

City and County of San Francisco

**Wellness Plan Assessment and Development  
Initial Health Risk and Cost Overview**

June 12, 2013

Prepared by

 **Continuance Health Solutions**

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## Executive Summary

The City and County of San Francisco (CCSF) initiated the Wellness Plan Assessment and Development project with the goal of developing a comprehensive, strategic wellness plan that encourages participation and addresses key health risk factors and chronic conditions that can be modified through behavior change. In order to focus CCSF's resources on those issues that are having the greatest economic impact on CCSF's ability to deliver city services efficiently, the project includes an analysis and prioritization of the health status, risk factors, and medical needs that are inherent in CCSF's employees, retirees, and dependents.

This deliverable is intended to provide a preliminary, high-level overview of the health risks of the covered population and associated costs based on pre-existing aggregate reports. In this context, the associated costs represent the economic impact of the covered population's health status and include CCSF's costs for group health, sick pay, disability, and workers' compensation plans as well as indirect productivity-related losses associated with injuries and illnesses. Lost productivity incorporates the reduction in CCSF's ability to deliver services when workers are absent and on-the-job underperformance due to health-related issues (i.e., presenteeism). Actual data provided by CCSF was used for the bulk of this deliverable. When actual data were not available, Continuance used benchmark reports provided by the Integrated Benefits Institute (IBI) based on its database, which includes data from other similarly-sized public sector employers. See Appendices A and B for more details.

The findings presented in this deliverable serve as the foundation for the wellness plan that will be developed in subsequent phases of the project. Specifically, this deliverable establishes baseline values for the economic impact of the covered population's health status and provides insight as to the specific chronic conditions affecting the covered population. Focusing the proposed wellness plan on the risk factors associated with these conditions maximizes the effectiveness of CCSF's investments in wellness and health improvement.

- The total economic impact associated with the health status of the covered population is estimated at \$716 million per year for active employees, retirees, and their dependents based on Continuance's analysis of the aggregate reports provided to it by CCSF and on industry benchmarks. This equates to 10% of CCSF's annual budget for FY 2012. The annual economic impact for active employees and their dependents (i.e., excluding retirees) is estimated at \$607 million. Approximately half of this amount is attributed to the group health plans. The other half is attributed to paid sick days, workers' compensation, disability, and lost productivity. (Figure 1)
- Based on benchmark data, lost work days attributed to health issues put significant pressure on CCSF's ability to deliver city services efficiently. Industry benchmark data suggests that about 417,000 days or 1,800 fulltime equivalent positions are lost each year, which equates to a 7% loss in overall capacity to deliver city services. Lost work days include sick days as well as days covered by disability and leave plans. (Figure 2)
- Health Service System (HSS) reports indicate that medical and pharmacy costs increased over the last four years (i.e., January 2008 through December 2011) despite a significant decrease in covered lives. Over the four year span, the average cost per person increased at an average rate of 8% per year, well in excess of increases in CCSF's revenue base of the same time period. It is noteworthy, however, that over the last 18 months the average cost per person increased at an average annual rate of only 1%. (Figure 4)

- Chronic conditions connected to lifestyle choices represent a substantial portion of the overall economic impact, based on Continuance’s analysis of the aggregate reports provided to it by CCSF for direct health benefit costs and on industry benchmarks for lost work days. (Figures 10, 11, 12, and 13)
- According to industry benchmarks, thirteen common chronic conditions represent 30% of CCSF’s lost work days (125,000). (Figure 3)
- Five condition categories were identified as potential targets for wellness programming: cardiometabolic conditions (e.g., diabetes, high blood pressure, high cholesterol, heart disease, obesity, etc.), joint disorders, mental wellbeing, respiratory issues, and pain. According to Health Service System reports, these conditions represent approximately \$34 million for CCSF active employees and their dependents. Many of these conditions have long-term implications for the workforce and their dependents, which include higher health benefit costs, work-related injuries, and disability. Wellness programs that address the risk factors associated with these conditions have a strong value proposition, especially for organizations with longer employee tenure. (Figure 12)
- In particular, diabetes prevention and management should be a primary target. While diabetes costs are comparatively low in relation to other conditions, diabetics have a considerably greater risk of developing kidney and heart disease. Diabetes control appears to be less than optimal, according to reports provided by Kaiser for its members. (Figure 15)
- Based on industry benchmarks, chronic pain, depression, anxiety, chronic fatigue and other behavioral health issues also need to be addressed due to their impact on absence, disability, and lost productivity. Benchmark data indicates that these conditions represent over 90,000 lost work days. (Figure 11)

## Introduction

The City and County of San Francisco (CCSF) initiated the Wellness Plan Assessment and Development project with the goal of developing a comprehensive, strategic wellness plan that encourages participation and addresses key health risk factors and chronic conditions that can be modified through behavior change. CCSF has contracted with Continuanace Health Solutions, Inc. (Continuance) to develop a comprehensive, coordinated wellness plan. In order to maximize the effectiveness of CCSF's investments in health and wellbeing, the wellness plan will be designed to focus CCSF's resources on those issues that are having the greatest economic impact on CCSF's ability to deliver city services efficiently. By addressing root causes driving medical and pharmacy benefit costs, absenteeism, workers' compensation claims, and disability claims, the proposed enhancements will enable CCSF to deliver city services more efficiently.

The Wellness Plan Assessment and Development project includes two deliverables that provide an analysis and prioritization of the health status, risk factors, and medical needs that are inherent in the covered population:

1. Initial Health Risk and Cost Overview
2. Population Health Profile

These deliverables will be used by the project team to identify specific needs that can be addressed by a comprehensive wellness strategy.

This deliverable is intended to provide a preliminary, high-level overview of the health risks and associated economic impacts of the covered population based on pre-existing aggregate reports. In this context, the economic impact of the covered population's health status includes CCSF's costs for group health, sick pay, disability, and workers' compensation plans as well as indirect productivity-related losses associated with injuries and illnesses. Lost productivity incorporates the reduction in CCSF's ability to deliver services when workers are absent and on-the-job under performance due to health-related issues (i.e., presenteeism).

CCSF provided Continuance with a set of aggregate reports for the purpose of developing this report. Continuance reviewed reports generated by Office of the Controller (CON), Health Services System (HSS), Kaiser (KP), Blue Shield (BS), and United Health Care (UHC). Continuance augmented these reports with a benchmark analysis completed by the Integrated Benefits Institute (IBI). IBI is an independent nonprofit research organization providing its members and partners with an array of measurement and modeling tools. A complete description of the data sources, analytic methods, assumptions and limitations is included in Appendix A. Appendix B includes additional information about the products from IBI that were used for this project.

Later in the project, Continuance will prepare a detailed Population Health Profile based on an analysis of group health, workers' compensation, disability, and absence data. That deliverable will precisely identify the areas of greatest need in terms of specific opportunities to control health benefit costs, improve productivity, and enhance wellbeing. In addition to medical and productivity-related costs, Continuance may examine the relationships between health status and absenteeism, overtime costs, and job tenure/employee turnover.

For this deliverable, Continuance focused on five key subject areas:

- The economic impact associated with the health status of the covered population measured in terms of CCSF's ability to deliver services.
- Demographic factors.
- Chronic conditions affecting the covered population.
- Measures of health status and specific risk factors reported by the health plans.
- Key utilization measures providing a glimpse as to the volume of adverse outcomes.

## Economic Impact

**Total Costs:** The overall economic impact of the covered population’s health status is estimated to be \$716 million per year in medical and pharmacy benefit costs and productivity-related costs. (Figure 1) The economic impact includes CCSF’s costs for group health, sick pay, disability, and workers’ compensation plans as well as indirect productivity-related losses associated with injuries and illnesses. This amount includes costs for current CCSF employees, retirees, and their dependents. The economic impact for active employees and their dependents is estimated to be \$590 million, which equates to \$22,400 per employee per year.

- The economic impact of active and retiree health status equates to 10% of CCSF’s annual budget of \$6.8 billion for FY 2012.
- According to HSS reports, medical costs represent \$433 million annually for CCSF. Active employees and their dependents represent \$324 million, and \$109 million is attributed to medical and pharmacy benefit costs for retirees and their dependents each year. According to reports from the Office of the Controller, an additional \$30 million is attributed to medical costs associated with workers’ compensation plans for active employees.
- Health issues are estimated to cost an additional \$253 million in wage replacement programs and lost productivity. Wage replacement includes incidental absence (sick pay), workers’ compensation days, and short- and long-term disability. Lost productivity includes staff replacement and opportunity costs and on-the-job health-related performance impairment (i.e., presenteeism).

Figure 1

<b>Overall Economic Impact of Employee Health</b>				
	<u>Type</u>	<u>Source</u>	<u>Annualized Cost</u>	<u>%</u>
<b>Wage Replacement for Lost Work Days</b>				
Paid sick days	Actual	CON	\$93,490,000	13%
Workers compensation days	Actual	CON	\$28,222,000	4%
Short-term disability	Benchmark	IBI	\$16,894,000	2%
<u>Long-term disability</u>	Benchmark	IBI	<u>\$27,410,000</u>	<u>4%</u>
<b>Total Wage Replacement</b>			<b>\$166,016,000</b>	<b>23%</b>
<b>Medical and Pharmacy (Actives)</b>				
Workers compensation-medical/Rx	Actual	CON	\$29,905,000	4%
<u>Group health - medical/Rx</u>	Actual	HSS	<u>\$324,188,000</u>	<u>45%</u>
<b>Total Medical and Pharmacy (Actives)</b>			<b>\$354,093,000</b>	<b>49%</b>
<b>Lost Productivity</b>				
When EEs are absent due to illness	Benchmark	IBI	\$35,337,000	5%
<u>Due to underperformance (presenteeism)</u>	Benchmark	IBI	<u>\$51,413,000</u>	<u>7%</u>
<b>Total Lost Productivity</b>			<b>\$86,750,000</b>	<b>12%</b>
<b>Total (Actives)</b>			<b>\$606,859,000</b>	<b>85%</b>
Retirees: Group health - medical/Rx	Actual	HSS	\$109,209,000	15%
<b>Total Health Related Costs</b>			<b>\$716,068,000</b>	<b>100%</b>

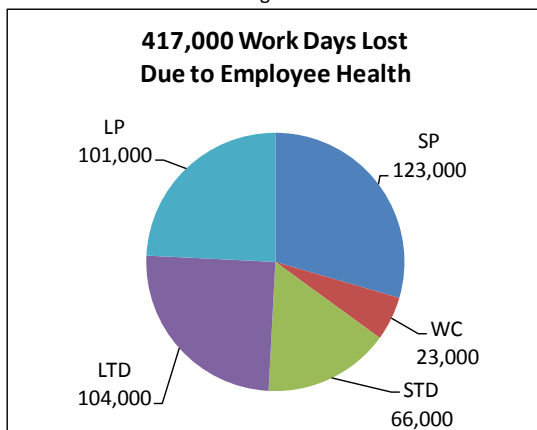
\*Active FT Employees: 27,150

Sources: Integrated Benefits Institute (IBI) Full Cost Estimator, Health Services System (HSS) Health Plan Dashboard, Office of the Controller (CON) Reports

**Lost Work Days (Benchmark Data):** CCSF’s capacity to deliver services is impaired when employees are off work. Either the work is not performed or staffing levels are increased to compensate for lost work days. Below are estimates of the impact of lost work days to CCSF based on Integrated Benefits Institute (IBI) benchmarks. IBI’s benchmark reports are adjusted to reflect demographics, industry, wages, and benefits. CCSF’s actual costs may be greater or less than the benchmark. Continuance will substitute actual amounts provided by CCSF for IBI’s benchmarks as such data become available.

- Employee health issues account for an estimated 417,000 lost work days per year according to the Integrated Benefits Institute benchmarks. Seventy-six percent of this amount (316,000) is attributed to wage replacement programs and 24% (101,000) is attributed to lost productivity, which includes staff replacement and opportunity costs and on-the-job health-related performance impairment (i.e., presenteeism). Nearly 90% of lost productivity is attributed to performance impairment. (Figure 2)
- The benchmarks suggest that employee health issues are resulting in a 7% reduction in overall productivity, which is equivalent to 1,800 fulltime equivalents. This is based on 27,000 active fulltime employees with an average of 230 available work days.
- Approximately one-third of lost work days (125,000) are attributed to 15 chronic conditions included in the IBI benchmarks. Chronic conditions can be impacted by wellness programming, which potentially reduces the number of work days lost due to these conditions. Analysis of the lost work days associated with the specific conditions appears below. (Figure 3)

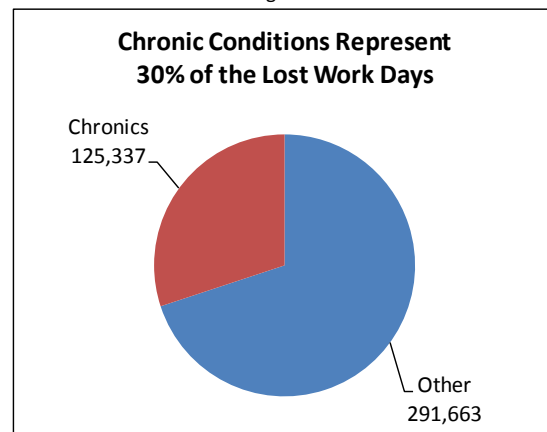
Figure 2



**SP:** Sick Pay      **LTD:** Long Term Disability  
**WC:** Workers Comp      **LP:** Lost Productivity  
**STD:** Short Term Disability (OT, temps, impairment, etc.)

Source: Integrated Benefits Institute

Figure 3



IBI benchmarks track lost work days for 15 common chronic conditions (see below)

Source: Integrated Benefits Institute

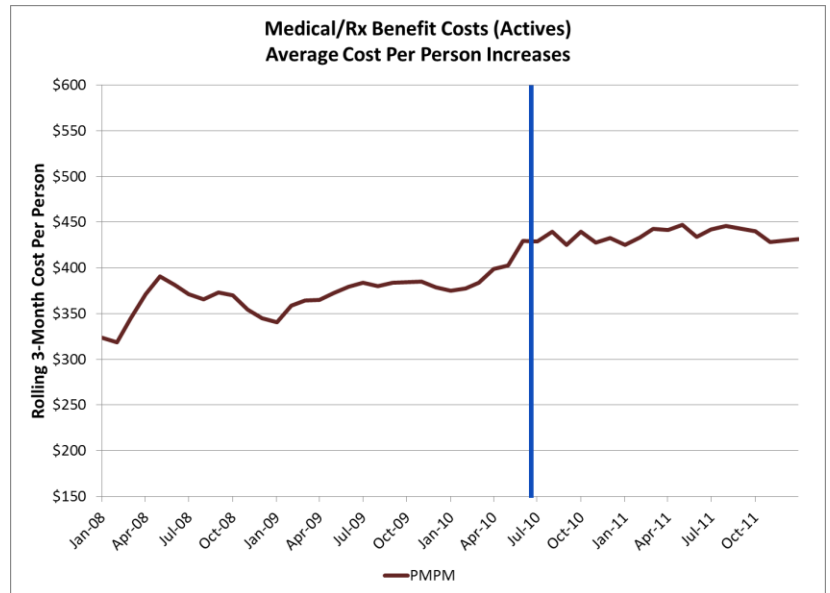


**Group Health Cost Trends:** Between January 2008 and December 2011, the growth in per person costs for active employees and dependents averaged 8%, according to HSS reports. It is noteworthy that over the last 18 months the average cost per person increased at an average annual rate of only 1%. (Figure 4)

Figure 4

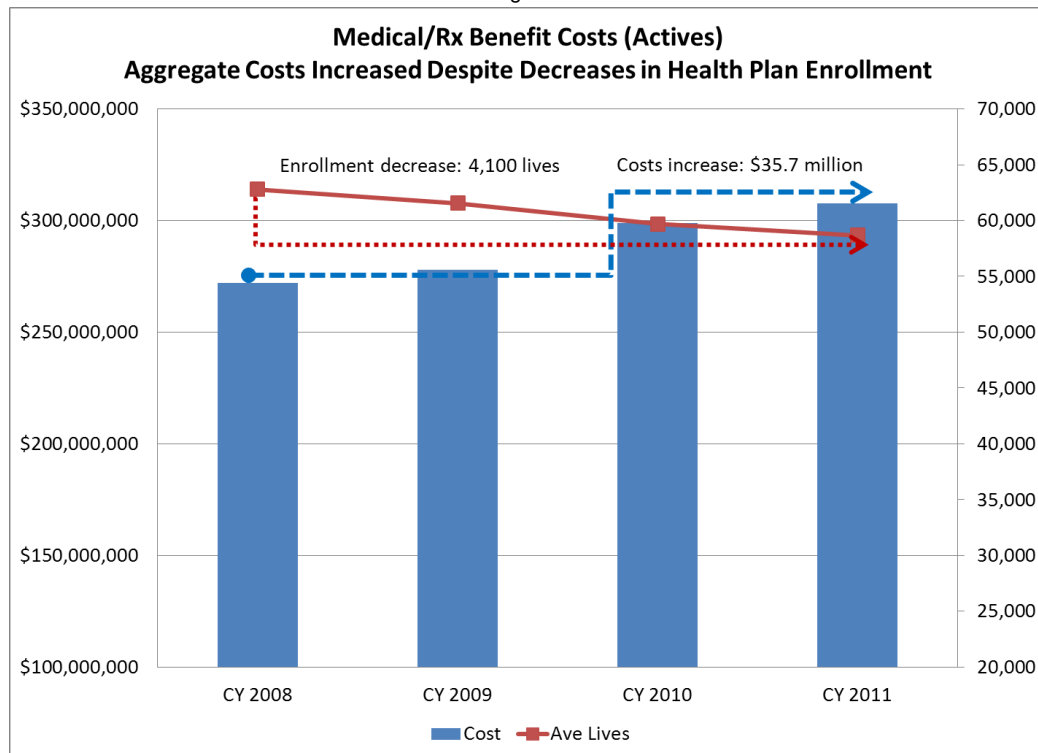
Between CY 2008 and CY 2011, enrollment in the group health plans decreased by 4,100 lives from 62,800 to 58,700. (Figure 5) However, costs increased by \$35.7 million from \$271.9 million to \$307.6. This suggests that the growth in costs attributed to demographics, prevalence of chronic conditions, medical inflation, the volume and mix of services, and other factors more than offset the decrease in enrollment over this period.

To the extent that group health costs increase faster than CCSF's operating budget, the health status of the covered population will consume an increasingly larger portion of the budget.



Source: Health Services System Health Plan Dashboard

Figure 5

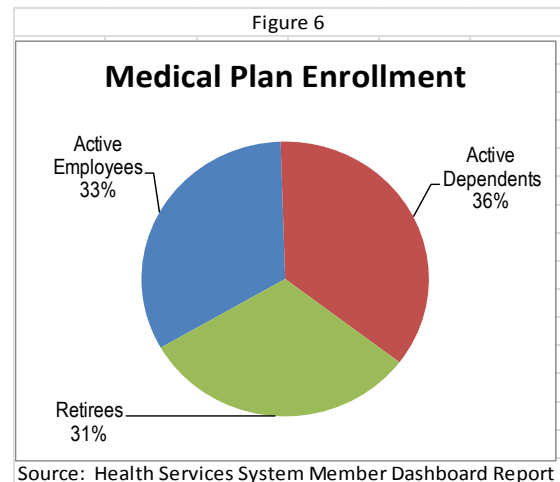


Source: Health Services System Health Plan Dashboard

## Demographics

**Enrollment:** The HSS population represents just over 108,000 individuals covered by four public employers. CCSF represents 60,000 total individuals. Of these, 27,000 are active employees who will have direct access to on-site wellness programming. Their dependents represent an additional 33,000 lives (21,000 are partners and 12,000 are children). Retirees and their dependents represent just under a third of the covered population. (Figure 6)

**Gender:** Based on Continuance’s analysis of worksite-based wellness programs at its other clients, females are generally more likely to participate in wellness programming at younger ages. In contrast, participation rates among males at those clients typically increase with age.



Based on HSS membership reports, the gender makeup of CCSF active employees, retirees and their dependents is estimated as of July 2012 to be:

- 53% (45,100) of the covered population are female.
- 49% (13,600) and 54% (16,300), respectively, of active employees and their dependents are female.
- Between July 2011 and July 2012, the number of female active employees increased by 105. Over the same period the number of active male employees decreased by 75.
- 50% (9,900) and 71% (5,200) of retired employees and their dependents, respectively, are female.

**Age:** Wellness programming needs to reflect the age of the target audience in order to be effective. Younger cohorts typically need programs that promote engagement and healthy lifestyle choices and getting those with undiagnosed conditions connected with a physician. On the other hand, older cohorts, who are more likely to be experiencing specific health issues affecting their wellbeing, need programs that help them actively engage in managing those conditions to prevent disease progression and to enhance their wellbeing.

Contrary to the commonly-held assumption that younger employees are “by definition” healthy, Continuance’s research for other clients has identified cohorts, individuals in their twenties and thirties, who have elevated biometric values (e.g., Body Mass Index, Blood Pressure, Cholesterol, Glucose, etc.) and who have not received appropriate medical care or participated in traditional fitness programs. This suggests that these individuals are disengaged from their own health and wellness and are likely on their way to developing significant medical issues. According to Continuance’s research for other clients, older cohorts typically include individuals who are being treated for one or more chronic conditions and who may be making less than optimal lifestyle and medical management choices.

Based on HSS membership reports, the age makeup of for CCSF active employees, retirees and their dependents is estimated as of July 2012 to be:

- The average age for active employees and their dependents is estimated to be 36.2.

- The average age for active employees is 47.3.
- 39% of active employees are under age 45. The average age for this cohort decreased slightly from 35.7 to 35.6 from July 2011 to July 2012.
- 61% of active employees (21,700) are ages 45 and older. The average age for this cohort increased slightly from 54.7 to 54.8 in one year.

**Geography:** Research shows that proximity to on-site wellness programming facilitates participation. Nearly 90% of the active workforce resides in the four-county area that includes San Francisco, San Mateo, Alameda, and Contra Costa counties. Retirees are more likely to reside out of the area. Only 70% of retirees reside in the four-county area. (Figure 7)

Figure 7

<b>Medical Plan Enrollment by County (Employees)</b>						
	<b>Actives</b>		<b>Retirees</b>		<b>Total</b>	
San Francisco	12,954	46%	7,444	38%	20,398	43%
San Mateo	5,862	21%	3,411	17%	9,273	19%
Alameda	3,288	12%	1,360	7%	4,648	10%
Contra Costa	2,801	10%	1,572	8%	4,373	9%
Solano	872	3%	642	3%	1,514	3%
Marin	795	3%	1,181	6%	1,976	4%
<u>Other</u>	<u>1,445</u>	<u>5%</u>	<u>4,204</u>	<u>21%</u>	<u>5,649</u>	<u>12%</u>
<b>Total</b>	<b>28,017</b>	<b>100%</b>	<b>19,815</b>	<b>100%</b>	<b>47,831</b>	<b>100%</b>

Source: Health Services System Membership Dashboard Report

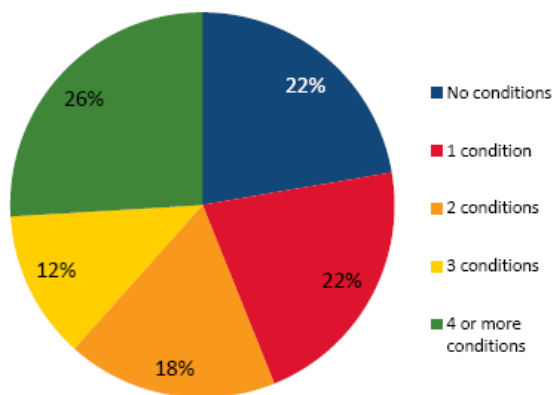
## Chronic Conditions

According to the Centers for Disease Control and Prevention, chronic conditions represent 70%-80% of medical costs. This overview provides a thumbnail sketch of specific chronic conditions affecting the health and productivity of the covered population. The Integrated Benefits Institute's reports examine prevalence and productivity for employees based on their benchmark resources. HSS and health plan reports provide a medical cost perspective derived from the benefit plan data.

Based on IBI's benchmark data base, an estimated 78% (21,200) of the workforce have one or more chronic conditions. Nearly three-quarters of this amount (15,200) are estimated to have multiple chronic conditions. (Figure 8)

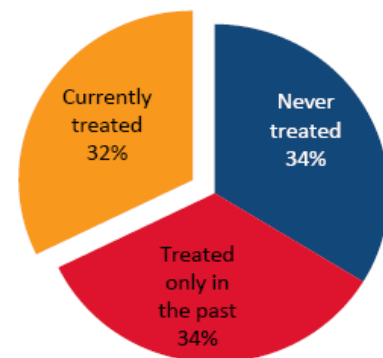
Consideration of the treatment status of these individuals is a key to an effective Wellness Plan. Wellness programming needs to consider where these individuals stand in terms of treatment status. IBI's benchmark norms suggest that a third of those with chronic conditions have never received treatment, a third received treatment in the past, and a third is currently in treatment. (Figure 9) The proportion of individuals being treated varies significantly by condition. For example, allergies, chronic fatigue, arthritis and cholesterol are much less likely to be treated. (Figure 10)

Figure 8  
Prevalence of Co-Morbid Conditions



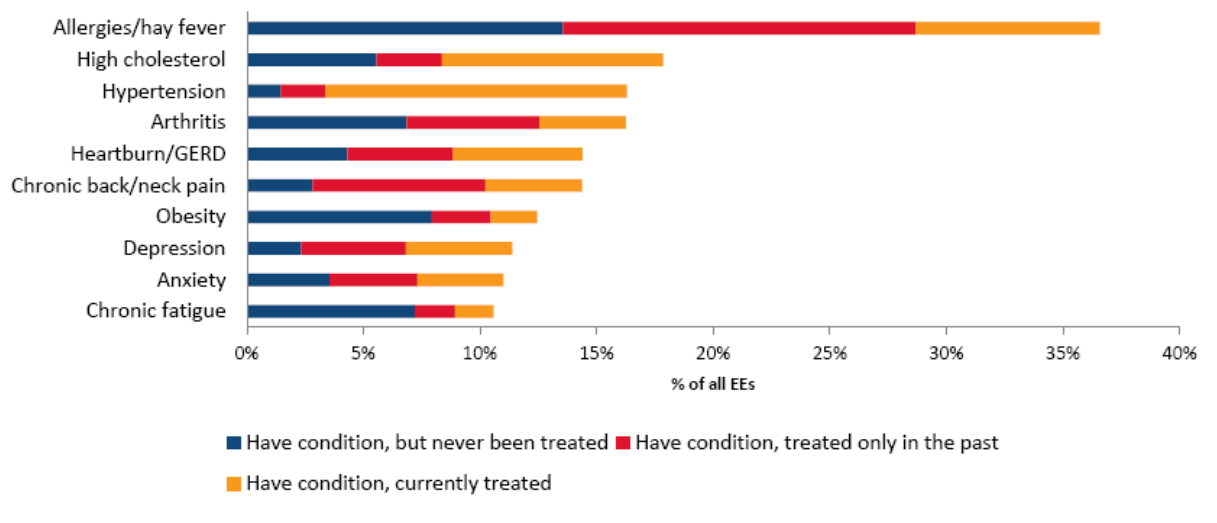
Source: Integrated Benefits Institute

Figure 9  
Treatment Status of Chronic Conditions



Source: Integrated Benefits Institute

Figure 10  
10 Most Prevalent Conditions by Treatment Status



Source: Integrated Benefits Institute

To maximize effectiveness, wellness programs focus resources on the risk factors and chronic conditions that have the greatest economic impact on the population’s health status. The economic impact for a condition is the sum of all the medical and productivity-related costs associated with that condition. Medical costs include the costs associated with the group health and workers’ compensation plans. Productivity costs include wage replacement costs for lost work days covered by sick leave, disability, and workers’ compensation programs and the productivity that is lost when personnel are absent (i.e., replacement and opportunity costs) and when on-the-job performance is impaired due to health issues (i.e., presenteeism).

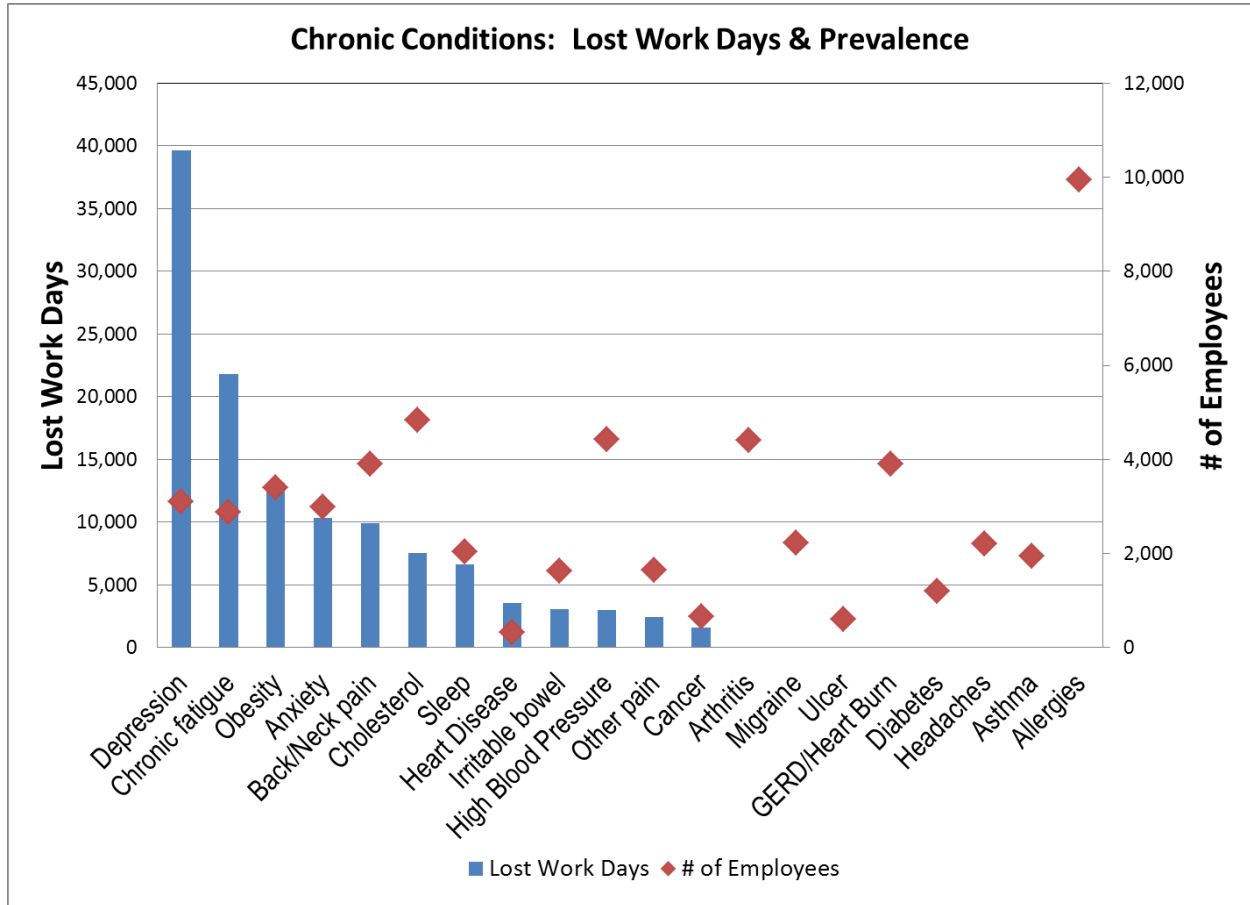
Due to limitations in the reports provided to Continuance, this overview is limited to separate analyses of lost work days derived from benchmarks produced by the Integrated Benefits Institute (IBI) and health plan costs derived from the HSS Health Plan Dashboard.

**Productivity:** Of the conditions included in IBI’s benchmark norms, allergies are the most prevalent. Allergies affect over a third of all active CCSF employees (9,900), double the next largest category. The next nine most prevalent conditions are cholesterol (4,800), hypertension (4,400), arthritis (4,400), back and neck pain (3,900), GERD/heart burn (3,900), obesity (3,300), depression (3,100), anxiety (3,000), and chronic fatigue (2,900). (Figure 11)

Lost work days provide a better representation of the economic impact of each condition than prevalence. Ninety percent of the lost work days attributed to chronic conditions are associated with eight conditions. IBI’s benchmark norms estimate that depression results in 39,600 lost work days or 12.8 days per employee with depression. The next seven conditions are chronic fatigue (21,800 days or 7.6 days per employee with chronic fatigue), obesity (13,100 days or 3.9 days per employee with obesity), anxiety (10,300 days or 3.5 days per employee with anxiety), back and neck pain (9,900 days or 2.5 days per employee with back and neck pain), cholesterol (7,600 days or 1.6 days per employee with cholesterol issues), sleep disorders (6,600 days or 3.2 days per employee with sleep disorders), and high blood pressure (3,000 days or 0.7 days per employee with high blood pressure). (Figure 11) This is

consistent with early feedback from stakeholder interviews where Continuance learned that sleep disorders, chronic fatigue, and apnea are perceived to be growing problems for CCSF employees.

Figure 12



Source: Integrated Benefits Institute

**Medical Costs:** For wellness planning, medical costs are attributed to condition categories as a basis for setting priorities. The scope of each condition category should be sufficient so that the breadth of each category is aligned with the domain of the proposed wellness initiatives. Conditions that can be impacted by a comprehensive, strategic wellness initiative should be reported separately from conditions that cannot be impacted by such programs.

Continuance will determine high impact conditions as part of the Population Health Profile by integrating group health, workers' compensation, disability, and absence data. Building up from detailed data, the Population Health Profile may align the breadth of the condition categories to the domain of the proposed wellness initiatives. By integrating productivity-related costs, the Population Health Profile measures the overall economic impact that each condition is having on CCSF's ability to deliver city services.

For this deliverable, Continuance focused on two sections of the Health Services System (HSS) Health Plan Dashboard for active employees and their dependents: High volume ICD9<sup>1</sup> Diagnosis Codes and High Volume Drug Classes.

The HSS Dashboard includes 118 high volume ICD9 Diagnosis Codes representing \$143 million in treatment costs for active CCSF employees and their dependents in 2011. The top twenty diagnosis codes appear in Figure 12. For wellness planning, these categories are grouped into broader condition categories that can be impacted by a comprehensive, strategic wellness initiative. For example:

- Cardiometabolic diagnoses represent \$34 million. Cardiometabolic diagnoses include diabetes, hypertension, hyperlipidemia, heart disease, obesity, etc.
- Joint disorders represent \$15 million. Non traumatic joint disorders may be an indicator of obesity, physical inactivity, and other risk factors that may be addressed through a comprehensive wellness program.

Figure 12

<b>High Volume Diagnosis Codes (2011)</b>		
<b>Code</b>	<b>Description</b>	<b>Cost</b>
V30	SINGLE LIVEBORN	\$14,521,228
715	OSTEOARTHRISIS ET AL(1)	\$10,666,560
038	SEPTICEMIA	\$11,996,487
410	ACUTE MYOCARDIAL INFARCT(2)	\$5,899,135
507	SOLID/LIQ PNEUMONITIS	\$5,606,591
414	OTH CHR ISCHEMIC HRT DIS(2)	\$5,578,603
204	Lymphoid leukemia	\$4,709,865
996	REPLACE & GRAFT COMPLIC	\$4,292,818
V58	ENCOUNTR PROC/AFT RCR NEC	\$4,192,442
250	DIABETES MELLITUS(2)	\$3,843,280
424	Other diseases of endocardium(2)	\$3,773,625
722	INTERVERT EBRAL DISC DIS(1)	\$3,576,286
540	ACUTE APPENDICITIS	\$3,474,477
428	HEART FAILURE(2)	\$3,246,386
135	SARCOIDOSIS	\$3,177,664
V31	TWIN MATE LIVEBORN	\$3,146,236
V57	REHABILITATION PROCEDURE	\$2,991,368
658	OTH AMNIOTIC CAVTY PROB	\$2,835,263
518	Other diseases of lung	\$2,575,554
153	COLON CA	\$2,432,368

Source: Health Services System Health Plan Dashboard

(1) Included in joint disorders group

(2) included in cardiometabolic group

<sup>1</sup> ICD9: International Classification of Diseases Version 9

The HSS Dashboard includes the costs for 27 therapeutic drug classes, representing \$26 million and 680,000 scripts and refills for CCSF active employees and their dependents in 2011 (Appendix C). Prescribing patterns provide additional insight as to the conditions being treated. Of those drug classes:

- Anti-inflammatory agents and opiate agonists appear near the top of the list. These medications suggest that pain management may be a critical need for the covered population.
- The volume of scripts associated with angiotensin-converting-enzyme (ACE) inhibitors, statins, beta blockers, thiazide diuretics, calcium channel blockers, and diabetes mellitus speak to the prevalence of employees with cardiometabolic conditions.

More than one drug class may be indicated for a given condition (e.g., beta blockers and thiazide diuretics are indicated for hypertension). More than one condition may be treated by a particular therapeutic category (e.g., beta blockers are indicated for hypertension and myocardial infarction). For the purpose of this overview, each therapeutic category was assigned to a single condition category. The assignment of condition categories is shown in Appendix C. Common prescribing patterns were used to select the most common indication. Broad condition categories were used to partially mitigate the possibility of erroneous attribution. (Figure 13)

- Medications for pain and inflammation represent \$7.7 million and 177,000 scripts.
- Medications used to treat hypertension, lipids, diabetes, and chronic heart failure represent \$8.5 million and 305,700 scripts.
- Medications used to treat depression and anxiety represent \$2.9 million and 78,100 scripts.

Figure 13

<b><u>Selected Indications for High Volume Drug Classes</u></b>		
<b><u>Inferred Indications</u></b>	<b><u>Scripts</u></b>	<b><u>Cost</u></b>
Inflammation(1)	116,613	\$5,492,402
Hypertension(2)	103,477	\$2,337,170
Pain(1)	59,978	\$2,197,150
Lipids(2)	57,559	\$2,367,615
Diabetes(2)	43,145	\$1,454,386
Depression(3)	42,703	\$2,280,966
Cardiovascular/Hypertension(2)	37,365	\$565,439
Anxiety (Sedatives)(3)	35,441	\$639,986
Contraception	33,616	\$2,132,064
Asthma/COPD	27,258	\$1,393,895
Antibiotic	26,527	\$440,008
Hypothyroidism	22,671	\$464,602
Reflux, GERD	22,400	\$1,420,297
Devices	16,775	\$366,907
Respiratory	13,125	\$205,924
Erectile Dysfunction	10,001	\$1,143,850
Convulsions/Neurologic	5,157	\$463,829
Hepatitis, herpes, HIV	4,855	\$970,357
<b><u>Hormone Replacement</u></b>	<b><u>1,141</u></b>	<b><u>\$59,957</u></b>
<b>Total</b>	<b>679,806</b>	<b>\$26,396,803</b>

Source: Derived from Health Service System Health Plan Dashboard

(1) included in pain/inflammation group

(2) included in cardiometabolic group

(3) included in depression/anxiety group



## Health Status and Risk Factor Measures

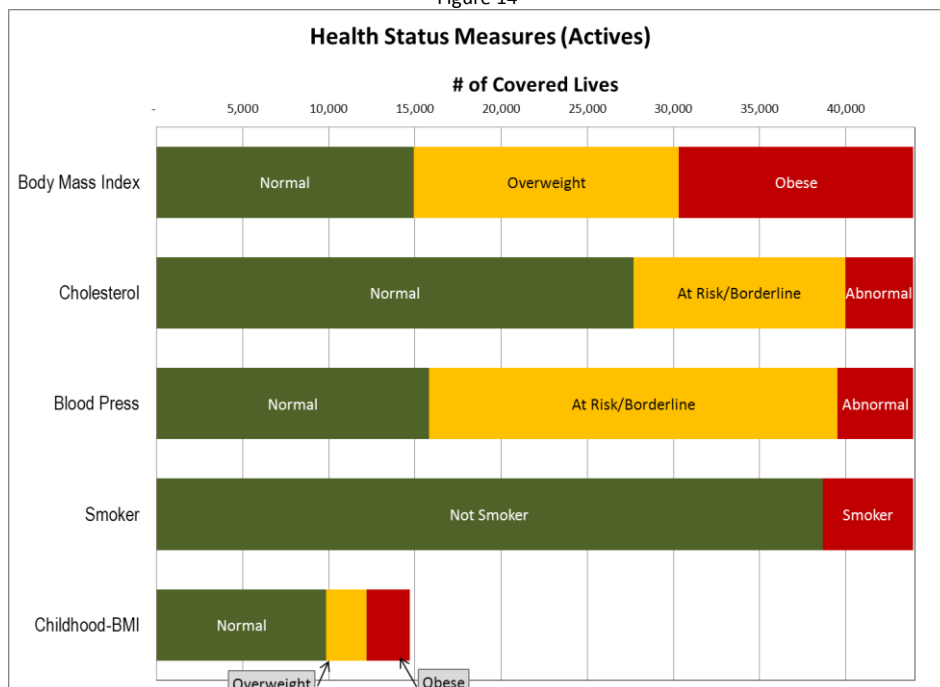
Kaiser Health Plan reports include aggregate measures of the health status of their CCSF members covered as active employees and their dependents. Body Mass Index (BMI), blood pressure, and cholesterol status were measured for adults. About 60%-75% of the adults were measured. For pediatrics, obesity was measured for 55% of the children. For most of the measures, Kaiser reported the percentage of individuals with normal, at-risk, and abnormal values. At-risk values include “overweight” for BMI and “borderline” for cholesterol. It should be noted, however, that Kaiser does not distinguish “prehypertension” and “normal” blood pressure values. Continuance estimates that about 60% of the individuals reported by Kaiser as having normal blood pressure have values that would be considered prehypertension. (Figure 14)

<b>Risk Factors Measured</b>
• Obesity
• Cholesterol
• Hypertension
• Tobacco Use
• Diabetic Care Gaps

Kaiser represents roughly half of the HSS population. To approximate the health status of the entire active CCSF population (employees and dependents), Continuance applied the percentages reported by Kaiser to the enrollment counts reported on the HSS Membership Dashboard as of 7/2012 (assuming that half of the lives in the 15-24 year old category are adults). According to AON Hewitt’s Risk Assessment of the HSS Membership (12/11/2012), Kaiser has the lowest risk score, which indicates that it is benefiting from favorable selection bias. Therefore, these estimates may be biased toward a healthier population and understate the number of candidates for wellness programming. For an active CCSF employee and dependent population of 44,000 adults and 15,000 children:

- 29,000 adults (66%) are overweight or obese.
- 16,000 adults (37%) have at-risk (i.e., borderline) or abnormal cholesterol values
- 28,000 adults (64%) have at-risk (i.e., borderline) or abnormal blood pressure values.
- 5,300 adults (12%) are smokers
- 4,900 children (33%) are overweight or obese

Figure 14



Source: Derived from Kaiser Health Plan Reports

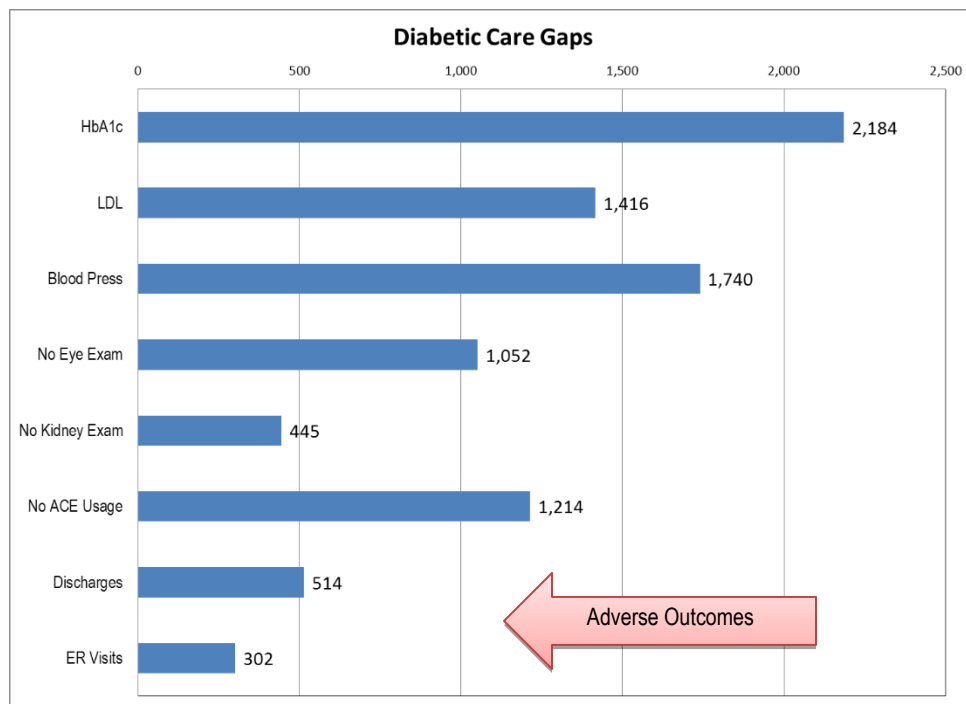
Diabetes is generally considered to be a high priority condition for wellness plans. In addition to the direct costs associated with diabetes, the toll that unmanaged diabetes takes on cardiovascular and renal system can result in catastrophic cases. Diabetes may be used as a barometer of broader health status issues. The Population Health Profile may contain health status measures for a range of high impact conditions.

Kaiser reports that 7% of the active population covered under their plan is diabetic. (This rate is a bit higher than expected. The American Diabetic Association data indicates that 6% of the <65 population are diabetic). Continuance extrapolated from Kaiser’s prevalence rate to estimate the number of diabetics in the covered population at 4,000 (i.e., active CCSF employees and their dependents). This amount does not include individuals who are at risk for developing diabetes. Applying Kaiser’s diabetic health status measures to this amount suggests that there is a significant number of individuals who would benefit from diabetes-oriented wellness programming. (Figure 15)

Managing diabetes is key to reducing the risk of complications, which may include eye problems and kidney failure, and adverse events, which may result in hospital care. There are a variety of measures for assessing diabetes management. The most common include Hemoglobin A1c (HbA1c) levels, blood pressure, low-density lipoprotein (LDL or bad) cholesterol levels, routine retinal eye exams, and ongoing use of medication to protect the heart and circulatory system (specifically an angiotensin-converting-enzyme (ACE) inhibitor). For a population of 4,000 diabetics:

- Over half of the diabetic population has HbA1c and blood pressure values greater than established goals.
- About a third of diabetics have LDL (bad) cholesterol levels greater than goal.
- A significant portion of the diabetic population has care gaps. About a quarter do not have a retinal eye exam and a just under a third do not have regular ACE inhibitor usage. Just over 10% do not have a screening for kidney disease.
- 13% and 7% of the diabetic population had an adverse event that required an inpatient stay and ER visit, respectively.

Figure 15



Source: Derived Kaiser Health Plan Reports

## Chronology of Chronic Conditions-Sample Cases

A key to a successful wellness strategy is to identify individuals who are at-risk for developing chronic conditions that are modifiable as early as possible. The earlier that at-risk individuals are engaged, the greater the opportunity for improved health outcomes and better controlled healthcare costs. Figure 16 represents two hypothetical cases. The “Uncontrolled Diabetic” case represents an individual who is in complete denial about his/her health care situation. His/her diabetes is undiagnosed until he/she loses consciousness and is taken to the emergency room. The “Controlled Diabetic” case represents an individual who is identified as being a potential diabetic in the early stages of the disease as part of a wellness-based health risk assessment/biometric screening program. As a result of the program, he/she is actively engaged in managing his/her diabetes well before any physical symptoms develop.

Figure 16

Uncontrolled Diabetic		Controlled Diabetic
<ul style="list-style-type: none"> <li>• Unengaged in health generally</li> <li>• Does not have a relationship with a physician</li> <li>• Ignores early symptoms (e.g., weakness, blurry vision, fatigue, and tingling or loss of sensation in feet).</li> </ul>	<b>Health behaviors</b>	<ul style="list-style-type: none"> <li>• Motivated to be healthy</li> <li>• Participates in wellness program screening event – identified as a potential diabetic</li> <li>• Visits physician for regular screenings</li> <li>• Manages glucose levels with diet &amp; exercise</li> </ul>
<ul style="list-style-type: none"> <li>• Diagnosed with diabetes during ER visit for loss of consciousness</li> <li>• Does not follow up with diagnosis, change health behaviors, or adhere to prescribed treatments</li> </ul>	<b>Diagnosis &amp; treatment</b>	<ul style="list-style-type: none"> <li>• Diagnosed with diabetes early</li> <li>• Engages health management behaviors</li> <li>• Adheres to prescribed treatments</li> </ul>
<ul style="list-style-type: none"> <li>• Health deteriorates as diabetes remains untreated – eye damage, heart &amp; kidney disease, stroke</li> <li>• High medical costs – more hospital visits and more complicated illnesses</li> <li>• Increased absences, disability, and risk of injury</li> </ul>	<b>Health outcomes &amp; costs</b>	<ul style="list-style-type: none"> <li>• Lower medical costs</li> <li>• No substantial change in absences and risk of injury</li> </ul>

## Key Utilization Measures

While certain inpatient stays and ER visits may be unavoidable, use of these services may be indicative of an adverse outcome related to suboptimal condition management or an avoidable complication of a chronic condition. Based on HSS reports, Continuanace estimates that there were 3,300 hospital stays representing 14,100 days and nearly 11,600 ER visits for active employees and their dependents. (Figure 17)

The Population Health Profile may use criteria developed by Agency Healthcare Research and Quality (AHRQ) and New York University (NYU) to identify hospital use that could have been avoided through better management of the condition on an outpatient basis or diverted to a less expensive setting.

Health plan reports prepared for the active HSS population indicate that 55% of ER visits by individuals covered by Blue Shield and 38% of ER visits by individuals covered by UHC could have been treated in an urgent care center. The top diagnoses that the health plans consider as being urgent care center eligible include:

- Abdominal pain other
- Dizziness & giddiness
- Fever
- Headache, migraine
- Intervertebral Disc Disorders
- Non specific chest pain
- Sprains, strains, & injuries
- Urinary infection
- Vomiting, alone

Figure 17

<b>CY 2011: Key Utilization Rates</b>		
	<b>Count</b>	<b>#/1,000</b>
Inpatient Admits	3,330	57
Inpatient Days	14,103	240
ER Visits	11,648	199
Scripts	502,338	8,562

Source: Health Services System Health Plan Dashboard

Another key utilization measure is adherence to prescribed medication; HSS reports that over 500,000 scripts were filled or refilled for the covered population. This equates to 8.6 scripts per covered life. The Population Health Profile may evaluate the use of medications for chronic conditions. Individuals with lower medication adherence rates may not be adequately engaged in managing their conditions. The lack of adherence is cited in published reports as a driver of adverse health events, absenteeism, and medical costs.

## Preliminary Opportunities

Based on the chronic conditions and risk factors inherent in the covered population, the project team will construct a plan that includes initiatives to promote health management behaviors associated with those conditions and risk factors. This overview provides an early indication of the challenges and opportunities that can be addressed by a comprehensive, strategically designed wellness initiative.

Specifically, there are five higher health priority areas that can be addressed by the Wellness Plan:

<b>Preliminary Opportunity</b>	<b>Health Risk Factors &amp; Conditions</b>	<b>Anticipated Outcomes</b>
Cardio-metabolic	Cholesterol, diabetes, heart disease, hypertension, obesity, physical inactivity	Mitigate onset of these conditions, improve the effectiveness of treatment plans, prevent adverse events such as ER visits & hospital stays, & control disease progression
Joint Disorders	Occupational and non-occupational injuries, non-traumatic knee & back problems, including arthritis and intervertebral disc disorders; often connected to obesity & physical inactivity	Reduce occupational and non-occupational injuries, improve job performance and employee morale
Mental Wellbeing	Depression, anxiety, chronic fatigue, sleep disorders, & chronic pain (primary & comorbidity)	Improve employee morale, safety, & the effectiveness of treatment plans
Respiratory	Allergies, asthma, respiratory infections, smoking	Avoid adverse events resulting in ER visits and hospital stays
Pain	Musculoskeletal issues, physical inactivity, ergonomics, substance abuse, depression, & chronic fatigue	Improve employee morale, job performance, safety, & the effectiveness of treatment plans

A detailed analysis of each of the categories will identify the extent to which wellness programs are configured to engage demographic segments (i.e., age, gender, geography, education/economics) and by treatment status (especially those that are not in treatment or are undertreated).

The Wellness Plan will focus on the chronic conditions that are having the greatest impact on CCSF's ability to deliver city services efficiently. Programs will be designed to keep the healthy segment of the workforce well, to reduce risk factors and disease severity, and to improve condition management.

## Appendix A: Methodology

**Data Sources:** CCSF provided Continuanace with a set of aggregate reports for the purpose of developing this report. Continuanace reviewed reports generated by Office of the Controller (CON), Health Services System (HSS), Kaiser (KP), Blue Shield (BS), and United Health Care (UHC). Continuanace augmented these reports with a benchmark analysis completed by the Integrated Benefits Institute (IBI). IBI is an independent nonprofit research organization providing its members and partners with an array of measurement and modeling tools. A complete list of the reports used for this overview is shown below.

**Analytical Approach:** Continuanace reviewed each of the reports provided by CCSF for this project and culled out specific items that supported the objectives for this initial overview. Many of the reports include actives, retirees, or both. Continuanace focused on reports for active employees and their dependents. The following points outline key analytical issues:

- In addition to CCSF, the HSS Health Plan Dashboard includes statistics for the three other entities for which HSS administers benefits. The Dashboard covers the HSS population as a whole and does not distinguish between the four employers. For this deliverable, Continuanace reduced the amounts shown on the dashboard on a pro rata basis using the proportion of the number of CCSF active employees (27,000) to the total number of active employees (35,000) reported in the HSS Membership Dashboard.
- The HSS Health Plan Dashboard includes supporting worksheets that provided key pieces of information that may not be displayed on the printed report. Continuanace included the supporting worksheets in its analysis as well. The Dashboard primarily reports “by plan.” Continuanace consolidated the plan specific results into a “CCSF-wide” perspective. Consolidating the top “X” reports (e.g., High Volume Diagnosis Codes) creates a reasonable approximation for the CCSF-wide perspective.
- The HSS Health Plan Dashboard shows the top drug classes by volume. The conditions for which the drugs were prescribed may be inferred based on common prescribing practices. In order to identify the conditions driving pharmacy utilization, Continuanace mapped each class to a condition. More than one drug class may be indicated for a given condition (e.g., beta blockers and thiazide diuretics are indicated for hypertension). More than one condition may be treated by a particular therapeutic category (e.g., beta blockers are indicated for hypertension and myocardial infarction). For the purpose of this overview, each therapeutic category was assigned to one condition category. Common prescribing patterns were used to select the most common indication. Broad condition categories were used to partially mitigate the possibility of erroneous attribution. The assignment of condition categories is shown in Appendix C.
- IBI’s benchmark data was adjusted for industry, job class, benefit levels, and demographics.

**Assumptions and Limitations:** While Continuanace reviewed reports for reasonableness, a comprehensive validation was outside the scope of this project. The scope of the analysis was constrained by the configuration of the reports. For example:

- Continuance was unable to analyze employees and dependents separately. Generally speaking, wellness programs tend to influence employees more than spouses and children.
- The reports included diagnosis categories that are not well aligned with wellness planning and assessment. The scope of each condition category should be sufficient so that the breadth of each category is aligned with the domain of the proposed wellness initiatives. The top diagnosis reports included categories that were either too broad or too narrow. For example, the High Volume ICD9 Diagnosis Report lists specific diagnosis codes that are too specific for wellness planning. For example, Myocardial Infarction (i.e., heart attack), Heart Failure, Heart Disease, Hypertension (i.e., high blood pressure), Myocarditis (inflammation of the heart) are reported as separate categories. Wellness programs typically are designed to focus on broad condition categories rather than specific diseases. On the other hand, the High Cost Major Diagnostic Category report contains categories that are too broad for wellness planning. For example, Diseases of the Circulatory System includes a vast array of conditions some of which can be impacted by wellness programs (e.g., Hypertension) and some that cannot (e.g., Rheumatic Fever).
- CCSF provided reports that represented medical and pharmacy costs and utilization, workers' compensation days for MTA, and an overview of LTD cases. Continuance was unable to integrate the various data sources to calculate a complete illness burden for the specific chronic conditions discussed in this report.

<b><u>DSE*</u></b>	<b><u>Description</u></b>	<b><u>Report Period(s)</u></b>
AON	Risk Assessment for the HSS Membership	12/11/2012
BS	Health Plan Utilization Review	9/09-8/10, 9/10-8/11
BS	Health Plan Utilization Review	9/09-8/10, 9/10-8/11
CON	Departmental Salary Spending, Five-year History	FY 2008-FY2012
CON	Workers Compensation Annual Costs by Category	2011-2012
CON	Consolidated Budget & Annual Appropriation Ordinance	FY 2012
HSS	HSS Dashboard (active)	4th Qtr 2011
HSS	HSS Dashboard (retirees O65)	4th Qtr 2011
HSS	HSS Dashboard (retirees U65)	4th Qtr 2011
HSS	Membership Demographics Report as of 7/1/2012	
HSS	Membership Demographics Report as of 7/1/2011	
IBI	Full Cost Estimator (9/7/2012)	
IBI	Health & Productivity Snapshot (9/7/2012)	
KP	Chronic Conditions & Update	Period ending 3/12
KP	Prevention and Lifestyle Risks	2012
KP	Chronic Conditions & Update	Period ending 9/09
KP	Prevention and Lifestyle Risks	2009
KP	1st Qtr PUR Summary	4/10-3/11
MTA	MTA Workers Compensation Absenteeism (4/17/12)	1/27/2009 - 1/26/2012
UNUM	Health & Productivity Overview	2004-2010*
UHC	Health Plan Performance Review-Executive Performance	7/09-6/10 paid thru 8/10
UHC	Health Plan Performance Review-Executive Performance	7/09-6/10 paid thru 8/10
UHC	Health Plan Performance Review-Executive Performance	7/10-6/11 paid thru 7/11
UHC	Health Plan Performance Review-Executive Performance	7/10-12/10 paid thru 1/11
UHC	Health Plan Performance Review-Diagnosis Distribution	7/09-6/10 paid thru 8/10
UHC	Clinical Executive Summary (reminders)	2010
UHC	Health Plan Performance Review-High Cost Claimant Diagnosis	7/09-6/10
UHC	Health Plan Performance Review (activation)	7/09-6/10 paid thru 8/10
UHC	Health Plan Performance Review-Preventive Services Utilization	7/09-6/10



**\*DSE: Data Submitting Entities**

AON	AON Hewitt
BS	Blue Shield of California
CON	Office of the Controller
HSS	Health Services System
IBI	Integrated Benefits Institute
KP	Kaiser Health Plan
MTA	SF Metropolitan Transit Authority
U	UNUM
UHC	United Health Care

## Appendix B: Integrated Benefits Institute

**Integrated Benefits Institute (IBI)** provides employers and their supplier partners with resources for demonstrating the business value of health. As a pioneer, leader and nonprofit supplier of health and productivity research, measurement and benchmarking, IBI is the trusted source for benefits performance analysis, research-based approaches, and forums for information and education. Under the direction of its research staff, IBI has compiled an extensive database of benchmark norms that have been incorporated into proprietary measurement and modeling tools that can be used to assess benefit plan performance and drivers of workforce health and productivity:

- **IBI ACE:** IBI's Absence Cost Estimators (formerly Lost Productivity Calculators) predict absence-related lost-productivity costs for a company, occupation group or pool of claimants.
- **IBI Health & Productivity Snapshot:** Using only a handful of corporate descriptors, the Snapshot estimates the lost-time/lost-productivity impact of chronic conditions on an employer's workforce and financial results.
- **IBI Benefits Intelligence:** Benchmark the performance of disability and absence programs against peers with IBI's Benefits Intelligence.
- **IBI HPQ-Select:** Expand insight into the chronic conditions that drive health costs and productivity loss for your workforce. This next-generation self-report tool helps focus health interventions for the greatest bottom-line return.
- **IBI Full Cost Estimator:** FCE brings the major components of health-related costs into a single online tool. It draws on national databases, the HPQ-Select database and millions of disability claims from IBI's benchmarking program to produce highly customizable estimates across an entire organization or industry.

IBI's comparison database represents 13 major data providers and includes data for 62,000 employer benefits programs, with 3.5 million claims and reportable on more than 972 industry groups.

For the purpose of this deliverable, IBI benchmark data provides insight in specific measurement domains that were not available for this report. Specially, Continuance used benchmark estimates of health-related lost work days covered by wage replacement programs such as sick days, short-term disability, long-term disability, and workers' compensation and of other forms of lost productivity. Lost productivity incorporates the reduction in CCSF's ability to deliver services when workers are absent and on-the-job under performance due to health-related issues (i.e., presenteeism).

## Appendix C: High Volume Therapeutic Drug Classes

<b>High Volume Drug Classes (2011)</b>		
<b>Class</b>	<b>Scripts</b>	<b>Cost</b>
ANTI-INFLAMMATORY AGENTS	62,901	\$1,717,503
ACE/ARB INHIBITOR	61,186	\$1,598,910
OPIATE AGONISTS	59,978	\$2,197,150
STATINS	57,559	\$2,367,615
CORTICOSTEROIDS	53,712	\$3,774,899
ANTIDEPRESSANTS	42,703	\$2,280,966
BETA BLOCKER	37,365	\$565,439
ANXIOLYTICS, SEDATIVES, MISC	35,441	\$639,986
CONTRACEPTIVES	33,616	\$2,132,064
BETA AGONIST	27,258	\$1,393,895
THYROID AGENTS	22,671	\$464,602
PROTON-PUMP INHIBITORS	22,400	\$1,420,297
BIGUANIDES	22,340	\$266,622
THIAZIDE DIURETICS	21,546	\$183,453
CALCIUM CHANNEL BLOCKER	20,744	\$554,807
PENICILLINS	20,623	\$357,759
DEVICES	16,775	\$366,907
ANTITUSSIVES	13,125	\$205,924
SULFONYLUREAS	10,658	\$221,741
DIABETES MELLITUS	10,148	\$966,022
PHOSPHODIESTERASE INHIBITORS	10,001	\$1,143,850
MACROLIDES	5,851	\$80,278
ANTICONVULSANTS, MISC	5,157	\$463,829
NUCLEOSIDES AND NUCLEOTIDES	4,724	\$871,627
ESTROGENS	1,141	\$59,957
HIV PROTEASE INHIBITORS	130	\$98,729
<u>ANTIBACTERIALS</u>	<u>54</u>	<u>\$1,970</u>
<b>TOTAL</b>	<b>679,806</b>	<b>\$26,396,803</b>

Source: Health Service System Health Plan Dashboard

<b><u>Indications for Therapeutic Classes</u></b>	
<b><u>Class</u></b>	<b><u>Indication</u></b>
ACE/ARB INHIBITOR	Hypertension
ANTIBACTERIALS	Antibiotic
ANTICONVULSANTS, MISCELLANEOUS	Convulsions/Neurologic
ANTIDEPRESSANTS	Depression
ANTI-INFLAMMATORY AGENTS	Inflammation
ANTITUSSIVES	Respiratory
ANXIOLYTICS, SEDATIVES & HYPNOTICS, MISC.	Anxiety (Sedatives)
BETA AGONIST	Asthma/COPD
BETA BLOCKER	Cardiovascular/Hypertension
BIGUANIDES	Diabetes
CALCIUM CHANNEL BLOCKER	Hypertension
CONTRACEPTIVES	Contraception
CORTICOSTEROIDS	Inflammation
DEVICES	Devices
DIABETES MELLITUS	Diabetes
ESTROGENS	Hormone Replacement
HIV PROTEASE INHIBITORS	Hepatitis, herpes, HIV
MACROLIDES	Antibiotic
NUCLEOSIDES AND NUCLEOTIDES	Hepatitis, herpes, HIV
OPIATE AGONISTS	Pain
PENICILLINS	Antibiotic
PHOSPHODIESTERASE INHIBITORS	Erectile Dysfunction
PROTON-PUMP INHIBITORS	Reflux, GERD (Heartburn)
STATINS	Lipids
SULFONYLUREAS	Diabetes
THIAZIDE DIURETICS	Hypertension
THYROID AGENTS	Hypothyroidism

## Appendix D: Glossary

Term	Definition
Cardiometabolic Conditions	An array of interrelated medical conditions that include diabetes, high blood pressure, high cholesterol, heart disease, obesity, etc.
Cost (Benefit Cost)	The cost to CCSF of providing benefits to employees and their dependents for group health coverage, sick pay, disability, workers' compensation, etc. (Costs do not include amounts paid by employees or by other agencies.)
Data Submitting Entity (DSE)	An entity that generated data for this deliverable. DSEs include CCSF, Kaiser, Blue Shield, UHC, AON
Illness Burden	The economic impact of the covered population's health status and includes CCSF's costs for group health, sick pay, disability, and workers' compensation plans as well as indirect productivity-related losses associated with injuries and illnesses. Lost productivity incorporates the reduction in CCSF's ability to deliver services when workers are absent and on-the-job under performance due to health-related issues (i.e., presenteeism).
Lost Productivity Cost	Indirect (or "soft") costs associated with the reduction in CCSF's ability to deliver services when an employee with health issues is absent or on the job. Lost productivity connected to absenteeism includes the costs for replacement staffing, opportunity costs, and lower output associated with temporary workers or overtime. Lost productivity connected to employees that report to work with significant health issues includes the cost associated with underperformance (presenteeism).
Lost Work Days	Lost work days include sick days as well as days covered by disability and leave plans.
Opportunity Costs	Indirect (or "soft") costs associated with work that is delayed or not completed due to health-related absences.
Presenteeism	On-the-job underperformance due to health-related issues.
Productivity-related Costs	Direct costs for wage replacement costs for lost work days covered by sick leave, disability, and workers' compensation programs and lost productivity.
Replacement Costs	Direct costs associated with staffing positions that are vacant due to health-related absences. Such costs may include temporary staff or overtime.
Wage Replacement Costs	Direct costs associated with sick pay and disability plans that cover all or a portion of a worker's wages when that worker has a qualifying event.