees and their dependents enrolled in KingCare^{SM} from 2003 through 2009. "Allowed" claims are the total claims that are actually covered by the plan (some claims sent to the plan are for services that are not covered by the plan – not allowed.) Payment for allowed claims come from a combination of the amount paid by King County; amounts paid by employees as deductibles, copays and other employee out-of-pocket expenses; and payments by other insurance companies when employees have additional health coverage under another employer plan. The statistics shown in figure 26 are not adjusted for inflation.

The HRI aims to improve employee health and healthcare. Changes in allowed claims reflect changes in employee health and healthcare independently of changes in the plan structure. For example, imagine a family receives $1,000 in care at an emergency room and pays a $50 copay and a $250 deductible. King County would pay $700. Now imagine that the copay is raised to $100 and the deductible to $400. King County's share goes down to $500, even though the employee's health and healthcare remain the same. In both cases, the allowed costs would be $1,000. In that way, allowed costs are a cleaner measure of employee health and healthcare.

Statistics reported in figure 26 match statistics reported in figure 11 of the Third HRI M&E report, and figure 7 of the Second HRI M&E report. The statistics in figure 26 do not include members of ATU Local 587 who receive partial benefits.

Statistics shown in figure 26 are on an incurred basis, and are adjusted for coming claims to provide a clear picture of costs in recent years. Claims totals for 2007 and 2008 are adjusted by a completion factor method for coming claims. Due to claims that have arrived at King County since the last M&E report, there are small differences between some of the claims totals reported in figure 26 and earlier M&E reports.

The totals shown in figure 26 include both medical and pharmacy claims costs. (Pharmacy costs were 19.7% of the totals in 2003 & 17.7% in 2008). The totals shown are not adjusted for changes in enrollment – increases in the workforce increase the rises shown in figure 26 and slowdowns in workforce increases slow the cost growths shown in figure 26.

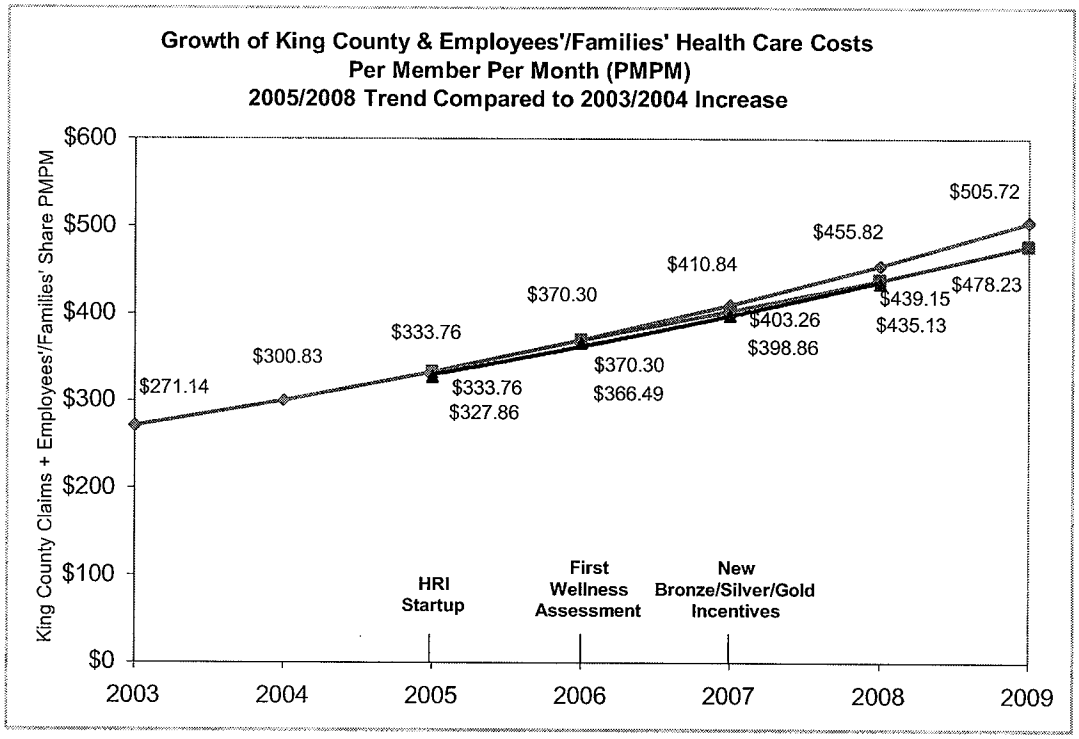
The top line in figure 26 that starts at $80M and rises to $148M is the increase in totals from 2003 and 2004 projected forward. From 2003 to 2004, the total allowed claims increased 10.8% (from $79.847M to $88.496M). The rise to $148M is the rise that would have been expected if allowed claims continued rising by 10.8% each year.

In figure 26, the bottom line that rises from $97M in 2005 to $126M in 2008 shows the actual allowed totals seen in 2005 through 2008. The center line that rises from $98M in 2005 to $140M in 2009 represents the target growth of 8.9% approved by King County Council in 2007.

Figure 26 of the 4th HRI M&E on a PMPM Basis

In the 4th HRI M&E report, figure 26 shows total allowed claims. Totals rise and drop with enrollment, so employees could get sicker, but the totals might drop if the number of people covered drops. To show cost growths after removing the effects of rising and falling enrollments, figure 6 below shows the same data as figure 26 in the M&E report, except that each statistic in figure 6 is allowed claims per member per month.

Figure 6



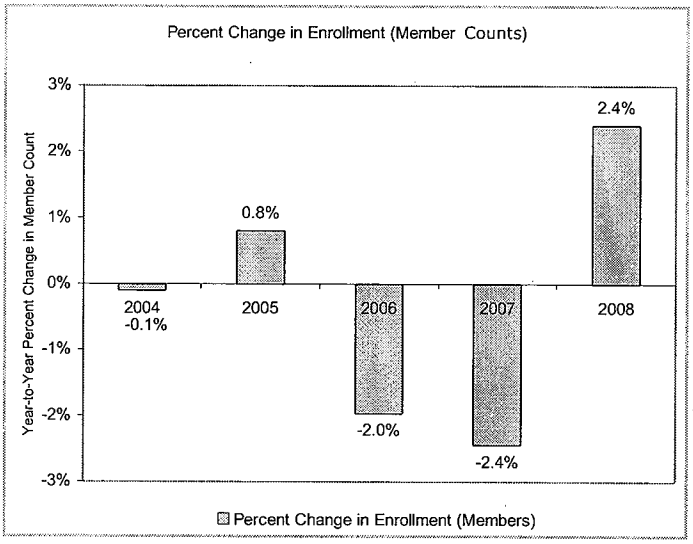
Blue lines with diamonds: 2003-2004 actuals with 2003-2004 cost increases projected forward to 2009
Red line with squares: target claims set in 2007 and approved by Council
Green triangles: Actuals
Green line: Trend line fit to actuals, based on an inflationary (exponential growth) model

In figure 6, the top line (with diamonds) shows the 2003-2004 cost increases projected forward; the middle line (with squares) shows targets set in 2007; and the bottom line (with triangles) shows actuals.

Statistics shown in figure 6 are not adjusted for inflation. They are KingCare^{SM} medical and Rx claims incurred in each year for active employees and their families with full benefits. Claims for COBRA, early retirees, retired sheriff (in the LEOFF1 plan), and Local 587 partial-benefits employees are excluded. Unlike reporting provided elsewhere in the HRI M&E report, data from spouses and partners dropped from King County's self-insured medical plan, KingCare^{SM}, in 2007 *are* included in the pre-2007 statistics in figure 6.

The patterns in figure 6 would match those of figure 26 in the 4th HRI M&E if the number of people covered in KingCare^{SM} had held steady from 2003 through 2008, but enrollment counts varied, as shown in figure 7. Spouses/Partners per employee dropped in 2007. Children per employee dropped in 2006. The drops in enrollment in 2006 and 2007 reduced the growth in *total* costs in those years on a PMPM basis.

Figure 7



Differences between Actual and Projected Costs

Table 5 lists the statistics shown in figure 26 of the fourth HRI M&E report. Actual costs shown in figure 26 have been below costs that were calculated by projecting the 2003-2004 actual cost growth forward through 2008. The right-most column in table 5 shows the differences between the actuals and the costs that would have appeared if the 2003-2004 cost increase had continued through 2008.

Table 5
Healthcare Claims Statistics Graphed in Figure 26 of the 4th HRI M&E

	Actual / Projected Medical/Rx Claims Costs	Percent Change	Targeted Medical/Rx Claims Costs	Target Percent Change	Target Medical/Rx Savings	Actual Incurred Allowed Medical/Rx Claims*	Percent Change	Medical/Rx Differences from Projected Costs
2003	$79.847M					$79.847M		
2004	$88.496M	10.8%				$88.496M	10.8%	
2005	$98.083M	10.8%	$98.083M	10.8%		$97.226M	9.9%	$0.857M
2006	$108.707M	10.8%	$108.707M	10.8%		$106.544M	9.6%	$2.164M
2007	$120.483M	10.8%	$118.382M	8.9%	$2.101M	$113.120M	6.2%	$7.363M
2008	$133.534M	10.8%	$128.918M	8.9%	$4.616M	$126.376M	11.7%	$7.158M
2009	$147.999M	10.8%	$140.392M	8.9%	$7.607M			
Total					$14.324M			$17.541M

Medical/Rx claims costs in table 5 are on an incurred basis and do not include Group Health Costs. The data stipulations related to figure 26 of the 4th HRI M&E and figure 6 (above) apply

to the statistics shown in table 5 and table 6 (below): the statistics are limited to active full-benefits employees and dependents covered in KingCare[SM]. Table 6 shows the statistics shown in figure 6 (above). The difference between table 5 and table 6 is that table 6 shows the statistics on a per employee per month (PMPM) basis.

Table 6
Healthcare Claims Statistics Graphed in Figure 6 of this Report

	Actual / Projected Medical/Rx Claims Costs PMPM	Percent Change	Targeted Medical/Rx Claims Costs PMPM	Targeted Percent Change	Target Medical/Rx Savings PMPM	Incurred Allowed Medical/Rx Claims PMPM	Percent Change in Incurred Allowed Medical/Rx Claims	Medical/Rx Differences from Projected Costs	Member Count	Total Difference
2003	$271.14					$271.14			24,540	
2004	$300.83	10.9%				$300.83	10.9%		24,515	
2005	$333.76	10.9%	$333.76	10.9%		$327.86	9.0%	$5.90	24,712	$1.750M
2006	$370.30	10.9%	$370.30	10.9%		$366.49	11.8%	$3.81	24,226	$1.109M
2007	$410.84	10.9%	$403.26	8.9%	$7.58	$398.86	8.8%	$11.98	23,634	$3.399M
2008	$455.82	10.9%	$439.15	8.9%	$16.67	$435.13	9.1%	$20.68	24,203	$6.007M
2009	$505.72	10.9%	$478.23	8.9%	$27.49					
Total					$51.74			$42.38		$12.264M

The statistics reported here are the result of changes in a variety of factors that drive King County's healthcare benefit costs. Those factors include:

- Employee health
- Medical care obtained
- Pricing of medical care
- Pharmacy prescriptions filled
- Pricing of prescription drugs
- Quality of medical care

Changes in any of these factors could outweigh or balance improvements in other factors. For example, an increase in medical care usage could appear at the same time as an improvement in health and result in higher healthcare costs, even though health has improved.

4. Healthy Hours Worked

Absenteeism

The measure of absenteeism shown in figure 27 of the 4th HRI M&E report is a question asked on the wellness assessment:

> "During the past 4 weeks, how many hours did you miss from work because of your health problems? Include hours you missed on sick days, times you went in late, left early etc., because of your health problems. Do not include time you missed to participate in this program."

Figure 27 summarizes answers to this question for 2006 and 2009. Table 7 shows the intervening years.

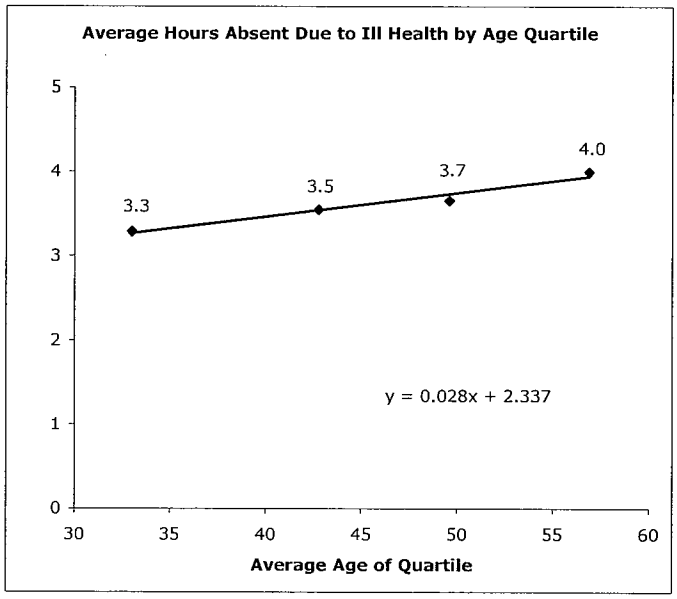
Table 7
Health-Related Absenteeism Statistics for 4,642 Employees
Reporting Health-Related Absenteeism in all four years (2006-2009)

Year	2006	2007	2008	2009
Average Hours Reported Absent due to Ill Health in Previous 4 Weeks	3.6	3.5	3.7	3.6
SD of Hours	11.5	11.0	11.4	12.5
Margin of Error	0.3	0.3	0.3	0.4

Table 7 statistics do not include employees who took the wellness assessment in all four years, but did not answer the health-related absenteeism question in all four years. For the 4,642 respondents reporting in all four years, none of the averages reported in any of the years is statistically significantly different from any other year (all $t(4641)<1.16$).

The employees producing the data shown in table 7 grew older each year. If it is usual for absenteeism to increase with age, then the holding steady (returning to 3.6) shown in table 7 would be an improvement. Figure 8 shows average hours of illness-related absenteeism by age quartile from the 2006 wellness assessment.

Figure 8



In 2006, the average employee added 0.028 hours of illness-related absenteeism per year of aging. The margin of error for the average illness-related absenteeism for 2009 reported in table 7 is 0.4. It would take more than a decade for the growth shown in figure 7 to exceed the margin of error of the 2009 absenteeism statistic in table 7. In the three years shown in table 7, the increase in age would be expected to add approximately 0.084 to the average absenteeism, raising it from 3.6 to 3.7. Because of the 0.4 margin of error, the 2.6 seen in 2008 is not statistically significantly different from the expected 2.7.

Absenteeism revealed in a 12-month question

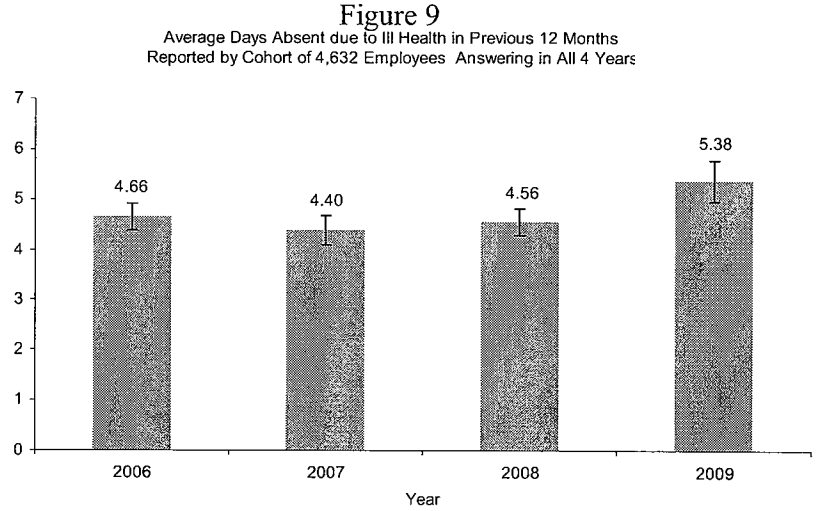
The 4th HRI M&E report summarizes answers to a question on the King County wellness assessment that asked about absenteeism in terms of hours in the previous four weeks. The wellness assessment also measured absenteeism with a second question, "In the past 12 months, how many days of work have you missed due to illness?"

Table 8 and figure 9 show the average days reported by the 4,632 employees who answered this twelve-month absenteeism question in all four wellness assessments (2006-2009).

Table 8
Health-Related Absenteeism Statistics for 4,632 Employees
Reporting Health-Related Absenteeism in all four years (2006-2009)

Year	2006	2007	2008	2009
Average Days Reported Absent due to Ill Health in Previous 12 Months	4.66	4.40	4.56	5.38
SD of Hours	9.28	9.96	9.07	14.18
Margin of Error	0.27	0.29	0.26	0.41

Figure 9

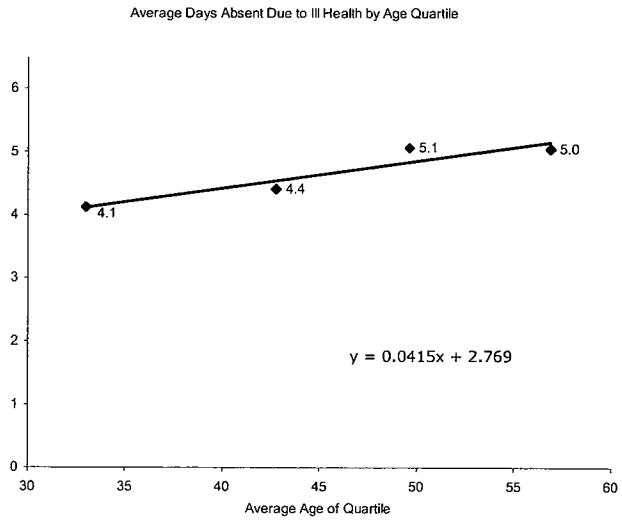


The vertical I-bars shown in figure 9 show 95% confidence intervals for the average answer.

The statistics in table 8 are based on the 4,632 employees who answered the health-related absenteeism question in all four years. From 2006 to 2008, none of the averages reported in any of the years is statistically significantly different from any other year (all $t(4,631)<1.50$). The 2009 average, 5.38 days, is statistically significantly larger than the averages from all of the other years (all $t(4,631)>3.15$).

The employees producing the data shown in table 8 grew older each year. Figure 10 shows average days of illness-related absenteeism by age quartile from the 2006 wellness assessment.

Figure 10



In 2006, the average employee had .0415 more days of illness-related absenteeism per year of aging. The 0.72 increase from 2006 to 2009 is larger than the 0.12-day increase that could be expected from aging. As with the four-week question about absenteeism, employees would have to age more than a decade before age-related increases in one-year absenteeism could be expected to show up as significant changes.

Presenteeism

The healthy hours worked (presenteeism) results included in the fourth HRI M&E report were calculated by Debra Lerner's research group at Tufts University. Debra Lerner developed the presenteeism measurement instrument that was included in the King County wellness assessment in 2008 and 2009. Data from that instrument were sent to Lerner's research group, and the reporting on presenteeism in the fourth M&E report is based on their analysis.

5. Additional Observations

In the fourth HRI M&E report, figure 29 shows cost statistics related to the clean sample used in the analysis of early indicator diagnoses. That sample does not include children or spouses/partners who were dropped from KingCare[SM] coverage at the beginning of 2007, when King County instituted a benefit access fee for spouses and partners with other medical coverage. Figure 29 shows costs for all medical care. Pharmacy costs are not included. Figure 29 shows the costs for employees and spouses/partners separately. Table 9 here shows employee and spouse/partner counts for the population represented in figure 29 in the fourth HRI M&E report.

Table 9

Member Counts for Statistics Shown in Figure 29 of the Fourth HRI M&E Report

(Excludes Spouses & Partners Dropped from KingCare[SM] in 2007)

Year	Employee Count	Spouse/Partner Count
2002	6,735	4,192
2003	6,645	4,052
2004	6,999	4,220
2005	7,133	4,333
2006	7,304	4,250
2007	7,529	4,314
2008	7,884	4,445

The medical costs reported in figure 29 are allowed claims on an incurred basis per member per month (PMPM), and not adjusted for inflation. Because the statistics for 2007 and 2008 are for medical care provided in 2007 and 2008, an actuarial technique, the completion factor method, was applied to estimate total costs including claims that have not yet been delivered to King County.

Figure 29 shows that, compared to their baseline and 2006, medical care costs for spouses/dependents jumped in 2007. This result will be studied in depth in the coming months in an effort to find what produced that jump in costs for spouses/dependents and to get a clearer conception of why the jump did not appear for employees.

6. Summary of Utilization

Utilization on a PMPM basis

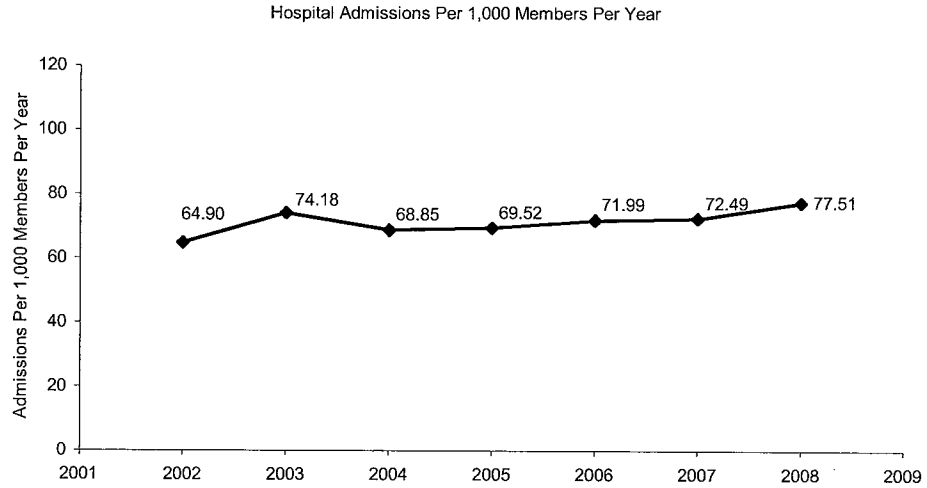
A key strategy of the HRI is to slow the growth in service utilization by improving member health. Although the *average* plan member aged three years during the 2002-2008 period, hospital admissions, emergency room utilization, and inpatient days have not risen with age, and

ambulatory utilization and prescription counts have not risen over their baseline trends. In general, increasing age is associated with increases in health care.

Hospital admissions

Figure 11 shows the number of inpatient hospital admissions per 1,000 members per year. Unlike the figures and tables shown above, the statistics in figure 11 includes members of local 587 who have partial benefits. From 2002 to the present, KingCare[SM] members partial-benefits members in local 587 have been between 0.2% and 0.7% of the the KingCare[SM] enrollment.

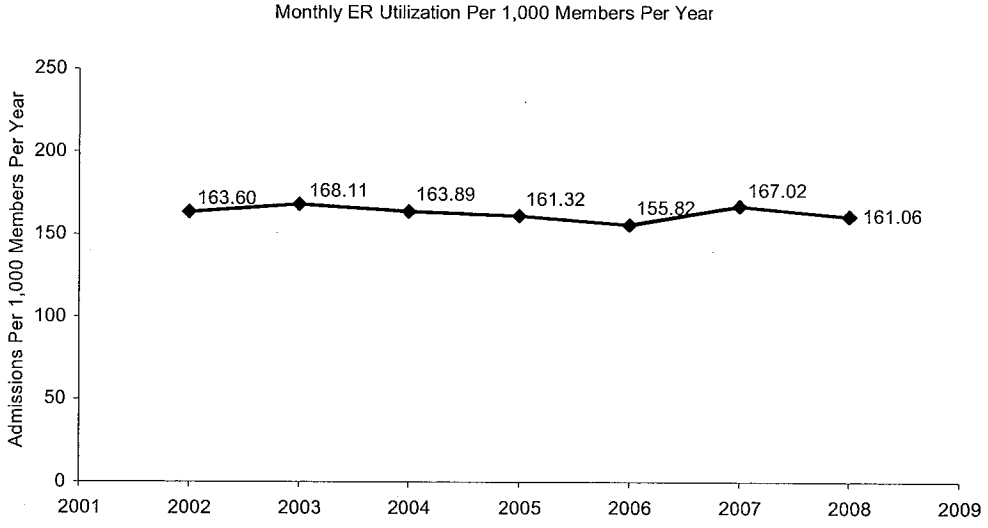
Figure 11



Emergency Room Utilization

Figure 12 shows emergency room utilization per 1,000 members per year. Due to de-identification of the King County healthcare database, for this analysis, ER utilization is defined as visiting an emergency room one or more times in a month. For example, a member who visited an ER on the 5th of the month, and then returned on the 20th of the same month would be counted as having only one ER utilization. That definition of ER utilization is applied to all years equally.

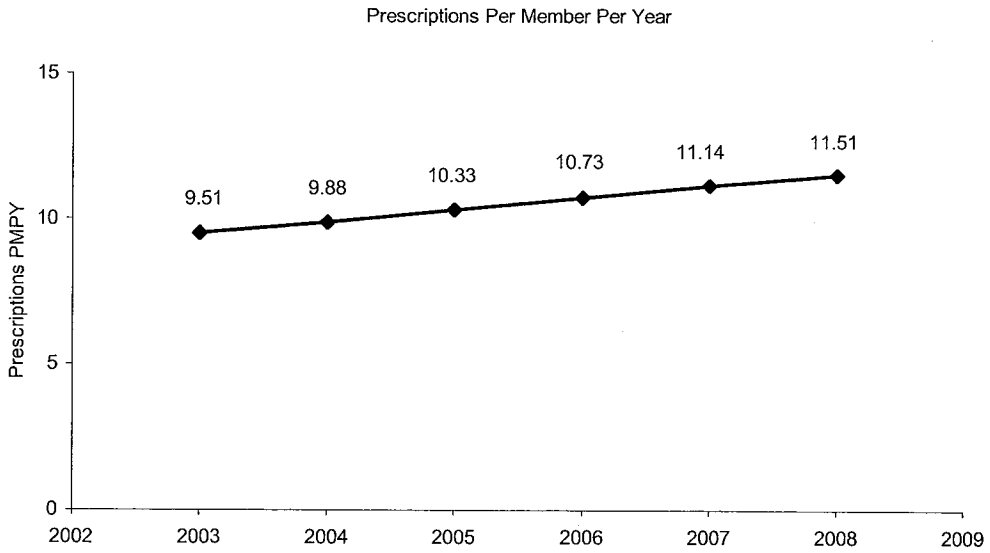
Figure 12



Prescription Counts

Figure 13 shows prescriptions filled per member per year. Because the counts in figure 13 are prescriptions filled, a single doctor's prescription that was filled and then refilled five times is counted as six prescriptions.

Figure 13

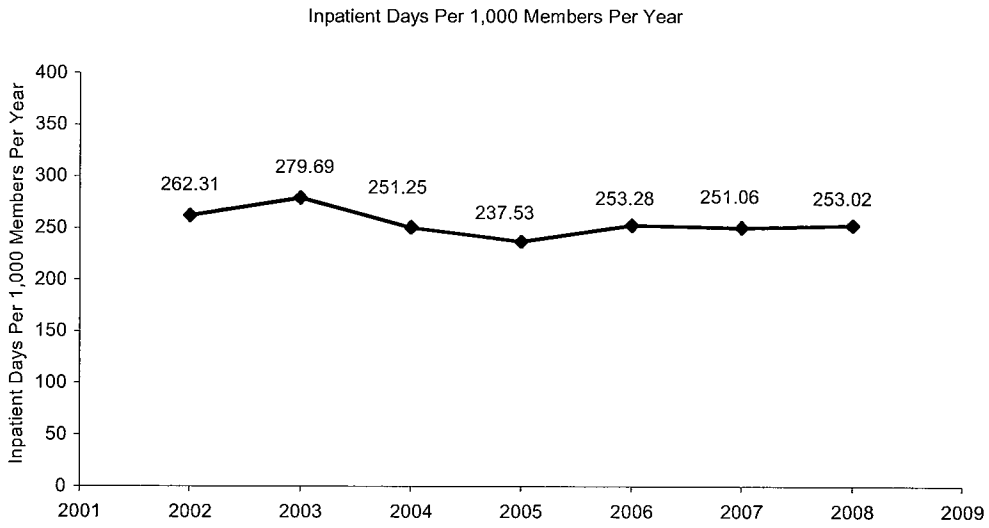


Prescription counts have been rising steadily since the beginning of 2003.

Hospital Days

Figure 14 shows hospital days per 1,000 members per year. Because a single hospital stay may result in multiple claims (e.g., pharmacy, testing, etc.), the statistics shown in figure 14 are based only on claims flagged as including an inpatient admission.

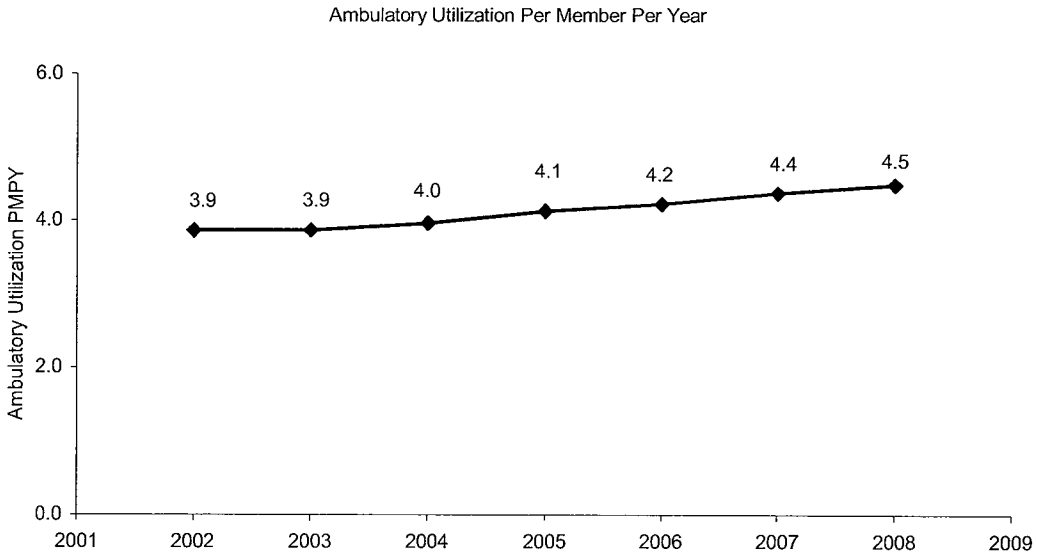
Figure 14



Outpatient Visits

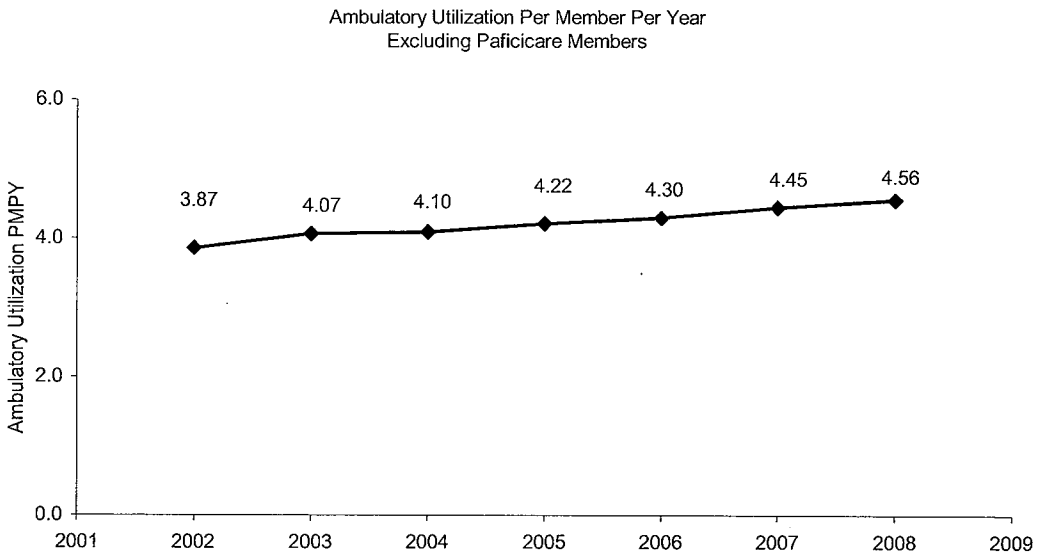
Ambulatory utilization is defined here as obtaining non-ER outpatient care one or more times in a month. A patient with an ambulatory visit on the 5th of the month and on the 20th of the same month is counted as having one ambulatory visit.

Figure 15



After holding steady from 2002 to 2003, ambulatory utilization rose steadily through 2008. The steady rate in 2002-2003 is due to the appearance in 2003 of members who had been covered in the Pacificare HMO in 2002. In 2003, the average Pacificare member visited a doctor less often than others, and adding them to the pool reduces ambulatory utilization on 2003-2008. Figure 16 shows ambulatory utilization after excluding prior Pacificare members.

Figure 16



Timeline of Health Reform Initiative Programs

Date	HRI Program Event
December 2004	Aetna Nurse Line pilot begun
December 2004	*Health Matters* monthly mailings begun
January 2005	Four Aetna pilot programs added: Aexcel Networks, Disease Management, Enhanced Member Outreach, MedQuery
January 2005	Puget Sound Healthcare Alliance begins start up
May 2005	First leadership forum on employee health
August & September 2005	Walk Fest 2005 pilot program
Mid-2005	Educational materials and manager toolkits created and presented to prepare for the Healthy Workplace Funding Initiative and Healthy Incentives program
September 2005	First Health & Benefits Fair
November 2005	Onsite flu shots provided
January 2006	First Annual Wellness Assessment (determined enrollment shift in 2007)
Feb-June 2006	Individualized telephone coaching of high-risk members
February-June 2006	Annual Intervention for low-risk members begun
March 2006	Contract awarded to Weight Watchers at Work
May 2006	Second leadership forum on employee health
Mid 2006	Healthy Workplace Funding Initiative ($25 per employee for workplace programs) process begun
September 2006	Second Health & Benefits Fair
November 2006	Second wave of onsite flu shots provided
January 2007	Benefits access fee, $100 emergency room copay, enrollment shift; Outcomes Begun
January 2007	Second Annual Wellness Assessment (determined enrollment shift in 2008)
February-June 2007	Second wave of individualized telephone coaching of high-risk members
February-June 2007	Second wave of annual intervention for low-risk members
May 2007	Third leadership forum on employee health
September 2007	Third Health & Benefits Fair
October 2007	Three pilot programs enhanced: Medquery enhanced with member messaging; Disease Management extended to a larger list of conditions; Enhanced Member Outreach integrated with enhanced MedQuery and Disease Management.
November 2007	Third wave of flu shots provided
January 2008	Aetna pilot program, Aexcel Networks, Stopped

7. King County Healthcare Database

To allow for analysis of healthcare benefit costs, claims (invoices) for medical care and pharmacy prescriptions are collected and stored in the King County Healthcare Database along with enrollment data from the Benefits and Retirement Operations Section (BROS).

De-Identification

All data are de-identified before being delivered to King County for inclusion in the King County healthcare database. De-identification means that identifying information (name, telephone number, work group) has been removed from the data. The de-identification process ensures that confidentiality for all employees and dependents is protected. De-identification also prevents reporting on particular work groups or work locations.

MEMORANDUM

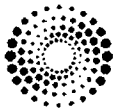
Ron Z. Goetzel, Ph.D.
Vice President of Consulting and
Applied Research in the
Healthcare division of
Thomson Reuters
Research Professor
Director of the Institute for Health and Productivity Studies
Emory University

August 7, 2009

Consultant Report:

FOURTH ANNUAL MEASUREMENT AND EVALUATION REPORT
HEALTH REFORM INITIATIVE (HRI)
Department of Executive Services
Human Resources Division
King County
August 2009

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



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Summary of Major Findings

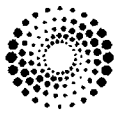
- The 4th Annual Measurement and Evaluation Report is a well-written, clear, analytically sound, and thorough report of the current status of King County's Health Reform Initiative (HRI).
- In full disclosure, Dr. Goetzel and colleagues are limited in their ability to completely validate the analyses without directly accessing and analyzing the raw health risk and medical claims data used in the Measurement and Evaluation Report.
- King County staff members have used sound and defensible statistical methods to analyze the HRI'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.

Background:

King County's Health Reform Initiative (HRI) engaged Dr. Ron Z. Goetzel, Ph.D., at Thomson Reuters to review its 4th Annual Measurement and Evaluation Report, to certify that the analyses contained therein are valid, and to suggest improvements in future analyses.

Overall report:

The 4th Annual Measurement and Evaluation Report is a well-written, clear, analytically sound, and thorough analysis of the current status of King County's Health Reform Initiative. The report is focused in King County's efforts to reduce the demand for (or use of) health care services and moderate the fees charged by the health care system for medical services. Dr. Goetzel's review is primarily focused on King County's efforts at improving employees' and spouses/domestic partners' health, reduce medical care costs, and improve workers' productivity (reduce absenteeism and presenteeism).



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Certification limitations:

In full disclosure, Thomson Reuters is limited in its ability to completely validate the analyses reported in the 4th Annual Measurement and Evaluation Report for several reasons:

- Thomson Reuters has reviewed the reports produced by King County 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 the results.

- Thomson Reuters was not involved with processing and cleaning of the data.

- The non-experimental nature of the HRI hinders any attribution of causation. For obvious and practical reasons, 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 King County employees have participated in the HRI throughout the study period. Therefore, by necessity, the design of the evaluation studies is 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 impact of the HRI in achieving its health and financial goals. 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. It is also impressive that the "percent missing" values (especially for biometrics) remain consistent over time which bolsters the reliability and validity of the data.

The changes in the burden of risk for conditions affected by behavior are largely consistent with results from the health risk analysis. Close attention should be paid, however, for medical services related to high biometric values (high cholesterol, blood sugar and blood pressure), obesity, and mental health as these costs are increasing over time.

Overall health care spending is within target. Much of the attenuation in trend is attributable to lower spending for prescription drugs, although, paradoxically the number of prescriptions per member per year has consistently increased over time. Concern is noted about the rise on costs for dependent adults who may not be adequately exposed to worksite-based interventions available to employees.

As noted in the report, employee absenteeism and presenteeism have remained stable over the course of the study period. When absenteeism is assessed using a 12 month framework, rather than for the prior four weeks, the rate of absenteeism increased significantly in 2009 when compared to a relatively even rate during the preceding three years. This may warrant further investigation to determine whether this self-reported absenteeism finding is consistent with administrative records.

Recommendations

In a previous review of a draft report, Ron Goetzel offered several recommendations for improving the methods used in the analysis. King County appropriately and adequately responded to the comments and recommendations offered. Below, we list some additional minor recommendations or suggestions regarding the analysis:

- In the main report, show N's (numbers of people) responding to survey questions within or next to the figures (e.g., for Figures 27 and 28).

- In the Technical Appendix, the scale used for figures should consistently be anchored at "0". Some are (e.g., Figures 11, 12) but others are not (e.g., Figure 13 and 15).

- Figure 6 in the Technical Appendix should include a key that describes the lines and symbols in the chart. The narrative below the figure defines the symbols but it is always helpful to include this information in the chart itself so that it can be displayed independently of the narrative.

- In conclusion, we recommend King County accept the analyses and conclusions of the 4th Annual Measurement and Evaluation Report.

King County

Health Reform Initiative

Independent Peer Review Panel Report

August 2009

CLEGG

Prepared by:

& Associates - 2009

Participants

Peer Review Panelists

Mike Cochran
Benefits Management Consultant

Peggy Hannon
Assistant Professor, Health Promotion Research Center, University of Washington

Dan Newton
Director, Total Health Management, Resolution Health, Inc

Cindy Watts
Director, Resource Center for Health Policy, University of Washington

Executive Office Staff

Caroline Whalen

HRI Measurement and Evaluation Committee:

Ruth Hultengren, Nick Maxwell, Karleen Sakumoto, Kerry Schaefer, David Solet, Wendy SooHoo

HRI Program Staff

Brooke Bascom, Barnaby Dow, Beth Glynn, Caroline Hughes, Don Robbins, Kristin Rohfliesch

Joint Labor Management Insurance Committee Members

Betty Sorbo, Randy Weaver

Consultant

Clegg & Associates
Judith Clegg, Irving Sambolin, Beka Smith

King County
Health Reform Initiative

Executive Summary

In 2009, King County convened a peer review panel of local health care experts to assess the King County Health Reform Initiative's (HRI) progress to-date in light of the draft Fourth Annual Measurement and Evaluation Report. The panel discussed the HRI's strategies and evaluation methods and identified opportunities to amplify the program's impacts.

The panel brought together the following experts:

- Mike Cochran, Benefits Management Consultant
- Peggy Hannon, Assistant Professor, Health Promotion Research Center, University of Washington
- Dan Newton, Director, Total Health Management, Resolution Health, Inc
- Cindy Watts, Director, Resource Center for Health Policy, University of Washington

The HRI's primary goals are to improve the health of employees and their families, to reduce the county's rate of cost increases for health care, and to increase employee productivity. In order to make progress toward these goals, the HRI designed and implemented a coordinated set of interventions to contain health-related costs, improve quality of health care in our region, and improve health and productivity among King County's employees and their dependents.

Peer Review Panel Findings and Recommendations

Members of the 2009 Independent Peer Review Panel began the discussion with a focus on the results described in the Fourth Annual Measurement and Evaluation report. Key findings included:

The HRI's Results to Date Are Impressive

The HRI is a well-designed and effectively implemented program that is achieving excellent results, not only in relation to progress on the key health indicators and the slowing of cost increases, but also in terms of employee participation.

Employee Risk Profiles Are Improving

The evaluation results indicate that the HRI has helped employees improve their risk profile in 12 out of 14 risk factor categories. This is a particularly significant accomplishment given the county's aging work force; most health care conditions become more expensive to address as people grow older.

Long-term Health Issues Will Take Time to Result in Lower Costs and Utilization

While the HRI program's results have been impressive to-date and show promise in short-term and intermediate measures of health and activity, long-term health issues—such as chronic conditions—will take time to register an impact.

Health Care Costs Are Growing at a Slower Rate

Because health care costs are so large in scale, even small decreases in their rate of growth can result in large reductions in expenditures over time. Therefore, King County's 8.8% increase in health care costs, rather than the 10.8% that was projected, represents a significant accomplishment.

Following its discussion regarding the HRI program's effectiveness, the panelists turned their attention to approaches the staff could take to enhance the initiative as it moves forward. The panel identified the following recommendations:

Regain the Cutting Edge

When the county launched the HRI program in 2004, it was a leader in the field. The industry is now much more sophisticated and offers tested methods for improving employee health and containing health-related costs. In order to gain from the experience of other programs, HRI staff should research the new promising practices that employers are implementing.

Delve Deeper into the Data to Better Target Interventions

In order to continue to make gains in employee and dependent health status and cost containment, the program needs to better understand the characteristics of those people who do not participate in the HRI and the barriers to their participation.

Gain a Better Understanding of Dependents

The HRI needs more sophisticated information about dependents' health status and their health care utilization, as well as their contribution to the county's costs. More information about dependents' actions and issues would help the HRI better tailor its outreach to this group.

Create Incentives for Addressing Chronic Conditions

Employers in the forefront of best practice employee health initiatives are implementing value-based insurance designs that actively reward members who adhere to recommended treatment plans for chronic conditions. King County should consider adopting this type of approach.

Research Integrated Approaches to Health-related Benefits and Services

King County is only dealing with the tip of the iceberg by not taking an integrated approach to its health care and disability management programs. The state-of-the-art among employers now calls for integrating short- and long-term disability, health promotion, health insurance, sick leave, and absenteeism efforts in an integrated system of services and data tracking.

Create Collaborative Opportunities for Vendors

The HRI contracts with multiple vendors to deliver its health interventions. There are likely opportunities to increase the HRI's effectiveness by bringing the individual vendors together to build collaborative interventions.

Strengthen the Policy Framework

The county needs to develop a clearer policy commitment to support improved employee and dependent health. Without this policy commitment, it can be difficult for the HRI to surmount reluctance among individual managers to implement workplace improvements that support employee health and to address roadblocks in implementation.

Overall, the peer review panel concluded that it was impressed with the HRI's success, including its improvements in health indicators and cost trends and its high participation rates. Panelists encouraged the county to build on its strong foundations and leverage its investment to create an even stronger program that equals those of cutting-edge employers throughout the country.

Building capacity for more sophisticated data analyses will help the HRI to move to the next level. With a more nuanced understanding of its impact on different populations, the HRI will be able to respond with increasingly sophisticated outreach and engagement messages, incentives for participation, and health promotion and disease management interventions.

This commitment to improving the HRI, along with the ability to measure its impact, will position the county to make continued progress toward meeting its goals of improved employee health and a slower increase in its health-related costs.

King County
Health Reform Initiative

Introduction

Background

King County launched the Health Reform Initiative in 2004 to achieve two goals—to improve the health of employees and their families, and to reduce the county's rate of cost increase for health care. The HRI added a third goal in 2007—to determine whether employee productivity increased as a result of improvements in health. In order to make progress toward these goals, the HRI designed and implemented a coordinated set of demand-side and supply-side interventions.

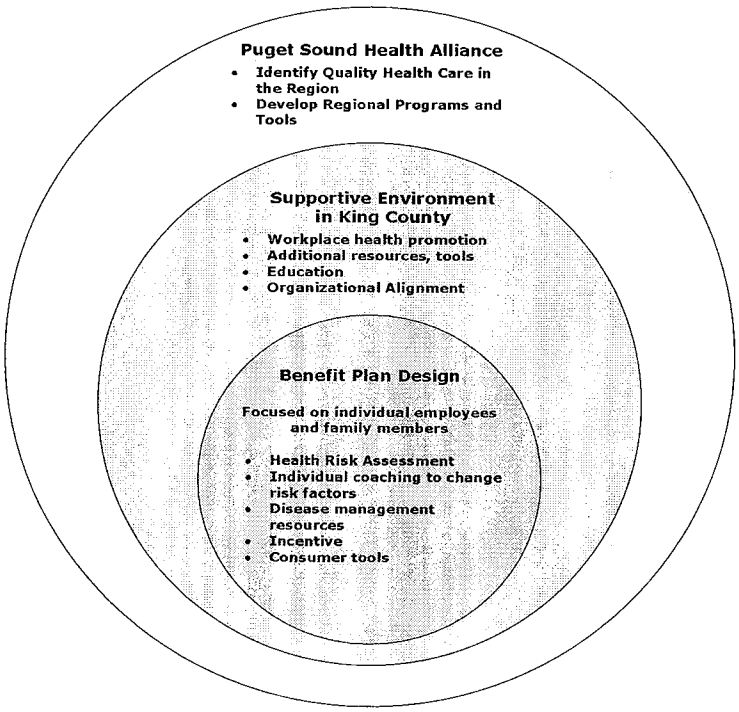
Programs to Reduce the Demand for (or Use of) Health Care

- The Healthy Incentives℠ benefit plan design helps employees and their families build good health behaviors and manage chronic conditions more effectively.
- "Healthy workplace" programs include efforts to educate employees about health and the wise use of health care resources, as well as workplace activities to support physical wellness, healthy eating, and preventive care (such as annual flu shots).

Programs to Moderate Costs of the Health Care System (the Supplier)

- The Puget Sound Health Alliance (PSHA) brings about changes in the health care system to improve the quality of care and reduce health care costs. PSHA promotes coordination of care across providers, encourages the use of evidence-based treatment guidelines, and has created a system of quality measurement used by all providers, health plans and health plan sponsors in the region.

The figure below depicts the HRI's integrated design.



Purpose of the Peer Review Panel

In order to ensure that the HRI's program strategies and evaluation methods are on target and to identify opportunities for improvement, the county invited a group of local health care experts to review the draft Fourth Annual Measurement and Evaluation Report and share their perspectives with staff from the Measurement and Evaluation Committee, Executive Office, HRI Program, and the Joint Labor Management Insurance Committee (JLMIC).

The panel held a facilitated half-day session to discuss the initiative's progress, the quality of the evaluation, and future opportunities for program improvement. More specifically, the panel discussion focused on three main questions:

- What can be learned from the 2009 Measurement and Evaluation Report regarding the effectiveness of the HRI program design and implementation?
- What changes could the HRI make to increase its effectiveness?
- How could the Measurement and Evaluation Committee refine the evaluation methodology to produce more sophisticated information for program improvement?

Building on the Results of the 2006 Peer Review Panel

The panel that convened in July 2009 was the second peer review panel brought together to assess the initiative and make recommendations for its improvement. In 2006, the county sponsored the first peer review panel to assess whether the HRI's strategies were in alignment with its intended goals of improving employee and dependent health and slowing health care cost increases. At that time, the five panelists agreed that early measurement and evaluation results were promising.

The 2006 peer review panel also made a number of recommendations to the HRI leadership regarding both program and evaluation-related improvements. HRI staff carefully assessed the feasibility of each recommendation and implemented many of them between 2006 and 2009. *(For a full list of the recommendations made by the 2006 panel and greater detail about the associated changes made to the HRI program, please see the Appendix.)*

"It sounds like you guys understand the importance of communications--you can have the best program in the world, but if employees don't know about it, it's worthless."

For example, key panel recommendations at that time included changes in the HRI's measurement and evaluation design. The panel recommended tracking biometric and intermediate measures, such as changes in physical activity, tobacco cessation, and flu shots, in order to better understand the HRI's impact on employees and their dependents' health status and actions. HRI staff successfully implemented these recommendations and created additional sources of data that informed the Fourth Annual Measurement and Evaluation Report and the 2009 panel's review.

The 2006 panel also recommended improvements in the county's work environment to better support employees' health. These recommendations included maintaining employees' motivation with a diverse set of events and activities. The HRI program responded to this recommendation with a wide range of events, competitions, and groups, such as Weight Watchers at Work®, the Live Well Challenge, and the creation of an activity center with workout equipment. The county also implemented the panel's recommendations to promote generic medications and expand communications and outreach.

In addition, the panel made several recommendations that the county evaluated but did not implement for various reasons, including feasibility and cost. Recommendations that were not implemented included

identifying peer groups for comparison, considering an onsite medical or pharmacy provider, implementing disease screening for high-risk populations, and developing a peer coaching program.

Key Findings: 2009 Independent Peer Review Panel

Members of the 2009 Independent Peer Review Panel began the discussion with a focus on the soundness of the HRI's program design. Next, panelists tackled opportunities to improve program quality, concluding with an exploration of how to sustain outcomes over the long-term. The following questions structured their conversation:

- What can we learn from the HRI's first three years of operation regarding the importance of the integrated program design in achieving the program's intended outcomes?
- What changes could the HRI make to the program design and/or implementation methods to increase the initiative's effectiveness and sustain its results over the long term?

The panel members displayed their in-depth knowledge of workplace health promotion and effective evaluation methodology and had thoroughly prepared for the session. As a result, the group's discussion yielded a trove of excellent findings and recommendations that HRI Program staff can employ to improve the program and its evaluation.

The Effectiveness of the HRI Program

The panelists held an animated and wide-ranging discussion regarding the impact of the HRI on its intended outcomes. The findings below represent consensus among panel members regarding the key program effectiveness findings.

"I think, actually, your results are amazingly good."

The HRI's Results to Date are Impressive

The HRI is a well-designed and effectively implemented program that is achieving excellent results, not only in relation to progress on the key health indicators and the slowing of cost increases, but also in terms of employee participation.

Employee Risk Profiles Are Improving

The evaluation results indicate that the HRI has helped employees improve their risk profile in 12 out of 14 risk factor categories. This is a particularly significant accomplishment given the county's aging work force. The HRI has been successful in helping employees maintain an improved risk profile as they age.

"The HRI maintained the risk profile for an aging population--that's huge."

Long-term Health Issues Will Take Time to Result in Lower Costs and Utilization

While the HRI program's results have been impressive to-date and show promise in short-term and intermediate measures of health and activity, long-term health issues will take time to register an impact. It will take more than five years to see the impact of changes in employee behavior, e.g., improved employee health and reduced treatment costs related to employee utilization of recommended health screenings.

"I was totally impressed by the cost data."

Health Care Costs Are Growing at a Slower Rate

Because health care costs are so large in scale, even small decreases in their rate of growth can result in large expenditure reductions over time. Therefore, King County's 8.8% increase in health care costs, rather than the 10.8% that was projected, represents a significant accomplishment.

Opportunities to Extend the Benefits of the HRI Program

Following its discussion regarding the HRI program's effectiveness, the panelists turned their attention to opportunities to enhance the program as it moves forward. Once again, the panel members' expertise enabled them to identify an important set of findings and recommendations. The group agreed that these issues are essential for the HRI Program to address in order to more fully achieve its purpose.

Regain the Cutting Edge

When the county launched the HRI program in 2004, it was a leader in the field. The industry is now much more sophisticated and offers tested methods for improving employee health and containing health-related costs. In order to gain from the experience of other programs, HRI staff should research the new promising practices other employers are implementing—for example, a number of cutting-edge employers now conduct more data-driven outreach strategies and integrate more of their health-related responsibilities.

Delve Deeper into the Data to Better Target Interventions

"Unfortunately, when times get tough, communications is one of the first things to get cut, when it's one of the most important."

In order to continue to make gains in both employee and dependent health status and cost containment, the program needs to better understand the characteristics of those people who do not participate in the HRI and the barriers to their participation. For example, 10% of employees do not take the health risk assessment (HRA). These individuals represent an opportunity for the program to increase its effectiveness by engaging nonparticipating employees, and potentially their dependents, who may have significant health risks and/or conditions.

Similarly, the program lacks sufficient data to know whether the Healthy Incentives℠ benefit plan has an adverse impact on particular employee groups, such as those who do not speak English as a first language. This limits the effectiveness of the program's communications strategies in reaching out to different groups and educating them about the financial impacts of failing to take an HRA or complete an individual action plan, and increases the financial burden on these employees.

The HRI should use data not only to better understand non-participants, but also to inform the focus of the program and to redesign and improve its strategies. Using data to reshape and hone the HRI's strategies will help the program continue to improve its results concerning medical costs and productivity.

Gaining a Better Understanding of Dependents Is an Important Next Step

The HRI needs more sophisticated information about dependents' health status and their health care utilization, as well as their contribution to the county's costs. More information about dependents' actions and interests would help the HRI better tailor its outreach to this group.

Create Incentives for Addressing Chronic Conditions

The existing incentive structure of the HRI is heavily focused on the wellness end of the health continuum. Although there are interventions for disease and chronic condition management, there are no incentives that encourage employees and their dependents to adhere to recommendations for managing these conditions. Employers in the forefront of best practice employee health initiatives are implementing value-based insurance designs that actively reward members who adhere to recommended treatment plans for chronic conditions. King County should consider adopting this type of approach.

Research Integrated Approaches to Health-related Benefits and Services

King County is only dealing with the tip of the iceberg by not taking an integrated approach to its health care and disability management programs. The panel indicated that a typical employer has an estimated 10% of its work force on disability at any one time. These employees often do not receive case management services and may account for 30% to 50% of the employer's total health care-related expenditures.

The state-of-the-art among employer-based health improvement and cost containment initiatives now calls for integrating short- and long-term disability, health promotion, health insurance, sick leave, and absenteeism efforts in an integrated system of services and data tracking. This type of integrated approach requires an in-depth understanding of the connections among these benefits and services, as well as their costs. A first step toward developing this type of analysis would be for the county to create a data warehouse that includes information on all of these programs. *(See the Recommendations section.)*

Create Collaborative Opportunities for Vendors

The HRI contracts with multiple vendors to deliver its health interventions. There are likely opportunities to increase the HRI's effectiveness by bringing the individual vendors together and encouraging them to build collaborative interventions. For example, integrating all of the behavioral health interventions scattered throughout the existing programs may be a good arena for collaboration among vendors.

Strengthen the Policy Framework around Health

The county needs to develop a clearer policy commitment to support improved employee and dependent health and the associated interventions necessary to achieve these results. Without this policy commitment, it can be difficult for the HRI to surmount reluctance among individual managers to implement workplace improvements that support employee health and to address roadblocks or slowdowns in implementation.

Recommendations

Once the panel members had thoroughly discussed their findings regarding the HRI's effectiveness and the associated opportunities for program improvement, they worked together to develop a set of recommendations. These recommendations fall into two main categories:

- Recommendations concerning program design and implementation
- Recommendations related to measurement and evaluation of the program

HRI Program Design and Implementation

King County Should Invest the Time and Resources Needed to Take the HRI to the Next Level

The HRI is a well-designed program that has produced excellent results to date. However, without building on this investment through continually improving the program, these results will likely taper off. Implementation of the following measures would help the HRI leverage its current investment to garner even greater overall gains in health and cost management.

"You need to make a really big investment in HRI-type programs to have any hope of achieving sustainable cost changes."

Research and Implement Evidence-based Strategies

The field of employee health management is evolving and more evidence-based programs and interventions are being developed by employers to achieve health status and cost trend improvements. These new approaches make use of data to more fully understand and engage subgroups such as dependents, employees who are not currently participating in the program, and others. Specifically, the HRI should use its data to identify and implement evidence-based approaches that:

- Sustain employee improvements in the key biometric indicators that have shown good progress
- Improve dependents' results on the key biometric indicators and utilization outcomes
- Add online shared decision-making tools for employees and dependents to use to prepare for making health care decisions in consultation with their providers
- Continue customization and increase the sophistication of the program to address the interests and needs of specific sub-populations within the county workforce
- Tailor physical activity interventions by worksite
- Increase employee productivity, including approaches that address the impact of dependents' illnesses on employees' work—these approaches could include in-person or virtual support groups for employees taking care of an ill partner
- Explore the correlations between absenteeism and specific health conditions
- Utilize the HRA as a method to raise awareness among and engage employees and their dependents in health-related activities, such as flu shots
- Improve the effectiveness of mid-level managers as change agents who have a key role to play in improving employee health and slowing increases in county health care costs

Develop Approaches to Address High-cost Conditions

Greater focus on the causes of high-cost claims and the development of enhanced programs to manage these claims and conditions will help the county to tailor its incentives and interventions to improve adherence to disease management protocols—ultimately improving health and lowering costs. The HRI should analyze sick leave data together with claims data to better understand the connections between health care costs and loss of productivity for specific conditions and use the information to target its interventions to maximize return on investment.

Conduct a Feasibility Analysis Regarding Integrated Approaches to Health-related Programs

The HRI should develop a business case describing an integrated approach to health care and short- and long-term disability-related programs and costs. This holistic approach has been implemented with success by other employers in the forefront of efforts to improve employee health and contain costs.

Fine-tune the Benefit Incentives Structure

The current incentives structure is well designed and provides a strong foundation for the program to build on. The HRI should continue to refine its incentives structure in order to produce more targeted results. Additional data analysis will help to identify those cost drivers that are most important in determining cost trends for the workforce. The HRI should target these key drivers with customized incentives, such as for adherence to disease management protocols. The program should be careful to implement incrementally any changes to the incentives structure that may result in increased costs for employees.

"Your 90% participation rate on the HRA is enormously impressive."

Customize Outreach to Specific Groups

Additional investigation and analysis will help the HRI to better understand why some employees choose not to participate in the HRA or fail to complete individual action plans, and therefore do not benefit from the incentive structure. For example, nonparticipants' decisions may be motivated by personal choice, language barriers, inability to complete the tool, lack of computer access, fear, or other factors. Understanding these issues is important in enabling the HRI to develop more targeted outreach that can increase its high participation rates even further.

Set Participation Targets for HRI Programs

Going forward, the county may benefit from establishing targets for participation in HRI programs. Targets can be set at the level of specific interventions, such as the percentage of employees and dependents with diabetes who participate in diabetes disease management programs.

Require Collaboration among Vendors

King County should explore building incentives into its vendors' contracts to encourage their collaboration on design and implementation of services. This will help to focus vendors on supporting the achievement of the HRI's overall goals rather than measuring the outputs of their individual interventions alone. Particularly, the HRI should push care management vendors to focus more strongly on improving employee engagement and incorporating evidence-based practices.

Bring Together the Peer Review Panel to Inform Each Year's Evaluation

Convening the Independent Peer Review Panel at the beginning of each year will assist the HRI in identifying the key issues to cover in the annual Measurement and Evaluation Report, as well as generate new ideas for program improvement.

Keep Working Collaboratively with Labor

Measures of employee satisfaction with the HRI are strong and suggest that the HRI brings significant benefits that improve the well-being of employees. The HRI should continue its partnership with labor around improving employee health and containing health care costs.

HRI Program Evaluation

> **"One of the neat things about the program is that everybody gets something out of it."**

Shift the Evaluation to a More Tactical Approach

To date, the evaluation has focused on big picture measures, looking at results for large population groups and the workforce as a whole. Going forward, the evaluation should adopt a tactical approach that generates data that informs the program about more specific issues, e.g., the characteristics of subgroups and the impact of the HRI on their health and health-related costs.

The HRI will need to enhance the sophistication of its evaluation methodology to generate this type of information. Specifically, enhanced data collection and analyses should enable the county to develop effective program enhancements to:

- Refine the incentives structure based on the impact of specific cost drivers on the county's health care cost trends
- Address the differential impact of specific cost drivers in terms of spending, e.g., pharmacy, sub-pharmacy, etc.
- Clarify the relationship between specific program interventions and specific clinical outcomes
- Compare the county to other high-performing employers on a set of standard health status, health care utilization, and cost benchmarks
- Project how employees' health status and associated health care costs would have changed without the HRI program's interventions
- Analyze health care utilization, including dependents' utilization patterns and trends
- Identify the distinguishing characteristics between those employees and dependents who participate in different HRI programs and those who do not
- Measure employees' and dependents' satisfaction with HRI interventions
- Assess the impact of Puget Sound Health Alliance products on employees' selection and utilization of specific health care providers
- Evaluate the results for employees making use of online shared decision-making tools once these tools are in place
- Calculate return on investment (ROI), i.e., analysis of the HRI's total costs per year in relation to annual changes in the county's cost trends

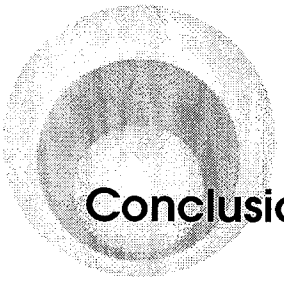
Pursue Data Integration

The HRI should consider using a third-party data warehouse to integrate the health-related data now housed in separate databases. This would help the HRI to overcome the issues related to HIPAA regulations protecting health information that currently keep the program from integrating data. The integration of data would enable the HRI to conduct more sophisticated and customized analyses that could link multiple employee and dependent characteristics with program participation patterns, as well as health status and utilization results. Integrated data made available through a third-party data warehouse would allow the HRI to identify benchmarks and correlations based on combinations of multiple types of data, such as sick leave, HRA results, health care utilization data from claims, health management results, and employee survey results.

Expand Employee Feedback

The HRI should implement strategies to increase the percentage of employees and dependents that provide feedback about the program. While the response rates for the HRI's satisfaction surveys are acceptable at approximately 40%, it would be beneficial to be sure that the program captures information from specific subgroups that may be isolated by their work locations, hours, or languages.

Strategies to increase feedback could include holding a series of focus groups with employees at different worksites and in various job classifications to hear directly about their perceptions of the program, their reasons for participating or not participating, and ideas for program improvements. These surveys should take place prior to the development of the annual employee and dependent satisfaction surveys and provide insights about the key issues that the surveys should cover.

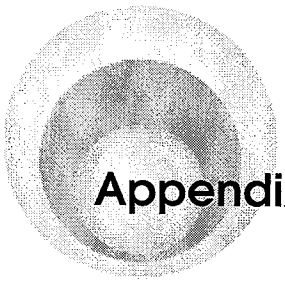


Conclusion

The Independent Peer Review Panel was impressed with the HRI's success, including its improvements in health indicators and cost trends and its high participation rates. Panelists encouraged the county to build on its strong foundations and leverage its investment to create an even stronger program that equals those of cutting edge employers throughout the country.

Building capacity for more sophisticated data analyses will help the HRI move to the next level. With a more nuanced understanding of its impact on different populations, the HRI will be able to respond with increasingly sophisticated outreach and engagement messages, incentives for participation, and health promotion and disease management interventions.

This commitment to improving the HRI, along with the ability to measure its impact, will position the county to make continued progress toward meeting its goals of improved employee health and a slower increase in its health-related costs.



Appendix

Evolution of the King County Health Reform Initiative 2005 – 2009

1st Year (2005 data) Measurement & Evaluation "Baseline"	2006 Peer Panel recommendations	2006 – 2009 HRI program changes	4th year (2008 data) Measurement & Evaluation results
Benefit design • Incentive based • Preventive services free • Health risk assessment • Individual action plan • Disease management	• HRA: add biometric measures • Add "intermediate measures" i.e. physical activity, tobacco cessation, flu shots, stress, member satisfaction etc. • Measure productivity • Identify peer groups for comparisons • Consider onsite medical/Rx • Examine disease screening for high risk populations • Consider peer coaching	**Panel recommendations:** **Add biometric measures** • Biometric measures added to HRA **Add intermediate measures, add productivity** • Intermediate measures included in early M&E. • Adopted four areas of measurement (Goetzel) - Change in risk profile - Change in burden of risk affected by behavior - Change in healthy hours worked (productivity) - Analysis of costs/ROI • Evaluated, not implemented • Evaluated, not implemented • Not implemented • Not implemented	• HRA: avg. 90% participation • IAP: avg. 86% participation • Improved 12 out of 14 Behavior/biometric risk factors • Reduced use of health care for 3 out of 5 conditions impacted by behavior change. • Smoking decreased 3.9 points (10.1% – 6.2%) • No change in absenteeism 2006-2009 • Growth in health care costs $18 million less than projected (11% to 9%)

1st Year (2005 data) Measurement & Evaluation "Baseline"	2006 Peer Panel recommendations	2006 – 2009 HRI program changes	4th year (2008 data) Measurement & Evaluation results
Supportive environment • Healthy Workplace programs • Organizational alignment • Robust communication	• Maintain motivation: add events, competitions, peer support groups • Promote and measure generic Rx • Expand communications messaging and outreach to new forms (web, etc.) • Expand outreach to dependents and external stakeholders	**<u>Panel recommendations:</u>** **Maintain motivation: add events, competitions, peer support groups** • Weight Watchers @ Work • Live Well Challenge • PEPS: early parent support groups • Gym discounts • Flu shots/Health fair • King County Walks Week • Bike to Work Month • Farm to Work pilot – fresh produce delivery to county office building • Free Activity Center with workout equipment and room where exercise classes meet • Logon & Learn: online decision support tools • Healthy snacks in vending machines	• Weight Watchers: Over 10,000 lbs lost • Live Well Challenge: 1,000 annual participation • 2 groups, 12 participants total • 29 gyms offer an average 20% off at 138 locations • Flu shots to 33% of target population. • 1,300 participants walked 11 million steps during highest annual event • 2009: 180 people biked to work in 37 teams

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Supportive environment (cont) • Healthy Workplace programs • Organizational alignment • Robust communication		**<u>Panel recommendations:</u>** **Promote generic Rx** • Choose generics promoted through campaign, lower co-pay differential **Expand communications messaging and outreach to new forms (web, etc.)** • Paper and web-based monthly newsletters • Employee focus ("Health Heroes") • Video **Expand stakeholder outreach** • Enhanced web sites including "toolkit" for stakeholders • Health Promotion Leadership Committee representing all departments • Stakeholder list with more than 200 names from the region and across the country • Steering committee for Live Well Challenge representing all departments • Healthy Building Committee (Chinook Building, with tenant department representatives)	• Rx Generic Fill Rate up 7.6% (to 65%) • Online newsletter: 40,000 hits since Jan 09 • National Recognition: o American Heart Assn. Fit Friendly Platinum designation o National Association of Counties Achievement Award o Seattle Magazine best places to work o Numerous speaking engagements

1st Year (2005 data) Measurement & Evaluation "Baseline"	2006 Peer Panel recommendations	2006 – 2009 HRI program changes	4th year (2008 data) Measurement & Evaluation results
Puget Sound Health Alliance • ID quality care in region • Clinical guidelines • Public reports	Not reviewed	• Comparison reports published • Clinical guidelines on generics, back pain, diabetes and heart published • Promoted to employees & dependents • Used for benefit plan design	• Public comparisons of 200 medical clinics on diabetes, heart disease, depression, low back pain and asthma; adherence to evidence-based guidelines for prevention, generics • 40 hospitals rated on health outcomes (e.g., heart attack, pneumonia, surgery, etc.) • Private reports to large purchasers, including King County, w/results for key health outcomes
Other	• Partner and test HRI principles with corporate sector	• Not implemented	