

## **OurCompany Profile**<sup>TM</sup>



Company: SampleOCP

**Projects:** 2020, 2019



# OurCompany Profile

The OurCompany Profile Report provides valuable, evidence-based insight designed to help guide your organization's decisions around its health and wellness programs.

Clinical laboratory data and biometrics are key indicators of health status. In fact, 70% of all medical decisions involve clinical laboratory results, yet these tests account for just three to five percent of medical costs.

We are pleased to present your organizations OurCompany Profile.

#### **Table of Contents**

**Executive Summary Report:** A topline summary of your population that includes an overview of wellness screening participation, risk factor scorecard, and population trends.

<u>Health Questionnaire Summary:</u> A review of the Health Questionnaire data provided by your population regarding their health, integrated with clinical laboratory data. This report includes an executive summary and valuable perception vs. reality comparisons.

Health Questionnaire Cohort Report: An analysis that includes historical self-reported Health Questionnaire results of those in your population who have consistently provided Health Questionnaire responses. The results in this report are also integrated with cohort respondents' clinical laboratory data.

**Metabolic Syndrome Report:** Analysis of Lab & Biometric Data with Identification of Risk for Metabolic Syndrome.

<u>Clinical Data Report:</u> A breakdown of most current year to date individual laboratory and biometric results, including a comparison to Quest Diagnostics database averages for added insight.

<u>Cohort Clinical Data Report:</u> An analysis that includes the historical clinical and biometric results of those in your population who have consistently participated in screenings for added insight to important trends in your population's health.

**Appendix A:** Test results summary and comparison across cohorts.

**Appendix B:** Quest Diagnostics Health & Wellness | OurCompany Profile Frequently Asked Ouestions

A topline summary of your population that includes an overview of wellness screening participation, risk factor scorecard, and population trends.

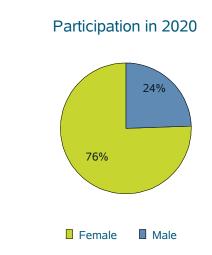
#### **Participation**

The Health & Wellness screening was performed on a total of 3,605 of 5,833 eligible participants at SampleOCP in 2020. This is a participation rate of 62%.

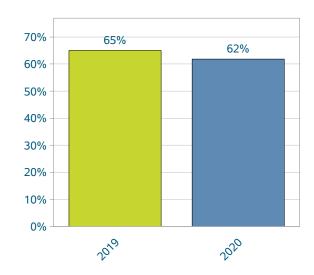
•100% (3,602) of participants were tested using a venipuncture modality.

62% (3,605 of 5,833) Participation rate for 2020

A participation rate higher than 50% achieves the highest rate of risk identification per participant. This increases the likelihood of engaging members of your workforce that are in the poorest health.



Non-Cohort Year Over Year Participation Rate



#### **Wellness Report Card**

Your Wellness Report Card provides an at-a-glance overview of the health risk factors for SampleOCP employees. Based on the risk information collected, we recommend that SampleOCP focus future health and wellness initiatives on the following:

#1

#### **Body Mass Index (BMI)**

BMI is calculated by measuring weight in kilograms divided by height in meters squared (BMI=kg/m2). According to the CDC and National Heart, Lung, and Blood Institute (NIH) a BMI of 25 to 29.9 is classified as overweight. A BMI of 30 or greater is considered obese.

#2

#### **Blood Pressure (BP)**

According to the CDC, heart disease is the leading cause of death for both men and women in the United States, killing more than 633,000 people in 2015. Having an out-of-range blood pressure reading could indicate an increased risk of heart disease, stroke, and other cardiovascular diseases. Healthy blood pressure starts with a healthy diet and physical activity at least 30 minutes per day, five days a week. High blood pressure is now defined as readings of 130 mm Hg and higher for the systolic blood pressure measurement, or readings of 80 and higher for the diastolic measurement. That is a change from the old definition of 140/90 and higher, reflecting complications that can occur at those lower numbers.

#3

#### Low-Density Lipoprotein (LDL) Cholesterol

LDL cholesterol is considered *bad* cholesterol because it can accumulate in the inner walls of your arteries, narrowing them and reducing blood flow. This result is not measured directly; it is derived from the total cholesterol, HDL cholesterol and triglyceride results. Lower levels of LDL cholesterol may reduce the risk of atherosclerotic cardiovascular disease.

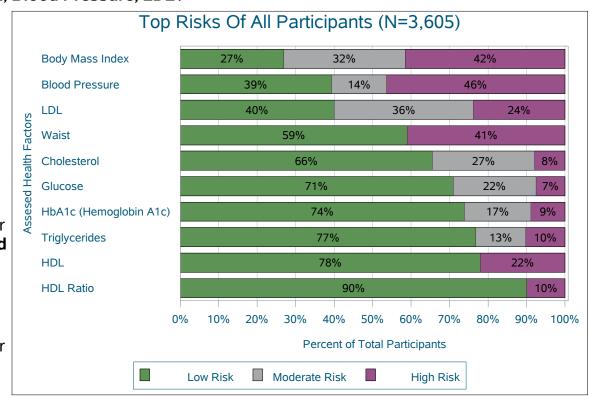
#### **Wellness Report Card**

The top **3** Risks identified for the SampleOCP population include **Body Mass Index**, **Blood Pressure**, **LDL**.

73%
of the employee population are at Moderate or High risk for Body
Mass Index.

**61%** are at Moderate or High risk for **Blood Pressure.** 

**60%** are at Moderate or High risk for **LDL**.



The table below describes the reference ranges for each risk factor.

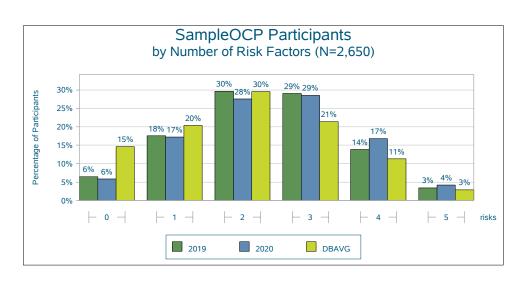
Risk Factor	Low/Acceptable Risk	Moderate Risk	High Risk
Body Mass Index	18.5-24.9	<18.5 or 25-29.9	30.0+
Blood Pressure	<120 over <80	120-129 over <80	>=130 over >=80
LDL	<100	100-129	>=130
Waist	M(<=40in/102cm)/F(<=35in/88cm)		M(>40in/102cm)/F(>35in/88cm)
Cholesterol	<199	200-239	>=240
Glucose	65-99	100-125	>=126
HbA1c (Hemoglobin A1c)	<5.7	5.7-6.4	>6.4
Triglycerides	<150	150-199	>=200
HDL	M(>=40)/F(>=46)		M(<40)/F(<46)
HDL Ratio	<5.0		>=5.0

#### **Multiple Risk Factors**

Employees with multiple risk factors cost employers more money in health care, absenteeism and overall productivity. Multiple studies have shown that overall costs increase at a faster rate once an individual reaches and exceeds three risk factors.

**49%** having 3+ risk factors is more than the database average and is up from **46%** in 2019.

Database Average is an average of all Health & Wellness participants over the past four quarters.



#### **Multi-Year Trends**

All Participants	Initial to Current Year
Test	Net Change % IN Range
Blood Pressure	( 3.5%)
Body Mass Index	0.7%
Glucose	( 5.6%)
LDL Cholesterol	( 0.2%)
Triglycerides	( 0.8%)

Across all screened participants, **Body Mass Index** scores improved the most, while **Glucose** scores decreased the most.

Cohort Participants	Initial to Current Year Cohort[N=2,645]		Potential Shift in Cost Risk
Test/Risk	Net Change from Highest Risk Level	HCUP*	Dollars Saved
Blood Pressure	193	\$5,342*	\$1,031,006
Glucose	12	\$4,311*	\$51,732
LDL Cholesterol	39	\$7,966*	\$310,674
Cohort table calculation derive status for L	\$1,393,412 Net Potential Cost Shift*		

<sup>\*</sup> Based on Healthcare Utilization Project (HCUP) Cost of One Hospitalization for Indicated Clinical Conditions.

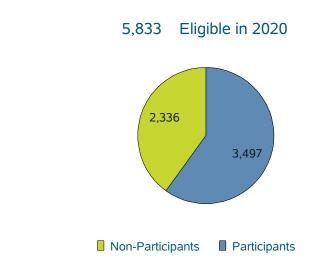
A review of the Health Questionnaire data provided by your population regarding their health, integrated with clinical laboratory data. This report includes an executive summary and valuable perception vs. reality comparisons.

#### **Participation**

On August 15, 2020, the Health & Wellness questionnaire was made available to 5,833 SampleOCP members. 3,497 participants either returned a completed paper-based questionnaire or completed the Internet-based questionnaire and received an individual Personal Wellness Report. This is a participation rate of 60%.

Of the 3,497 60% participants: (3,497 of 5,833)
• 75% were female Participation rate for 2020

The purpose of the Health & Wellness program is to assess the overall health of the population and identify health risks of individuals. Aggregate results of the Health & Wellness program for SampleOCP are presented in this report.

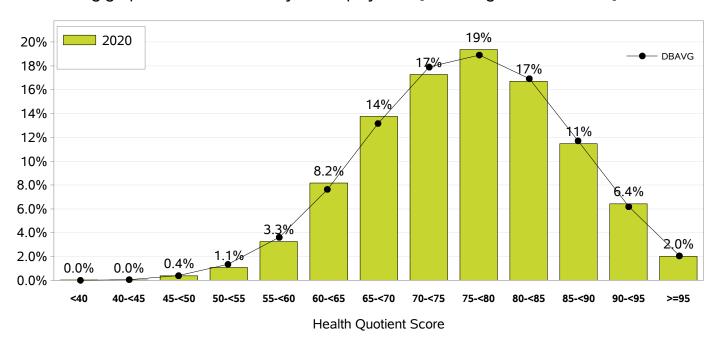


Demographics	Number	Percent
Total Participation	3,497	59.95%
Female	2,638	75.44%
Male	859	24.56%

#### **Health Outlook**

The Quest Diagnostics Health Quotient is an overall wellness index, reported as 0–100 and calculated on a composite of risk factors and health behaviors. Factors such as exercise, cholesterol, diabetes, blood pressure, and weight are weighted for each individual. Participants lose points for poor health behaviors, such as tobacco use, and retain points for good health practices, such as maintaining an optimal weight. Each individual receives a Quest Diagnostics Health Quotient score. The Quest Diagnostics Health Quotient is an assessment of risk based on lifestyle factors, biometric data, and clinical laboratory data.

The following graph is a distribution of your employees' Quest Diagnostics Health Quotient scores.



The average HQ score of the SampleOCP population was **76**, higher than the database average of **70**.

63% of the participants have a score of 79 or lower, compared to the database average of 72%. These 2,216 individuals have an elevated risk for one or more risk factors and a higher risk of developing a chronic illness.

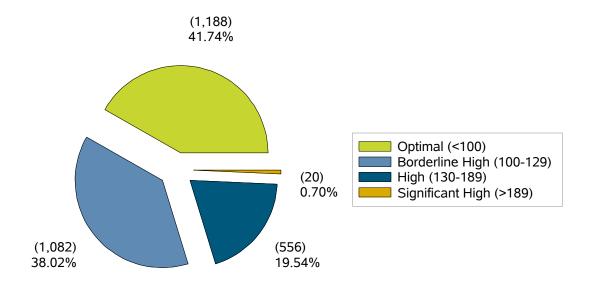
#### **Health Outlook**

#### Perception vs. Reality

The perception that people have concerning their health status versus the reality of findings from medical exams and clinical blood analysis can be enlightening. Until people are aware of their true health status, they typically believe that they are low risk for health problems. Raising the awareness of a population's true health status is the first step toward positive change.

The following figures represent the number of individuals who had not been diagnosed by a physician, yet demonstrated concerning outcomes at their Health & Wellness event in the following three areas: LDL Cholesterol, Glucose, and Hypertension.

#### Participants Never Diagnosed with High Cholesterol in Specified Reference Range for LDL

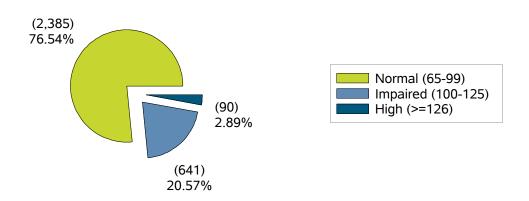


There were 2,846 that responded no to ever being diagnosed with high cholesterol. Of those participants there were 1,082 (38%) that had a borderline high LDL Cholesterol and 556 (20%) that had a high LDL cholesterol.

#### **Health Outlook**

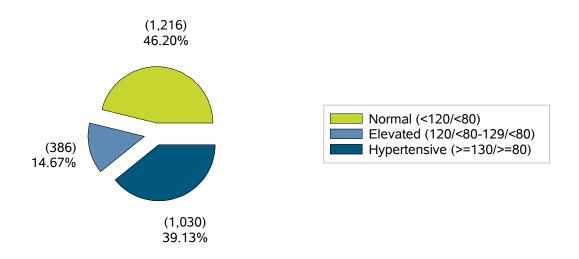
#### Perception vs. Reality (continued)

#### Participants Never Diagnosed with Diabetes in Specified Reference Range for Glucose



There were 3,116 that responded no to ever being diagnosed with diabetes. Of those participants there were 641 (21%) that had a impaired glucose and 90 (3%) that had a high glucose.

# Participants Never Diagnosed with Hypertension in Specified Reference Range for High Blood Pressure



There were 2,632 that responded no to ever being diagnosed with hypertension (high blood pressure). Of those participants there were 386 (15%) that had a elevated blood pressure reading and 1,030 (39%) that had a high blood pressure reading.

#### **Health Outlook**

#### **Self-Reported Health Status Outlook**

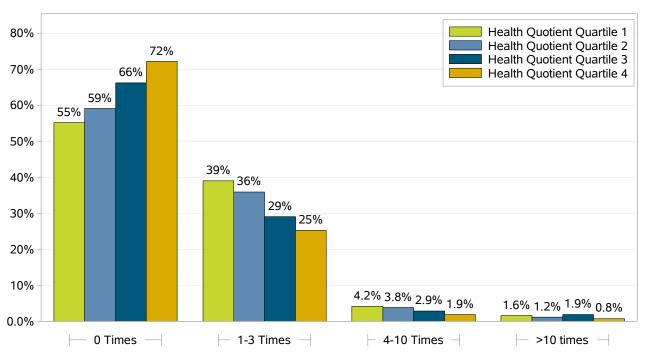
Health perception is an important indicator of health care system utilization. Individuals who perceive their health as poor are more frequent users of the health system. The Health & Wellness questionnaire asks participants to rate their health in a number of ways.

Perceived Health Status	Number of Participants	Percent of Participants
Reported fair or poor health	423	12.10%

#### **Absenteeism**

The health status of SampleOCP participants was evaluated by the Health Quotient Score. Participants who fall in Quartile 1 represent the least healthy participants while participants who fall in Quartile 4 represent the healthiest. The below graph represents those participants who fell in each Quartile of the Health Quotient Score compared to their self-reported times they missed one or more days from work due to illness or injury.

#### Days Missed From Work



#### **Health Outlook**

#### **Medical Conditions**

It is no surprise that employees and their dependents with chronic disease states account for a disproportionate share of an organization's health care budget. According to the National Center for Chronic Disease Prevention and Health Promotion, over 75% of all U.S. health care expenditures are for the diagnosis and treatment of chronic diseases. [2]

The below table represents the number of participants that reported having been diagnosed with the specified medical condition, the percent of those currently taking medication for their treatment, and/or under medical care for the diagnosed condition.

Medical Condition	Percent with Condition	Percent with Condition taking medication	Percent under medical care
Allergies	40.81%	52.70%	17.73%
Asthma	12.41%	59.91%	47.24%
Anxiety	32.03%	33.45%	27.55%
Depression	19.25%	61.07%	47.55%
Arthritis & Rheumatism(joint disease)	15.56%	40.07%	40.44%
Female Breast Cancer	2.43%	0.00%	0.00%
Prostate Cancer	0.00%	0.00%	0.00%
Skin Cancer	2.95%	0.00%	0.00%
Other Cancer	2.66%	9.47%	26.32%
Congestive heart failure	0.60%	71.43%	76.19%
Insulin Dependent Diabetes (Type I)	1.23%	76.74%	76.74%
Non-Insulin Dependent Diabetes (Type II)	7.84%	83.21%	71.53%
Gestational diabetes	2.49%	9.20%	9.20%
Gastrointestinal Disorder	3.40%	0.00%	0.00%
High cholesterol	18.56%	57.32%	50.39%
Hypertension or high blood pressure	24.22%	84.18%	59.98%
Kidney disease	1.14%	37.50%	77.50%
Liver Disease	0.89%	0.00%	0.00%
Migraines(severe headaches)	14.58%	50.59%	39.61%
Osteoporosis(weak bones)	2.72%	49.47%	56.84%
Thyroid Disorder	11.95%	0.00%	0.00%

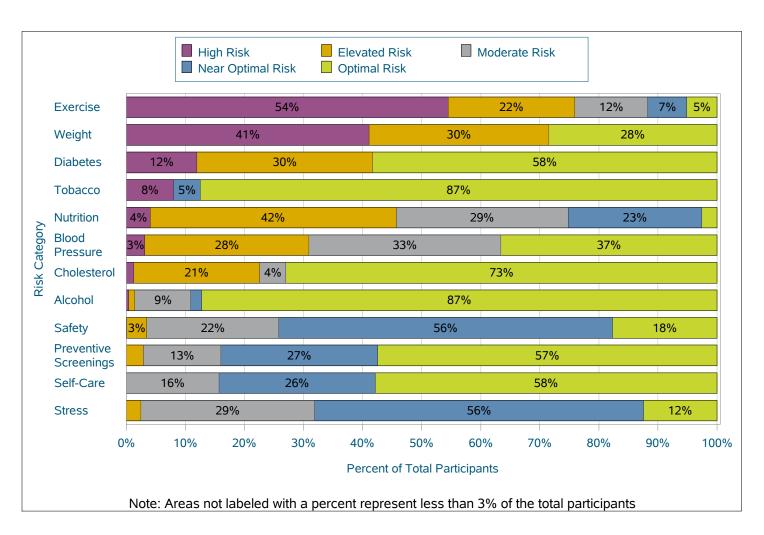
## **Risk Factor Summary**

#### **Multiple Risks**

Multiple risk factors magnify the health events and resulting health care expenditures of individuals

As the number of risks increase, so does the probability of developing additional conditions and diseases. The key risks for SampleOCP population are listed below by prevalence:

Note: Data represented in the chart below includes participants who had both Health Questionnaire and Biometric lab data.

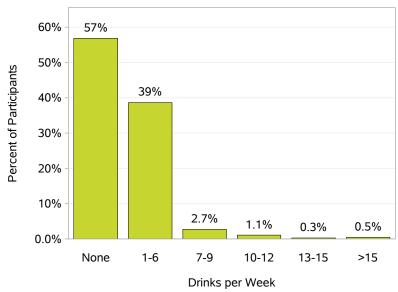


## **Risk Factor Summary**

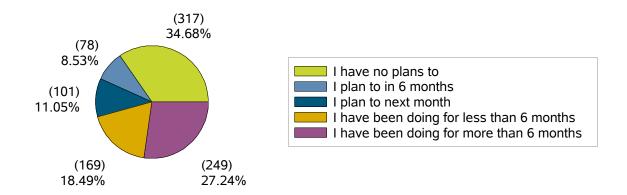
#### **Alcohol**

According to the CDC excessive alcohol use is consuming more than two drinks per day on average for men or more than one drink per day on average for women. Binge drinking is drinking more than 4 drinks in one sitting for men or more than 3 drinks for women. According to the Behavioral Risk Factor Surveillance System BRFSS, 5% of those surveyed drank more than 2 drinks per day and 16% had binge drank in the past 6 months. [3,4]

374 Participants for SampleOCP reported having 5 or more alcoholic drinks in a single sitting in the last 6 months. The below table represents a distribution of drinks per week as reported by the participants.



The below chart represents the readiness to change for participants reported having 5 or more alcoholic drinks in a single sitting in the last 6 months.



## **Risk Factor Summary**

#### **Tobacco Use**

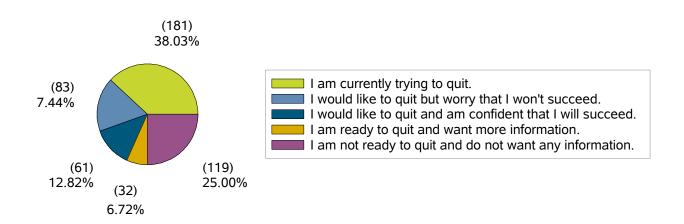
Tobacco use is directly linked to a number of chronic health conditions including heart disease, stroke, emphysema and chronic bronchitis. According to the Centers for Disease Control and Prevention, tobacco use accounts for over 85% of lung cancer occurrences and is the leading cause of cancer related deaths in the United States. [5]

Self-Reported Factor	Number of Participants	Percent of Participants	Database Average
I am an ex-tobacco user	624	56.73%	59.76%
I am an occassional/social tobacco user	196	17.82%	17.32%
I currently use tobacco	280	25.45%	22.91%

The table on the right represents the types of tobacco being used by those who currently use tobacco products, please note participants could select multiple forms of tobacco.

Forms of Tobacco Use	% Using
Smoke Cigarettes	72.90%
e-Cigarettes	14.29%
Smokeless Tobacco	4.83%
Smoke Cigars	3.99%
Smoke a Pipe	0.42%

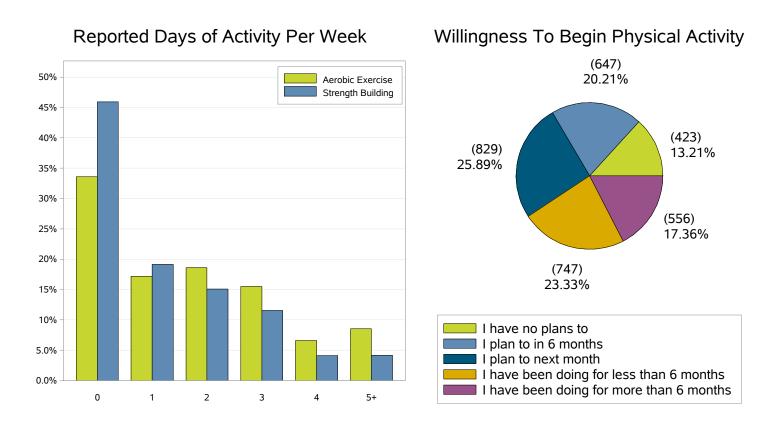
#### How Tobacco Users Feel About Quitting



## **Risk Factor Summary**

#### **Exercise**

The American Heart Association recommends taking part in physical activity most days of the week and strength training at least 2 times per week. Physical activity is not only helpful for preventing heart disease but has been associated with decreasing stress and anxiety levels. [6]



#### **Action Plan**

Participants that have no plans to begin physical activity: Provide education programs about the importance of physical activity.

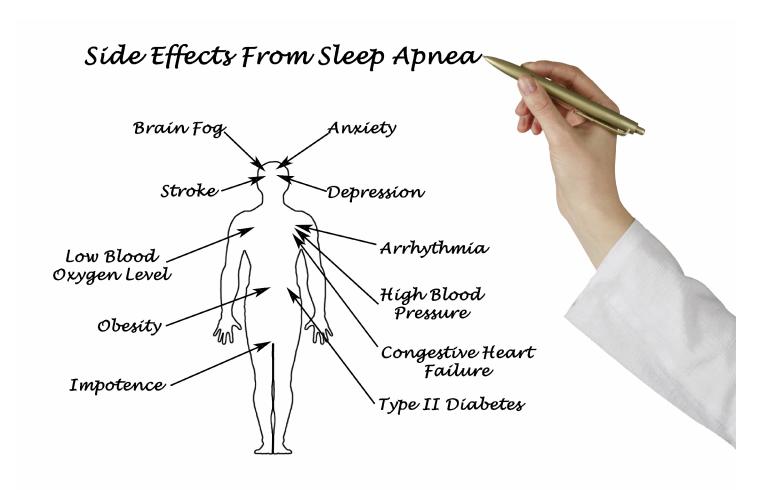
Participants that plan to in 6 months or plan to in a month: Provide corporate discounts with local fitness facilities or offer exercise programs at the workplace.

## **Risk Factor Summary**

#### **Sleep Apnea**

Obstructive Sleep Apnea (OSA) is a sleep disorder where breathing repeatedly stops and starts. Common symptoms include frequent loud snoring and feeling sleep deprived after a full night's sleep. If left untreated, OSA can lead to disturbed sleep, excessive sleepiness during the day, and a range of other medical conditions.

Patients are classified as high risk or lower risk for sleep apnea based on a combination of self-reported information about sleep habits and screening results for Body Mass Index (BMI) and Blood Pressure.



## **Risk Factor Summary**

#### **Sleep Apnea (continued)**

Quest Health & Wellness utilizes The Berlin Questionnaire to assess risk for sleep apnea. These questions provide a means of identifying patients who are likely to have sleep apnea.

The Berlin Questionnaire consists of three categories pertaining to sleep apnea risk. Participants are classified as High Risk if they qualify for two or more categories. They are classified as Low Risk if questionnaire responses and screening results qualify for only one or no categories.

Sleep Apnea risk is calculated based on a combination of factors including a BMI greater than or equal to 30, blood pressure of 140/90 or greater, and self-reported information about sleep patterns and behavior.

# (2,072) 59.57%

(1,406) 40.43%

Participants At Risk For Sleep Apnea

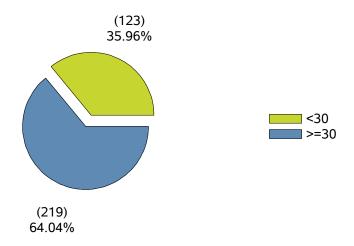
## **Risk Factor Summary**

#### Sleep Apnea (continued)

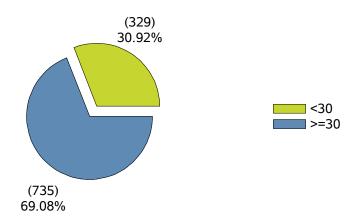
The below charts represents the correlation between BMI and sleep apnea risk of the employee population broken down by gender.

Within the SampleOCP population, 68% of participants at high risk for sleep apnea had a BMI of 30 or greater.

Male Participants with Out of Range BMI and Sleep Apnea Risk



Female Participants with Out of Range BMI and Sleep Apnea Risk

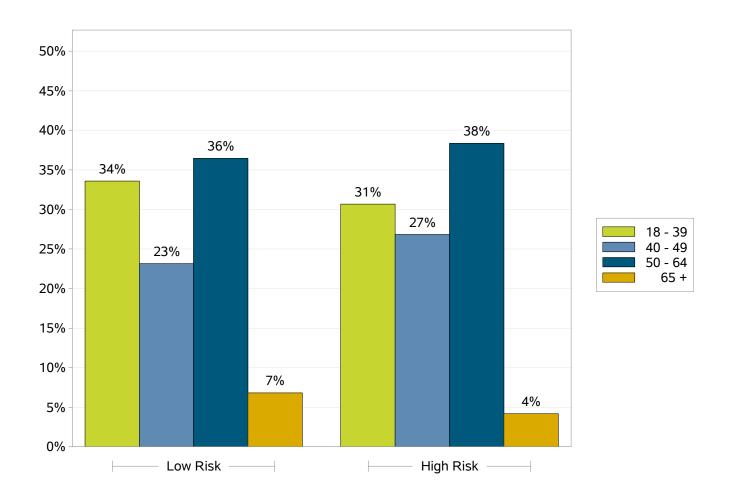


## **Risk Factor Summary**

#### Sleep Apnea(continued)

Participants in the 50 - 64 age range are at the greatest risk for sleep apnea.

Within this High Risk group, males compromise 41% and females represent 38%.



## **Risk Factor Summary**

#### **Stress**

Stress is an all-inclusive term that manifests itself in all areas of life and at every age. Stress can be found in employment and unemployment; every occupation has its risks. There is also heightened media attention because of the growing confirmation that stress plays a role in heart disease, hypertension, sudden death syndrome, depression, anxiety, smoking, obesity, alcoholism, substance abuse, cancer, arthritis, gastrointestinal issues, skin ailments, various infections, and immune system disorders. [7]

The below table represents those participants reporting serious problems with:

Self-Reported Factor	Number of Participants	Percent of Participants	Database Average
A Friend or Co-Worker	273	7.81%	5.62%
A Death of a loved one	608	17.39%	13.82%
Depression	682	19.50%	12.30%
Divorce/Separation	153	4.38%	3.15%
Finances	754	21.56%	14.89%
Job Stress or Anxiety	1,275	36.46%	28.47%
Stress or Anxiety (not job related)	1,232	35.23%	26.42%
Your Family	628	17.96%	12.59%
Your Health	590	16.87%	11.34%
Your Relationships	423	12.10%	8.63%
Your Supervisor or Manager	305	8.72%	7.00%
Moving/Relocation	249	7.12%	5.74%

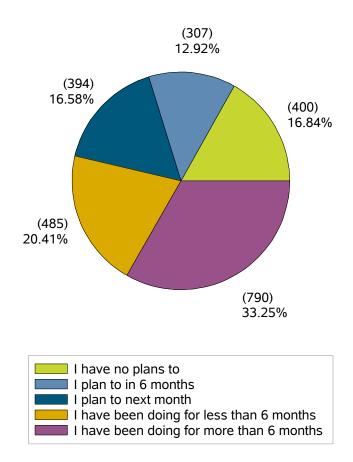
## **Risk Factor Summary**

#### **Stress (Continued)**

It is recommended that people manage stress through an outlet, such as talking with a friend about your stressors, taking part in deep breathing relaxation exercise or taking part in regular physical activity. Below is a summary of your population's participation in stress reduction activities.

- 16% of SampleOCP participants never use stress reducing techniques.
- 50% of SampleOCP participants sometimes use stress reducing techniques.
- 34% of SampleOCP participants *often* use stress reducing techniques.

The below chart represents SampleOCP participants' willingness to begin taking part in stress reducing techniques.



## **Risk Factor Summary**

#### **Nutrition**

Poor nutrition is one of the major causes of today's largest health epidemic, obesity. According to the CDC, following a healthy diet and being physically active should enhance the health of nearly everyone. [8]

The Department of Agriculture recommends 5 servings of fruits and vegetables per day, 3 servings of whole grain food, and 3 cups of low-fat milk/dairy products per day to maintain bone health. Limit high fat food intake to less than 2 servings per day.

Self-Reported Factor	Number of Participants	Percent of Participants	Database Average
< 5 Servings of Fruits and Vegetables per day	3,243	92.74%	92.04%
< 3 Servings of Whole Grain Foods per day	2,783	79.58%	78.64%
> 2 Servings of High Fat Foods per day	433	12.38%	10.29%

#### **Health Outlook**

#### **Preventive Medical Screenings**

The OurCompany Profile is an important first step toward calling out and preventing diseases. Preventive Medical Screenings recommended for their age and gender is another way to encourage populations to be proactive about health initiatives. It is important to increase awareness of these screening recommendations as it directly reduces complications related to chronic disease and prevent excess medical expenditures.

The table below represents your population's self-reported compliance with preventive screening guidelines:

Test	Recommendation	Percent Meeting Guidelines	Database Average
Colorectal Health Fecal occult blood test/fecal immunochemical test (FOBT/FIT) Colonoscopy or signoidoscopy (U.S. Preventive Services Task Force, 2008)	Yearly for those 50 and older	42.48%	39.15%
Immunization Flu shot(Centers for Disease Control and Prevention, 2006)	Yearly	60.82%	52.45%
Breast Health/Mammography (American Cancer Society, 2007) (U.S. Preventive Services Task Force, 2009)	Every 1-2 years for those 50 and older	80.09%	79.92%
PAP exam and HPV U.S. (U.S. Preventive Services Task Force, 2009)	Every 1-3 years	75.13%	77.53%
Dental (Centers for Disease Control and Prevention, The new Guidelines for Infection Control in Dental Health-care Settings, 2003)	Every 6 months	68.94%	69.40%

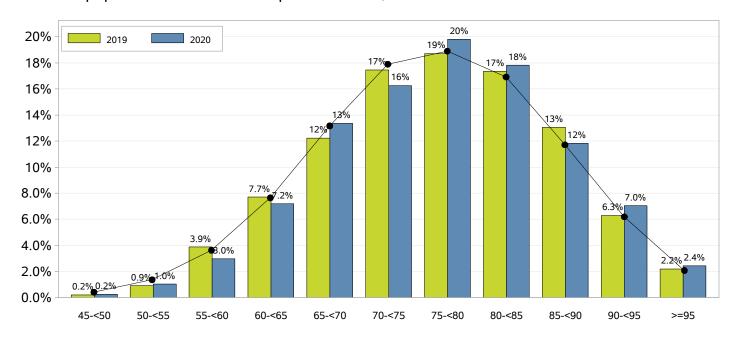
Increasing awareness of the importance of these screening recommendations will reduce complications related to chronic disease and prevent excess medical expenditures.

An analysis that includes historical self-reported Health Questionnaire results of those in your population who have consistently provided Health Questionnaire responses. The results in this report are also integrated with cohort respondents' clinical laboratory data.

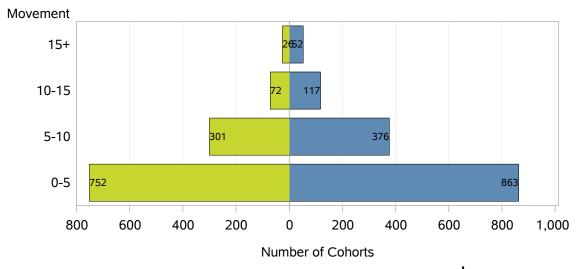
## **Health Quotient Summary**

Of the 3,497 employees who completed the Health & Wellness assessment in 2020, 2,559 employees also completed the Health & Wellness screening event in 2019.

The Health Quotient (HQ) is a score from 0-100 that is based on responses from the health assessment, biometric measurements, and clinical laboratory results. The figure below represents the comparisons of the 2019 and 2020 HQ scores. In 2019, the average score for the cohort population was 76.22 compared to 2020, which was 76.42.



The figure below represents the cohort participants for SampleOCP and the movement of the HQ score. Negative movement represents declining wellness, and an increasing score shows an improvement in health and wellness. Over 55% (1,408) improved their HQ score.

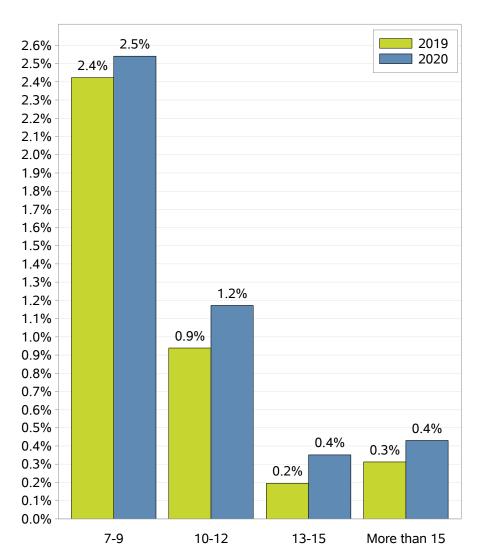


## **Risk Analysis**

#### **Alcohol Use**

In 2019, 30 participants reported high alcohol use. In 2020, 38 participants were at risk for alcohol problems. Of those who were at risk in 2019, 15 (50%) were still at risk for alcohol problems in 2020, but 50% reduced their risk.

The chart below represents **all** cohort participants stratified by self-reported drinks consumed per week in 2019 as compared to 2020.



## **Risk Analysis**

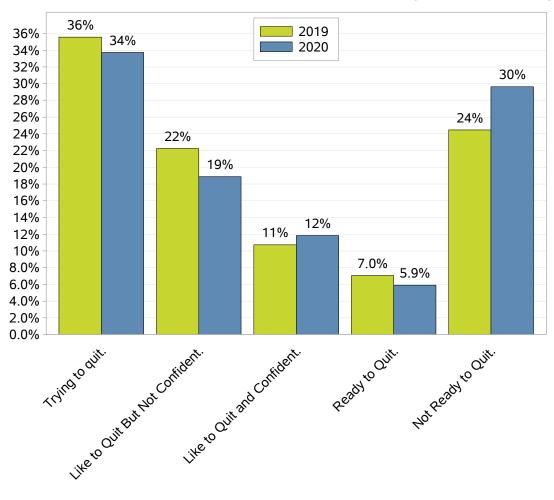
#### **Tobacco Use**

In 2019, 199 participants reported using tobacco products. In 2020, 195 participants were at risk from tobacco use. Of those who were at risk from tobacco in 2019, 156 (78%) were still at risk, but 22% reduced their risk.

The table below represents a summary of the usage of tobacco products within the cohort population.

Self-Reported Factor	2019	Percent of Participants	2020	Percent of Participants	Δ in Number of Users
Current Tobacco User	199	7.99%	195	7.83%	-4
Former Tobacco User	440	17.67%	436	17.51%	-4

The chart below represents the cohort tobacco users shift in willingness to stop using.

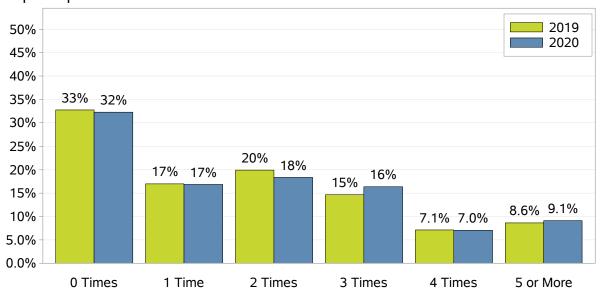


#### **Risk Analysis**

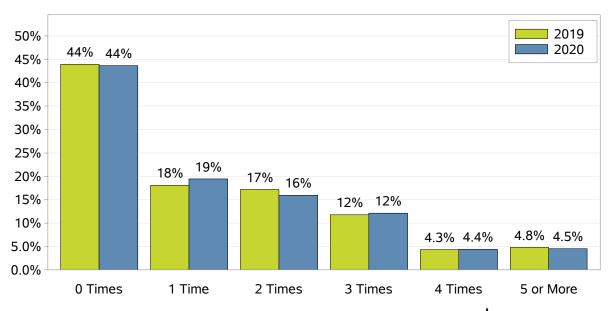
#### **Exercise**

In 2019, 1,935 participants were not meeting the recommended guidelines for exercise. In 2020, 1,899 participants were not meeting recommended guidelines for exercise. Of those who were not meeting the guidelines for exercise per week in 2019, 1,679 (87%) were still not meeting guidelines in 2020.

The chart below represents the number of self reported sessions of aerobic exercise per week by the cohort participants.



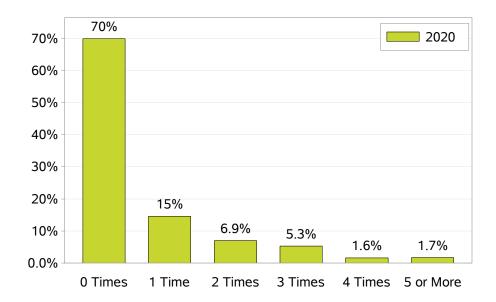
The chart below represents the number of self reported sessions of strength training exercise per week.



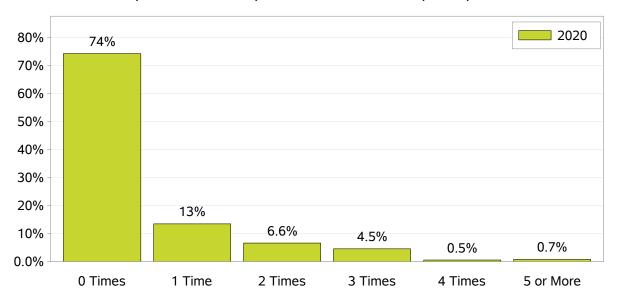
## **Risk Analysis**

#### **Exercise (continued)**

There were 838 participants that reported zero aerobic exercise sessions in 2019. Of these same participants, 30% reported they now exercise one or more times per week. The chart below represents the responses of those same participants in 2020.



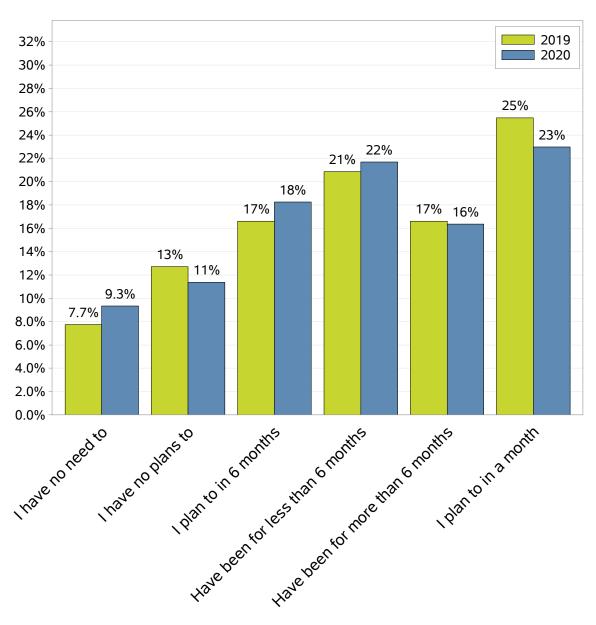
There were 1,123 participants that reported zero strength training exercise sessions in 2019. Of these same participants, 26% reported they now do strength training one or more times per week. The chart below represents the responses of those same participants in 2020.



## **Risk Analysis**

#### **Exercise (continued)**

The chart below represents the cohort participants' shift in readiness to begin taking part in regular exercise.



#### **Risk Analysis**

#### **Nutrition**

In 2019, 1,175 participants reported that they do not eat the recommended amount of servings of fruits, vegetables, whole grain and high fat foods per day. In 2020, 1,119 participants were identified as having these eating habits. Of the participants at risk for poor nutrition habits in 2019, 832 (71%) were still at risk in 2020.

The table below represents a summary of nutrition habits within the cohort population.

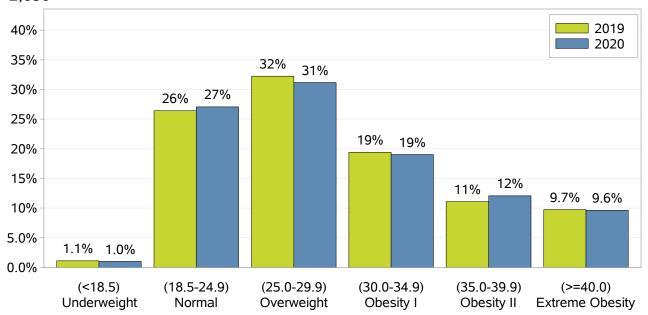
Self-Reported Factor	2019	Percent of Participants	2020	Percent of Participants	Database Average
< 5 Servings of Fruits and Vegetables per day	2,374	92.77%	2,361	92.26%	92.04%
< 3 Servings of Whole Grain Foods per day	2,058	80.42%	2,044	79.87%	78.64%
> 2 Servings of High Fat Foods per day	311	12.15%	278	10.86%	10.29%

## **Risk Analysis**

#### Weight

In 2019, 1,853 participants were above the ideal weight range. In 2020, 1,833 were identified as being above ideal weight range. Of the participants that were above ideal weight range in 2019, 1,731 (93%) were still above in 2020.

The chart below represents the cohort participants in each Body Mass Index (BMI) category. N = 2,650



The table below represents the change of Body Mass Index(BMI) within each weight category for the cohort participants.

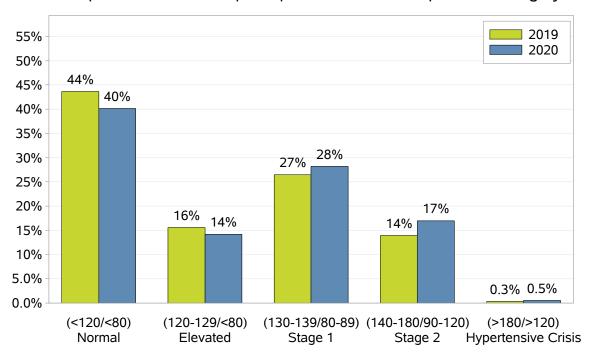
Body Mass Index	2019 Average BMI	2020 Average BMI	∆ in Average BMI
Underweight (<18.5)	17.29	17.54	0.25
Normal (18.5-24.9)	22.67	22.76	0.09
Overweight (25.0-29.9)	27.38	27.35	-0.03
Obesity I (30.0-34.9)	32.22	32.12	-0.10
Obesity II (35.0-39.9)	37.17	37.34	0.17
Extreme Obesity (>=40.0)	44.88	45.34	0.46

## **Risk Analysis**

#### **Blood Pressure**

In 2019, 706 participants were at risk for high blood pressure. In 2020, 801 participants were identified as being at risk for high blood pressure. Of those that were at risk for high blood pressure in 2019, 452 (64%) were still at risk in 2020.

The chart below represents the cohort participants in each blood pressure category. N = 2,645



The table below represents the change in average blood pressure within each category for the cohort participants.

Blood Pressure	2019 Average Blood Pressure	2020 Average Blood Pressure	∆ in Average Blood Pressure	
Normal (<120/<80)	109/69	109/69	0/0	
Elevated (120-129/<80)	124/73	123/72	-1/-1	
Stage 1 High BP (130-139/80-89)	126/81	126/81	0/0	
Stage 2 High BP (140-180/90-120)	144/89	144/90	0/1	
Hypertensive Crisis (>180/>120)	182/104	185/103	3/-1	

## **Risk Analysis**

#### **Stress and Depression**

In 2019, 44 participants were at risk for stress related disorders. In 2020, 36 participants were at risk for stress related disorders. Of those who were at risk for stress related disorders in 2019, 7 (16%) were still at risk, but 84% reduced their risk.

The table below represents the cohort participants' responses to selected stress and depression related questions in 2019 compared to 2020.

Self-Reported Factor	Number of Participants 2019	Percent of Participants 2019	Number of Participants 2020	Percent of Participants 2020	∆ in Number of Participants
A Friend or Co-Worker	227	8.87%	210	8.21%	-17
A Death of a loved one	443	17.31%	453	17.70%	10
Depression	447	17.47%	470	18.37%	23
Divorce/Separation	105	4.10%	101	3.95%	-4
Finances	626	24.46%	523	20.44%	-103
Job Stress*	764	29.86%	906	35.40%	142
Stress*	845	33.02%	863	33.72%	18
Your Family	457	17.86%	446	17.43%	-11
Your Health	397	15.51%	434	16.96%	37
Your Relationships	306	11.96%	286	11.18%	-20
Your Supervisor or Manager	195	7.62%	218	8.52%	23
Moving/Relocation	190	7.42%	137	5.35%	-53

<sup>\*</sup>Updates were made to the manner in which we asked about problems with Job Stress and Stress, these changes asked participants to categorize general stress different from job stress.

# **Metabolic Syndrome Report**

Analysis of Lab & Biometric Data with Identification of Risk for Metabolic Syndrome.

Reference Ranges for Metabolic Syndrome are based upon the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III).

To raise awareness and educate employers about the effects of obesity we have included an analysis of metabolic syndrome. Metabolic syndrome is defined by five health risk factors. When three or more of these factors fall outside the target ranges, an individual has a much greater chance of developing heart disease, diabetes, stroke and other health problems. For example, someone with metabolic syndrome is two times as likely to develop heart disease, and five times as likely to develop diabetes as someone without it.

You may notice the target ranges for metabolic syndrome are different from some of the reference ranges listed elsewhere in this report. This is because metabolic syndrome has been linked to these risk factors at the specific target ranges listed in this analysis. Metabolic syndrome can only be diagnosed by a doctor. This analysis is an estimation of risk based on results collected in this screening.

## **Metabolic Syndrome Summary**

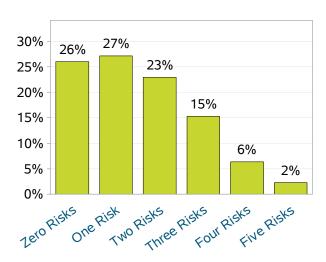
Metabolic Syndrome has emerged as an accurate measurement of the disease risks associated with obesity. According to the CDC, we are facing an epidemic of obesity. The factors reflected by Metabolic Syndrome include blood pressure, glucose, triglycerides, HDL cholesterol, and waist circumference. BMI can be used in place of waist circumference if it is preferred.

When the values for 3 or more of these measures fall within targets established for Metabolic Syndrome by the American Heart Association, participants receive a *green light* and are less likely to be at risk for heart disease, diabetes and stroke. Participants with 2 or fewer target values receive a *red light*, and are at greater risk. In fact, research indicates these individuals are 5 times more likely to become a diabetic and 2 to 3 times more likely to have a cardiovascular event. By understanding their risk profiles, participants can make lifestyle changes to reduce or eliminate their risk of Metabolic Syndrome.

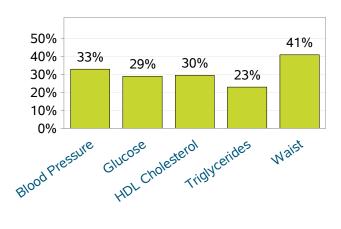
#### Percentage of Participants With and Without Metabolic Syndrome



# Percentage of Participants by Number of Risks Failed



#### Percentage of Participants that Failed MetS by Each Risk

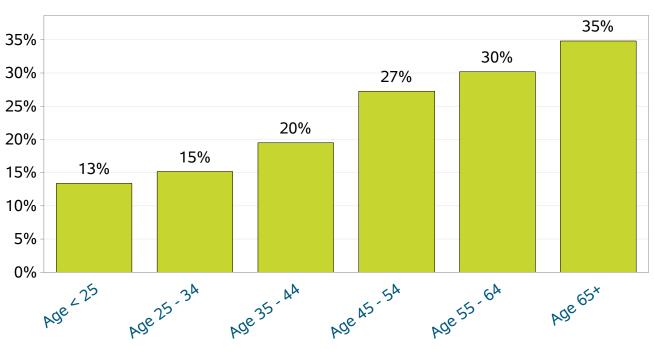


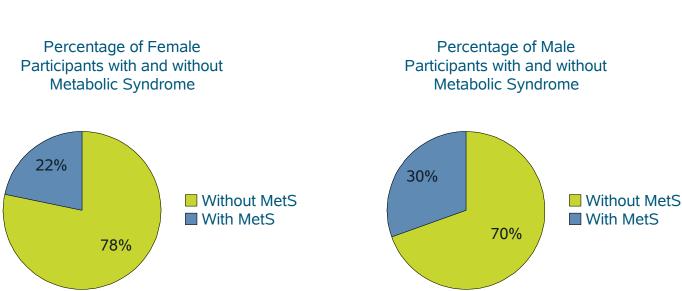
## **Metabolic Syndrome Age and Gender Breakouts**

The average age of participants with 3 or more risk factors (Metabolic Syndrome) is 49.

The average age of participants with 2 or fewer risk factors is **45**.

## Metabolic Syndrome by Age Group





Summary Data	* Number in 2020 (n)	** % At Risk MetS	Systolic BP>=130 Diastolic BP>=85	Glucose >=100	HDL <40 M <50 F	Triglycerides >=150	Waist >40 M >35 F
All	3,541	23.89%	33.01%	28.97%	29.57%	23.07%	41.01%
7 111	3,341	23.0370	33.0170	20.57 70	23.37 70	23.07 70	41.0170
Female	2,671	21.75%	27.85%	25.72%	30.36%	19.36%	45.30%
Male	870	30.46%	48.85%	38.97%	27.13%	34.48%	27.82%
Age < 25	112	13.39%	25.00%	8.04%	32.14%	16.07%	26.79%
Age 25 - 34	659	15.17%	19.58%	13.51%	32.93%	19.73%	35.81%
Age 35 - 44	841	19.50%	26.16%	22.00%	31.87%	20.10%	43.04%
Age 45 - 54	854	27.28%	35.01%	33.26%	29.04%	25.76%	42.97%
Age 55 - 64	874	30.21%	43.25%	42.33%	25.63%	26.54%	43.48%
Age 65+	201	34.83%	57.21%	44.28%	26.87%	23.88%	38.31%

Summary Data	* Number in 2020 (n)	Zero Risk Factors	One Risk Factor	Two Risk Factors	Three Risk Factors	Four Risk Factors	Five Risk Factors
All	3,541	26.01%	27.17%	22.93%	15.25%	6.35%	2.29%
Female	2,671	27.67%	28.00%	22.58%	13.55%	6.21%	1.98%
Male	870	20.92%	24.60%	24.02%	20.46%	6.78%	3.22%
Age < 25	112	36.61%	37.50%	12.50%	8.93%	3.57%	0.89%
Age 25 - 34	659	34.90%	28.98%	20.94%	10.93%	3.34%	0.91%
Age 35 - 44	841	27.82%	29.96%	22.71%	11.77%	6.18%	1.55%
Age 45 - 54	854	24.59%	24.71%	23.42%	17.45%	7.03%	2.81%
Age 55 - 64	874	19.45%	24.94%	25.40%	18.65%	8.24%	3.32%
Age 65+	201	17.91%	23.88%	23.38%	23.38%	7.46%	3.98%

<sup>\*</sup> In order to be included in the Metabolic Syndrome analysis the participant had to have results for all 5 factors.

<sup>\*\*</sup> The "At Risk" percentage represents participants who have 3 or more factors that fall outside the target ranges.

# **Database Average**

Summary Data	* (%)	** % At Risk MetS	Blood Pressure (At Risk)	Glucose (At Risk)	HDL (At Risk)	Triglycerides (At Risk)	Waist (At Risk)
All	100.00%	21.88%	31.02%	26.32%	26.94%	24.38%	20.66%
Female	51.75%	18.12%	24.24%	20.81%	26.82%	18.68%	23.97%
Male	48.25%	25.91%	38.30%	32.24%	27.06%	30.50%	17.11%

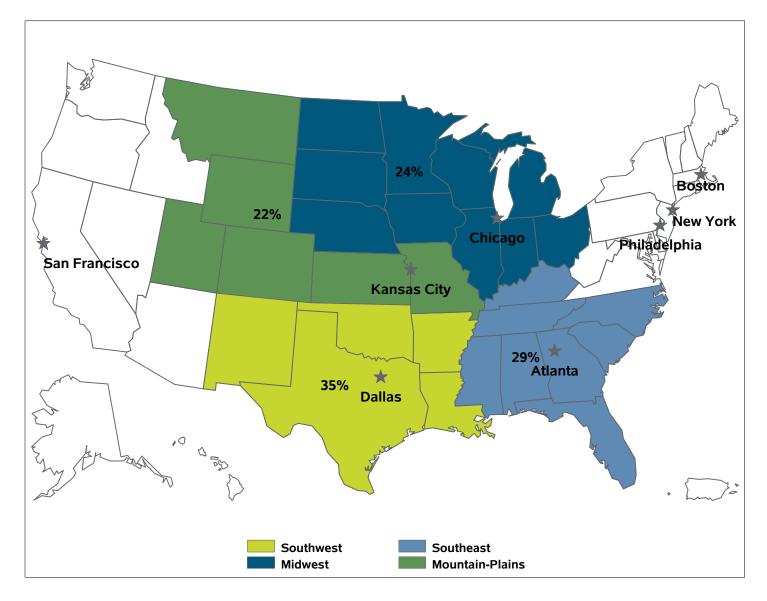
Summary Data	* (%)	Zero Risk Factors	One Risk Factor	Two Risk Factors	Three Risk Factors	Four Risk Factors	Five Risk Factors
All	100.00%	30.07%	27.02%	21.02%	13.40%	6.57%	1.92%
Female	51.75%	35.20%	27.28%	19.40%	11.45%	5.26%	1.42%
Male	48.25%	24.57%	26.75%	22.77%	15.49%	7.97%	2.46%

<sup>\*</sup> In order to be included in the Metabolic Syndrome analysis the participant had to have results for all 5 factors.

<sup>\*\*</sup> The "At Risk" percentage represents participants who have 3 or more factors that fall outside the target ranges.

SampleOCP employees are distributed across the different geographical regions designated by the US Bureau of Labor Statistics. The map below highlights the percent at risk for Metabolic Syndrome by these regions.

Data is available for the client where the sum of the participants is 40 or more in 3 or more regions.



Region	Southwest	Southeast	Midwest	Mountain-Plains
# MetS Screened	140	154	1,996	1,220
# At Risk	49	45	470	272
% MetS	35%	29%	24%	22%

## **Metabolic Syndrome Cohort Report Introduction**

This report represents your participants Metabolic Syndrome status over multiple screening periods. Within this report you will first see an overview of your overall trend for your entire population for each screening period represented, followed by a deeper focus on the population cohort, meaning those that participated in every screening analyzed within this report.

Cohort: Those participants that took part in the screenings in 2019 and 2020 and had results for all 5 factors.

### **Total Participant Summary**

The table below represents participants in each year of the program and the overall percent at risk for Metabolic Syndrome for all participants as well as the cohort participants in both screening periods, by their number of risk factors for each screening period. The change in percentage from 2019 to 2020 at each risk level is also displayed.

	All Part	icipants	Cohort Participants			
	2019	2020	2019	2020	Change	
Number of Participants	3,206	3,541	2,604	2,604		
% at Risk for MetS	20.77%	23.89%	20.05%	23.31%	+3.26%	
Zero Risk Factors	27.32%	26.01%	27.42%	26.04%	-1.38%	
One Risk Factors	28.67%	27.17%	28.99%	27.38%	-1.61%	
Two Risk Factors	23.24%	22.93%	23.54%	23.27%	-0.27%	
Three Risk Factors	12.88%	15.25%	12.44%	14.86%	+2.42%	
Four Risk Factors	5.93%	6.35%	5.84%	6.26%	+0.42%	
Five Risk Factors	1.97%	2.29%	1.77%	2.19%	+0.42%	

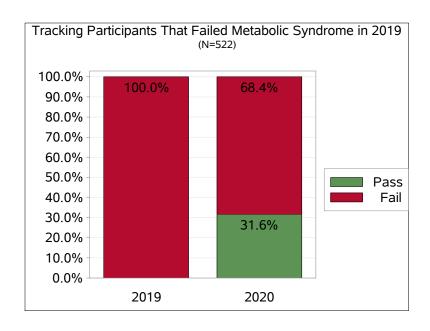
### **Overall Cohort Participant Summary**

In SampleOCP there were 2,604 participants that took part in both screening periods represented in this report. In 2019 20% of those were at risk for Metabolic Syndrome and in 2020, 23% were at risk which is an increase of 3% at risk and is considered negative movement.

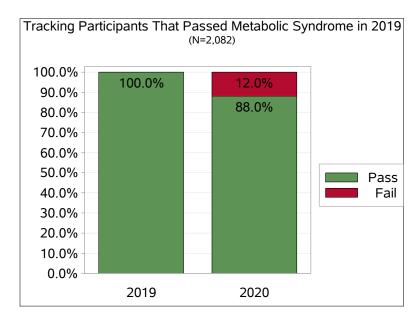
## **Change in Risk Status**

Looking at overall risk migration of a population is important, however looking at the overall net change can hide meaningful information about the changes occurring at each risk level. Key insights can be found in your cohort populations risk migration from the following charts that represent a breakout of the overall risk by looking at each risk level separately. The first bar in each chart represents the number of participants in 2019 that fell into the specified risk category, while the second bar represents the movement in risk that may have occurred by 2020.

Of those participants who failed or were at risk for Metabolic Syndrome in 2019 **165** or **32%** improved to an in-range status in 2020 leaving 357 out of range.

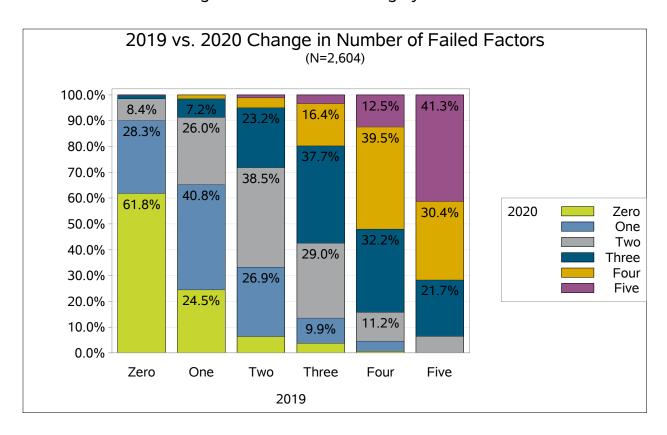


Of those participants who passed or were not at risk for Metabolic Syndrome in 2019 **250** or **12%** of those fell to an at-risk status in 2020 leaving 1,832 in range.



# **Risk Migration**

The following chart illustrates the movement of risk from the initial screening period. The X-axis represents the number of risk factors the participant began with and the multiple bars at each risk level represent the migration of those participants to other risk levels, higher or lower. It is important to note the percentage of participants that move to different stages of Metabolic Syndrome risk and note the migration from one risk category to another.



		2020									
2019	Zero	One	Two	Three	Four	Five					
Zero	61.8%	28.3%	8.4%	1.4%	0.0%	0.1%					
One	24.5%	40.8%	26.0%	7.2%	1.6%	0.0%					
Two	6.4%	26.9%	38.5%	23.2%	3.9%	1.1%					
Three	3.7%	9.9%	29.0%	37.7%	16.4%	3.4%					
Four	0.7%	3.9%	11.2%	32.2%	39.5%	12.5%					
Five	0.0%	0.0%	6.5%	21.7%	30.4%	41.3%					

(chart reads from left to right - N=2,604)

A breakdown of most current year to date individual laboratory and biometric results, including a comparison to Quest Diagnostics database averages for added insight.

#### **An Overview**

Clinical laboratory testing gives important insight into what is happening within the body at the time of the test, and what can happen in the future if action is not taken. Laboratory testing results impact 70% of all health care decisions and spending. Within the continuum of care, by shifting resources from diagnosis to preventative care, health problems are caught before they become more serious. In this way, laboratory testing can be an important health care cost containment tool.

Screening tests help identify health risks that employees may not know about thus enabling them to take appropriate actions. These tests also provide a benchmark for measuring future results. Screening tests can reinforce the importance of positive lifestyle factors while also serving as a change agent by identifying areas for improvement.

In this section, a summary of laboratory test results are presented. The summary of these tests are grouped by body system and disease and are followed by a detailed explanation of each clinical test performed on each blood sample. All reference ranges and guidelines are established by Quest Diagnostics to interpret laboratory results.

## **Understanding Clinical Laboratory Data**

#### **Biometrics**

#### **Blood Pressure (BP)**

High blood pressure is one of several risk factors associated with cardiovascular disease (CVD), which is the number one killer of Americans. CVD claims the life of 1 American every 33 seconds, and in 2003 CVD accounted for \$142 billion lost in productivity due to morbidity and mortality. [10]

Blood Pressure	Male	Female	Number in Range	Percent in Range	Company Average	Database Average
Normal (<120 over <80)	203	1,170	1,373	39.48%	38.65%	39.17%
Elevated (120-129 over <80)	142	357	499	14.35%	15.30%	15.53%
Stage 1 High BP (130-139 over 80-89)	297	718	1,015	29.18%	28.93%	30.37%
Stage 2 High BP (140-180 over 90-120)	205	370	575	16.53%	16.72%	14.67%
Hypertensive Crisis (>180 over >120)	9	7	16	0.46%	0.40%	0.26%

Blood pressure is the amount of stress or strain being placed on your veins and arteries that carry blood throughout your body. Increased pressure in your arteries and veins can cause damage to them and increase the risk of blockages that cause strokes and heart attacks. For many people blood pressure can be controlled by losing weight, if you are overweight, and becoming physically active. There are also pharmaceutical methods for controlling high blood pressure. Currently **84%** of those previously diagnosed with high blood pressure reported taking medications to control their blood pressure.

High blood pressure is now defined as readings of 130 mm Hg and higher for the systolic blood pressure measurement, or readings of 80 and higher for the diastolic measurement. That is a change from the old definition of 140/90 and higher, reflecting complications that can occur at those lower numbers.

## **Understanding Clinical Laboratory Data**

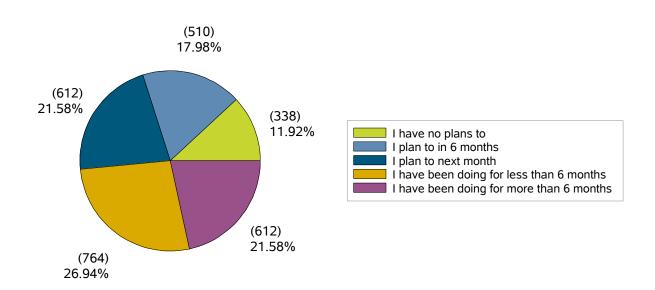
## **Biometrics (continued)**

#### **Body Mass Index (BMI)**

BMI equals weight in kilograms divided by height in meters squared (BMI=kg/m2). A BMI of 25 to 30 is classified as overweight. A BMI of 30 or greater is considered obese. According to the BRFSS, 37% of those surveyed have a BMI considered to be overweight and 27% had a BMI considered Obese or greater than 30. [9]

Body Mass Index	Male	Female	Number in Range	Percent in Range	Company Average	Database Average
Underweight (<18.5)	5	37	42	1.20%	1.05%	0.96%
Normal (18.5-24.9)	221	732	953	27.25%	27.35%	29.59%
Overweight (25.0-29.9)	313	751	1,064	30.43%	33.58%	34.21%
Obesity I (30.0-34.9)	179	491	670	19.16%	20.46%	19.60%
Obesity II (35.0-39.9)	83	347	430	12.30%	10.02%	9.08%
Extreme Obesity (>=40.0)	58	280	338	9.66%	7.54%	6.56%

The below chart represents the participants' readiness to begin a weight loss program for all participants for SampleOCP participating in the Health & Wellness screening event.



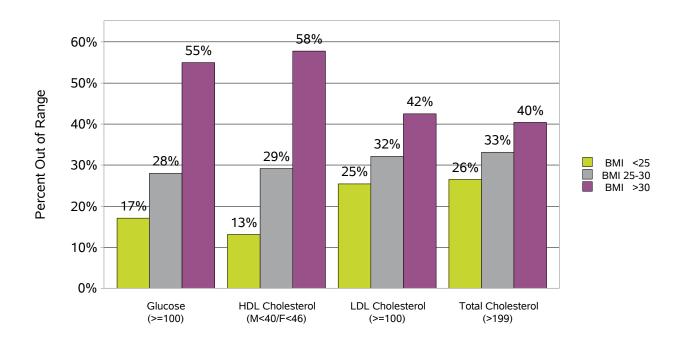
## **Understanding Clinical Laboratory Data**

## **Biometrics (continued)**

#### **Body Mass Index (continued)**

Weight plays an important role in managing risk for heart disease. Cholesterol and glucose have been shown to be significantly impacted by weight (American Heart, 2008). Weight can affect cholesterol, raising levels of LDL cholesterol (the harmful kind of cholesterol that clogs blood vessels) and lowering levels of HDL cholesterol (the good kind of cholesterol that helps clear blood vessels).

The below chart represents the correlation between participant BMI and the percent of those participants with out-of-range test results.

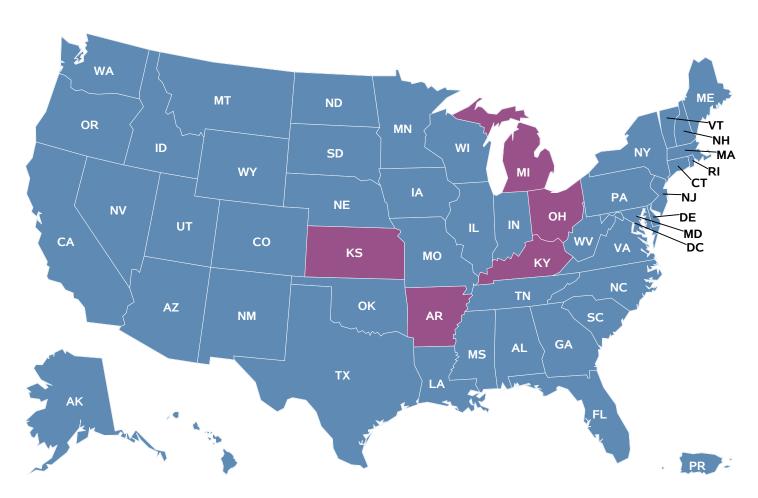


## **Understanding Clinical Laboratory Data**

## **Body Mass Index (continued)**

SampleOCP employees are distributed across the different geographical locations. The map below highlights the 5 states with the highest rates of obesity based on the percentage of participants in each state with a Body Mass Index of 30 or more.

Data is available for the client where the sum of the participants is 40 or more in 5 or more states.



State	Michigan	Ohio	Arkansas	Kansas	Kentucky
#BMI Screened	323	152	136	329	151
#BMI>=30	167	75	63	149	68
% BMI>=30	51.70%	49.34%	46.32%	45.29%	45.03%

## **Understanding Clinical Laboratory Data**

## **Biometrics (continued)**

#### **Waist Circumference**

A waist circumference measurement can provide an independent prediction of risk above that of body mass index (BMI). It is especially useful in those who are categorized as normal or overweight on the BMI scale.

A high waist circumference in a patient with a BMI in a range between 25 and 35 kg/m2 is associated with an increase risk for:

- Type 2 diabetes
- Dyslipidemia
- Hypertension
- · Cardiovascular disease

Waist Circumference	Number in Range	Percent in Range	Company Average	Database Average
Male Avg (<=102 cm or 40 in)	623	72.78%	73.34%	70.74%
Male Above Avg (>102 cm or 40 in)	233	27.22%	26.66%	29.26%
Female Avg (<= 88 cm or 35 in)	1,429	55.05%	58.07%	58.02%
Female Above Avg (> 88cm or 35 in)	1,167	44.95%	41.93%	41.98%

# **Understanding Clinical Laboratory Data**

#### **Heart**

Coronary artery disease is the end result of atherosclerosis and inflammation. Cholesterol (fatty material) accumulates within the artery walls, where it eventually hardens. Arteries subsequently lose their normal elasticity and become narrow, restricting the passage of oxygen-rich blood to the heart. Lipid screening is the most common technique used to evaluate your cardiovascular system and measures the different types of fat in your body. There are many different kinds of lipids, most of which are included in your total cholesterol level.

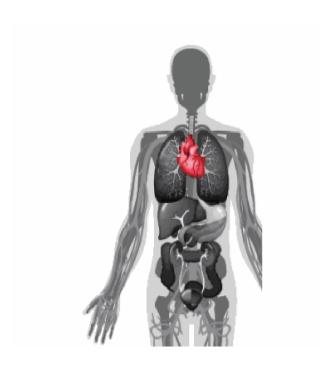
**Total Cholesterol:** Cholesterol is an essential body fat needed to produce substances such as hormones and bile. High levels of cholesterol are usually associated with a higher risk of heart disease and narrowed blood vessels. Lipids included in Total Cholesterol are HDL Cholesterol, LDL Cholesterol, and Triglycerides.

### **High-Density Lipoprotein (HDL)**

**Cholesterol:** HDL cholesterol is commonly called *good* cholesterol because it can aid in the removal of excess cholesterol in body tissues and help prevent the accumulation of LDL cholesterol in the arteries. Higher levels of HDL cholesterol are desirable.

### **Low-Density Lipoprotein (LDL)**

**Cholesterol:** LDL cholesterol is considered *bad* cholesterol because it can accumulate in the inner walls of your arteries, narrowing them and reducing blood flow. This result is not measured directly; it is derived from the total cholesterol, HDL cholesterol, and triglyceride results. Lower levels of LDL cholesterol are desirable.



**Total Cholesterol/HDL-C Ratio:** This calculation is obtained by dividing the total cholesterol level by the HDL cholesterol level. The higher the number, the greater the risk of coronary heart disease.

**Triglycerides:** Triglycerides are fats composed of fatty acids and glycerol. Triglycerides combine with proteins to form particles called lipoproteins that transport fats through the bloodstream. These lipoproteins carry triglycerides from the liver to other parts of the body that need this energy source. Triglycerides then return to the liver where they are removed from the body. The level of triglycerides in your blood can indicate how efficiently your body processes the fat in your diet. Accurate results require a minimum of a twelve-hour fast (no food or drink except water and medication) prior to testing.

## **Understanding Clinical Laboratory Data**

## **Heart (continued)**

#### What the results mean:

Low levels of total and LDL cholesterol are associated with a low risk of heart disease. Low levels of HDL cholesterol are considered undesirable and are associated with an increased risk of heart disease.

High levels of total and LDL cholesterol are associated with a high risk of heart disease. High levels of HDL cholesterol are considered desirable and are associated with a decrease risk of heart disease. Many other facts and tests are important in assessing heart disease, including smoking, diabetes and blood pressure.

Test/Range	Male	Female	Number in Range	Percent in Range	Company Average	Database Average
Triglycerides						
Normal (<=149)	563	2,127	2,690	76.92%	77.58%	75.57%
Borderline High (150-199)	153	301	454	12.98%	11.92%	12.56%
High (>=200)	143	210	353	10.10%	10.50%	11.87%
Total Cholesterol						
Desirable (<=199)	629	1,664	2,293	65.57%	64.91%	64.41%
Borderline High (200-239)	184	748	932	26.65%	26.28%	26.57%
High (>=240)	46	226	272	7.78%	8.81%	9.02%
HDL Cholesterol						
High (Desirable) (>=60)	112	1,044	1,156	33.08%	33.14%	33.00%
Acceptable M(40-59)/F(46-59)	514	1,061	1,575	45.06%	47.33%	46.97%
Low M(<=39)/F(<=45)	232	532	764	21.86%	19.53%	20.03%
LDL Cholesterol						
Optimal (<100)	350	1,050	1,400	40.07%	39.20%	41.44%
Borderline High (100-129)	323	945	1,268	36.29%	34.95%	33.79%
High (130-189)	172	609	781	22.35%	24.37%	23.31%
Significant High (>189)	12	33	45	1.29%	1.48%	1.46%
HDL Ratio						
Normal (<5.0)	701	2,449	3,150	90.21%	89.20%	87.42%
High (>=5.0)	157	185	342	9.79%	10.80%	12.58%

# **Understanding Clinical Laboratory Data**

## **Heart (continued)**

#### **hsCRP**

hsCRP is a new clinical laboratory test that stands for "C reactive Protein" which is made by the liver in response to infection, tissue injury or inflammation. Even low values of hsCRP, previously regarded as normal, have now been shown to be a risk factor for atherosclerosis (fatty deposits lining the walls of blood vessels). Build-up of these fatty deposits can cause chest pain, called angina, and eventually lead to a heart attack. Your risk increases with increasing levels of hsCRP, and this test adds significant precision in predicting future cardiovascular disease events.

#### What the results mean:

**Low** - The lower the better. The lowest levels of hsCRP are associated with the lowest risk of cardiovascular disease when the ratio of HDL cholesterol and total cholesterol is also low.

High/Out of Range - An elevated hsCRP level indicates the presence of injury, inflammation or infection somewhere in your body. hsCRP is such a sensitive test that even elevations within the average range are of great importance. Subjects in the high-risk range are at a higher risk of heart attack or stroke than subjects in the low-risk range. This is true even when lipids are normal because hsCRP is independent of other known risk factors.

hsCRP	Male	Female	Number in Range	Percent in Range	Company Average	Database Average
Low risk < 1.0 mg/dL	309	696	1,005	28.74%	30.92%	31.68%
Average Risk 1.0-3.0 mg/dL	358	828	1,186	33.91%	34.87%	35.74%
High Risk 3.01-10.0 mg/dL	192	1,114	1,306	37.35%	34.21%	32.58%

## **Understanding Clinical Laboratory Data**

## **Heart (continued)**

#### **Non-HDL Cholesterol**

Non-HDL cholesterol is a calculated measurement used in the evaluation of cardiovascular health and has a stronger relationship with heart disease risk than any other lipid measurement.

#### What the results mean:

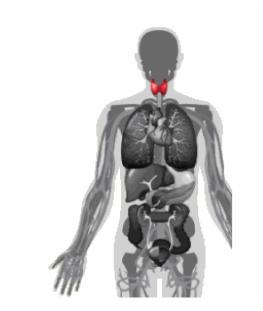
If triglycerides levels are higher than 199 mg/dL after reaching a physician determined LDL cholesterol goal, a doctor may use non-HDL cholesterol (total cholesterol-HDL cholesterol) as the secondary goal for improving lipid measurements and cardiovascular health.

Non-HDL	Male	Female	Number in Range	Percent in Range	Company Average	Database Average
Normal (<160)	677	2,115	2,792	79.98%	78.48%	77.19%
High (>=160)	180	519	699	20.02%	21.52%	22.81%

# **Understanding Clinical Laboratory Data Thyroid**

The thyroid is a small, butterfly-shaped gland located in the lower part of the front of the neck. This gland releases hormones into the blood stream. The levels of thyroid hormones in the blood affect heart rate, muscle strength, bowel function, fat metabolism, energy level, hair growth, and mood. There are several different forms of hormones produced by the thyroid gland. The most important one measured is thyroxine. The active form that affects function is Free T4 abbreviated as "FT4".

The production of hormones of the thyroid gland is stimulated by a hormone produced by a tiny pituitary gland that sits at the base of the brain. This hormone is thyroid stimulating hormone (TSH). TSH is the first-line test to identify abnormalities of the thyroid gland. When the TSH test results are out of the normal range, a second test, FT4, is performed and used to better understand the different possibilities that influence the complex interrelationship among different glands.



#### **TSH and Free T4**

Thyroid Stimulating Hormone (TSH) is a hormone produced by the pituitary gland, a small gland located at the base of the brain, which controls the activity of the thyroid and many other body systems. The TSH test is the best test to screen for an overactive or underactive thyroid gland.

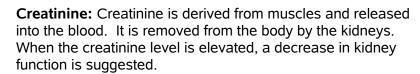
When the TSH test result is above or below the normal range, a Free Thyroxine (FT4) is performed to help make an accurate diagnosis. Thyroxine (T4) can either be bound to proteins or be unbound. The unbound portion is called Free T4 and is the biologically active form of thyroid hormone that controls the rate of metabolism.

Test	Gender	Age	Range	Number Out of Range	Percent Out of Range	Company Average	Database Average
TSH	Male	All	0.4-4.50 microUI/mL	36	4.19%	4.68%	4.74%
TSH	Female	>20Y	0.4-4.50 microUI/mL	209	7.93%	6.81%	7.47%
Free T4	Both	All	0.8-1.8 ng/dL	18	7.14%	7.90%	3.67%

# **Understanding Clinical Laboratory Data**

## **Kidney**

The kidney's main function is to eliminate metabolic waste products and to maintain balance of sodium, potassium, chloride, water and many other vital elements in the body. Blood flows to the kidneys where over one million 'filters' serve to remove these waste products from urine. The kidneys are also important in the maintenance of blood pressure and in the production of a hormone that stimulates production of the red blood cells.

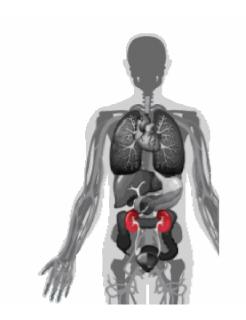




**Out of range:** Individuals with a large body muscle mass may have a slight increase in creatinine. High levels typically reflect impaired kidney function. Always seek the advice of your physician or qualified healthcare provider if you have any questions about your result.

**EGFR:** Creatinine is not sensitive to early renal damage since it varies with age, gender and ethnic background. The impact of these variables can be reduced by an estimation of the Glomerular Filtration Rate (EGFR) using an equation of serum creatinine, age and gender.

Test	Gender	Age	Range	Number Out of Range	Percent Out of Range	Company Average	Database Average
Creatinine	Male	All	0.5-1.30	41	4.77%	4.68%	4.25%
Creatinine	Female	All	0.5-1.20	36	1.36%	1.90%	1.83%
EGFR	Both	All	>=60	127	3.53%	3.08%	3.25%



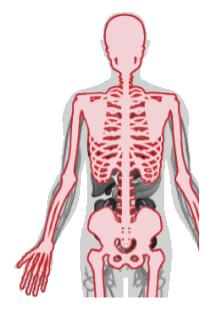
# **Understanding Clinical Laboratory Data**

#### **Bone**

The normal adult skeleton is made up of 206 bones. Bone is composed of specialized cells and proteins as well as a hard mineral substance made of calcium phosphate and calcium carbonate. Bone serves as a reservoir of calcium for the body. The bone marrow located in the center of many bones produces the red blood cells, white blood cells, and platelets.



**Out of range:** An out of range value can indicate inadequate absorption, malnutrition, vitamin D deficiency, or low albumin (protein). Slightly out of range calcium levels may be due to dehydration. Out of range calcium levels may be caused by bone disease, excess consumption of antacids and milk (sometimes seen with individuals with ulcer disease), excess consumption of vitamin D, cancer and over activity or tumors of the parathyroid glands.



Calcium: Calcium is important in the function of muscles, the brain, and nervous system, enzymes, and blood clotting. Calcium is released from bones or stored in bones based on the calcium level in the blood. Calcium levels are regulated by parathyroid hormone that is produced by four tiny glands located adjacent to the thyroid gland in the neck and by levels of vitamin D and other factors.

Test	Range	Male	Female	Number Out of Range	Percent Out of Range	Company Average	Database Average
Calcium	8.6-10.2 mg/dL	22	85	107	2.97%	3.15%	3.26%

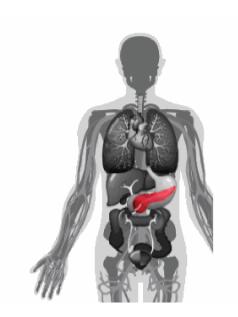
# **Understanding Clinical Laboratory Data**

#### **Diabetes**

**Glucose:** Glucose is the chief source of energy for all cells in the body. This test measures the concentration of glucose in your blood.

#### What the results mean:

Low - A decreased level of glucose is called hypoglycemia, or low blood sugar, which can prevent your body from functioning properly. Certain conditions such as liver disease and hypothyroidism can contribute to low glucose levels. Medications may also lower blood glucose. It is recommended that individuals seek the advice of a doctor or qualified healthcare provider if there are any questions about test results.



**Impaired and High** - A high glucose level suggests the possibility of prediabetes. This is a potentially serious condition.

It is recommended by the American Diabetes Association that glucose levels be measured on two different occasions. Persistently elevated glucose levels are consistent with diabetes. Other conditions that can elevate your glucose levels include inflammation of the pancreas, kidney failure, or stress from surgery or trauma. Medications, including steroid hormones and diuretics, can contribute to a high glucose level.

Glucose	Male	Female	Number in Range	Percent in Range	Company Average	Database Average
Low (<65)	3	11	14	0.40%	0.34%	3.51%
Normal (65-99)	527	1,948	2,475	70.77%	72.14%	72.04%
Impaired (100-125)	251	503	754	21.56%	20.68%	19.12%
High (>=126)	78	176	254	7.27%	6.84%	5.33%

# **Understanding Clinical Laboratory Data Diabetes (continued)**

**HbA1c(Hemoglobin A1c):** Hemoglobin A1c (also known simply as "A1c") helps to monitor the effectiveness of diabetes therapy. When diabetes is well controlled, people feel better and suffer fewer complications of diabetes.

The blood level of glucose is tightly controlled by hormones, especially insulin produced by the pancreas. In diabetes, insulin is either less effective or not produced in sufficient quantity. As a result, the glucose level has greater variation with elevated levels typically observed in individuals with diabetes compared to individuals without diabetes. The excess glucose binds onto proteins including the most abundant protein in the red blood cells, Hemoglobin. The combination is known as Hemoglobin A1c and results are reported as percent of the Hemoglobin that has bound glucose.

Hemoglobin A1c has as its key advantage that it reflects the average control for the previous several months, known as long-term control. In contrast, glucose levels reflect short-term control, influenced by diet, activity, and the daily cycle of our lives. Both tests are important because they provide different information essential to provide good diabetes control.

The American Diabetes Association (ADA) recommends that individuals with diabetes be tested at least twice each year for those in good control and quarterly for those whose diabetes is not well controlled or whose therapy changes.

Hemoglobin A1c Level	Interpretation	Male	Female	Number in Range	Percent in Range	Company Average	Database Average
4.0-5.6%	Consistent with controlled diabetes or absence of diabetes. May increase risk of hypoglycemia (low glucose level) among those with diabetes.	590	1,998	2,588	74.03%	71.26%	73.95%
5.7-6.4%	If known to have diabetes, consistent with controlled diabetes. Suggests increased future risk of diabetes if confirmed by elevated fasting glucose level.	167	435	602	17.22%	20.31%	18.15%
6.5-6.9%	If known to have diabetes, consistent with controlled diabetes. If not previously diagnosed, results of 6.5% and greater are consistent with diabetes if confirmed on repeat measurement or if non-fasting glucose 200 mg/dL or greater and symptoms are present.		61	89	2.55%	2.60%	2.38%
7.0-8.0%	If not previously diagnosed, this result is consistent with diabetes if confirmed on repeat measurement or if glucose 200 mg/dL or greate and symptoms are present.	45 r	73	118	3.38%	2.84%	2.60%
>8.0%	Consistent with poorly controlled diabetes that needs modified management.	29	70	99	2.82%	2.99%	2.87%

# **Understanding Clinical Laboratory Data**

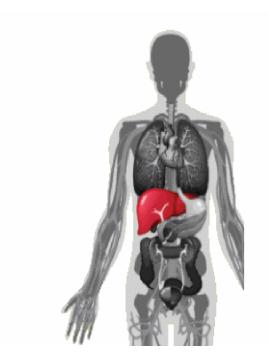
#### Liver

The liver is the body's chief "chemical factory" and performs many varied and complex tasks. The liver produces certain proteins such as albumin and the proteins that are involved with blood clotting. The liver also produces about half of the total cholesterol in the body (the other half comes from food). The liver filters blood from all over the body. Enzymes in the liver neutralize harmful or toxic substances such as alcohol or medications which are then eliminated in either bile or blood. The liver also serves as a storage site for sugars and lipids, which can be released when needed.

**Total Protein** - Total protein has two main components – albumin and globulin. The body's protein is derived from ingested food and therefore is influenced by the quality of diet, as well as by liver and kidney function.

**Albumin** - Approximately 60 percent of the total protein circulating in your blood is albumin. This important protein, produced in the liver, helps to keep water inside your blood vessels. When your albumin level is too low, water is not retained within blood vessels, and leaks out into body tissues, causing swelling called "edema".

**Globulin** - Globulin is not measured directly. It is calculated as the difference between the total protein and the albumin levels. The globulins are a group of about 60 different proteins that are part of the immune system, which helps to fight or prevent infections. They also play an important role in blood clotting, and serve as carrier proteins for hormones.



Albumin:Globulin Ratio - The albumin:globulin ratio is derived by dividing the albumin result by the globulin result. The calculated ratio sometimes highlights an abnormality that is not obvious by reviewing the individual test results.

Total and Direct Bilirubin - Bilirubin is the main pigment in bile and a major product of normal red cell breakdown. It is helpful in evaluating liver function, various anemias and in evaluating jaundice, yellowing of the skin.

## **Understanding Clinical Laboratory Data**

## Liver (continued)

#### What the results mean:

**Total Protein** - An out of range total protein is seen in pregnancy, acute burns, severe dietary deficiency, chronic liver disease and kidney disease. Increased total protein is seen in some cancers of the immune system such as multiple myeloma and lymphoma, some forms of liver disease (cirrhosis), and some chronic diseases, such as rheumatoid arthritis.

Total and Direct Bilirubin - An out of range bilirubin level in the blood may indicate liver damage or obstruction of bile ducts in the liver. High levels of bilirubin may indicate excessive destruction of red blood cells which may result in anemia. Slight elevations of bilirubin can be seen in association with Gilbert's disease, benign inherited liver enzyme defect, and occasionally as a result of fasting.

**Albumin** - An out of range albumin result can be caused by malnutrition, excess body water, pregnancy, liver disease, kidney disease, severe injury such as burns or major bone fractures, and prolonged blood loss. It can also often be a reflection of dehydration.

Globulin - An out of range globulin level may be seen in the breakdown of the body associated with advanced cancers, kidney diseases, and some blood diseases, including lymphocytic leukemia, and lymphoma. An out of range globulin level may be seen in some types of myeloid leukemia, Hodgkin's disease, cancers of the immune system, lupus, and rheumatoid arthritis. Often, additional tests are performed to determine which type of globulin is being produced in excess.

Albumin: Globulin Ratio - An out of range result may be associated with several disease states such as chronic liver disorders, chronic inflammatory diseases, rheumatoid arthritis, or some cancers.

Test	Gender	Age	Range	Number Out of Range	Percent Out of Range	Company Average	Database Average
Total Protein	Both	All	6.2-8.3 g/dL	90	2.50%	2.17%	1.96%
Albumin	Both	All	3.6-5.1 g/dL	32	0.89%	1.04%	0.96%
Globulin	Female	All	2.2-3.9 g/dL	143	5.42%	4.47%	5.59%
Globulin	Male	All	2.1-3.7 g/dL	43	5.01%	4.28%	4.79%
Albumin: Globulin Ratio	Both	All	1.0-2.1 calculated	124	3.44%	3.41%	5.47%
Total Bilirubin	Both	All	0.2-1.2 mg/dL	98	2.72%	3.33%	4.03%
Direct Bilirubin	Both	All	<=0.2 mg/dL	73	2.03%	2.67%	2.93%

## **Understanding Clinical Laboratory Data**

### Liver (continued)

Alkaline Phosphatase - Alkaline phosphatase is an enzyme found primarily in bone and liver. Abnormalities can reflect increased activity of bone forming cells or obstruction to bile flow in the liver.

#### What the results mean:

**Out of range:** The most common reason for an out of range level of this enzyme is liver or bone injury or disease (for example, when bone is being repaired after a fracture, or when the bile ducts are blocked by gallstones, or certain medications).

**Gamma Glutamyltransferase (GGT)** - GGT is produced in highest concentration within bile ducts in the liver and can be used as an indicator of liver disease.

#### What the results mean:

**Out of range:** Out of range levels of GGT may be caused by use of alcohol or certain drugs, inflammation, or obstruction of bile ducts in the liver.

Test	Gender	Age	Range	Number Out of Range	Percent Out of Range	Company Average	Database Average
Alkaline Phosphatase	Male	All	40-115 u/L	39	4.54%	5.57%	5.19%
Alkaline Phosphatase	Female	0-49Y	33-115 u/L	58	3.71%	3.82%	4.11%
Alkaline Phosphatase	Female	>49Y	33-130 u/L	28	2.60%	2.58%	2.65%
GGT	Both	All	3-70 u/L	145	4.03%	4.39%	4.22%

## **Understanding Clinical Laboratory Data**

Alanine Aminotransferase (ALT) & Aspartate Transaminase (AST): ALT and AST are enzymes produced primarily in the liver, skeletal and heart muscles. ALT is present in the liver in a higher concentration than AST and is more specific for differentiating liver injury from muscle damage.

#### What the results mean:

**Out of range:** High levels of both ALT and AST may signify liver disease. Results are usually interpreted together with other laboratory test results, history, and physical findings. If appropriate, additional laboratory tests are ordered, such as tests for hepatitis. Certain medications may cause toxicity to the liver resulting in high levels of ALT and AST.

Test	Gender	Age	Range	Number Out of Range	Percent Out of Range	Company Average	Database Average
ALT	Male	All	9-60 u/L	39	4.54%	5.22%	5.24%
ALT	Female	All	6-40 u/L	111	4.21%	4.83%	4.75%
AST	Male	All	10-35 u/L	47	5.47%	4.84%	5.03%
AST	Female	0-44Y	10-30 u/L	76	4.86%	4.70%	4.69%
AST	Female	>44Y	10-35 u/L	33	3.07%	3.80%	3.94%

# **Understanding Clinical Laboratory Data**

## **Throughout the Body**

#### **Uric Acid**

Uric acid is useful in diagnosing several conditions, kidney disease, and certain malignant tumors.

#### What the results mean:

**Out of range:** Out of range levels in uric acid are common in gout, a metabolic disease causing painful joint inflammation and kidney stones. It most commonly affects men and often runs in families. Increases in uric acid may also be associated with kidney failure, high cell turnover (as with certain tumors and skin conditions) and some medications, such as diuretics. Foods high in compounds called purines (such as sweetbreads, kidney, and liver) can increase uric acid and precipitate an acute attack of gout.

#### **Prostate Specific Antigen (PSA)**

The prostate produces prostate specific antigen (PSA) with advancing age and certain medications. The PSA reflects the size of the prostate.

#### What the results mean:

**Out of range:** An out of range level of PSA is most commonly associated with the enlargement of the prostate that occurs as men grow older. This condition is referred to as "benign prostatic hypertrophy." Inflammation of the prostate may result in an increased PSA level. Cancer of the prostate may also increase the PSA level. A diagnosis of cancer is based only on a biopsy of the prostate, not a laboratory blood test. Therefore, PSA is useful to screen for the possibility of prostate disease and to monitor therapy, but not to make a diagnosis.

Test	Gender	Age	Range	Number Out of Range	Percent Out of Range	Company Average	Database Average
Uric Acid	Male	All	4.0-8.0 mg/dL	122	14.20%	10.55%	10.12%
Uric Acid	Female	All	2.5-7.0 mg/dL	127	4.81%	4.99%	4.86%
PSA	Male	All	At Risk >4.0	14	2.80%	3.24%	2.94%

## **Understanding Clinical Laboratory Data**

### **Throughout the Body (continued)**

#### Iron, TIBC, Iron/TIBC %, Ferritin

Iron plays many important roles in the body. Hemoglobin is the iron-rich protein present in red blood cells. Hemoglobin allows the red blood cells to carry oxygen from the lungs to all of the body tissues, and to carry carbon dioxide from the tissues back to the lungs where carbon dioxide is exhaled. Iron is best interpreted with the Total Iron Binding Capacity (TIBC). The TIBC reflects the total capacity of the blood to carry iron. The percent saturation is the ratio of the iron to TIBC. It is a reflection of the remaining capacity to carry iron. Ferritin, another protein, is the best indicator of the amount of uncommitted iron reserve that the body has in storage.

#### What the results mean:

Out of range: An out of range value of iron/TIBC is consistent with iron deficiency. Iron deficiency often causes a decrease in hemoglobin-rich red blood cells, a condition known as iron deficiency anemia. An out of range result may also be seen in another type of anemia associated with chronic diseases, such as rheumatoid arthritis. Out of range levels of iron/TIBC are consistent with iron storage disease in which the body is unable to regulate the amount of iron absorbed from the diet. A low ferritin value indicates decreased iron reserves and is consistent with iron deficiency, especially when the iron/TIBC is also low. A high ferritin value suggests iron storage disease, especially when the iron/TIBC is also high. A high ferritin value by itself may be suggestive of recent infection or illness.

Test	Gender	Age	Range	Number Out of Range	Percent Out of Range	Company Average	Database Average
Iron	Male	0-29Y	45-75 ug/dL	10	10.31%	8.37%	8.65%
Iron	Male	>29Y	45-170 ug/dL	60	7.87%	7.37%	7.25%
Iron	Female	0-49Y	40-175 ug/dL	174	11.13%	12.41%	11.54%
Iron	Female	>49Y	40-160 ug/dL	55	5.12%	5.71%	6.05%
Irong: TIBC %	Male	All	20-50 calculated	302	18.40%	17.26%	17.09%
Irong: TIBC %	Female	All	15-50 calculated	820	16.42%	17.30%	16.20%
TIBC	Male	All	250-425 mcg/dL	75	4.57%	4.30%	4.19%
TIBC	Female	All	250-450 mcg/dL	294	5.89%	5.99%	5.78%
Ferritin	Female	40-59Y	10-232 ng/mL	342	12.99%	13.01%	12.59%
Ferritin	Female	20-39Y	10-154	256	15.62%	15.34%	15.09%
Ferritin	Male	>39Y	20-380 ng/mL	138	11.91%	12.62%	12.39%
Ferritin	Male	20-39Y	20-345	34	7.07%	11.12%	9.71%

# **Understanding Clinical Laboratory Data**

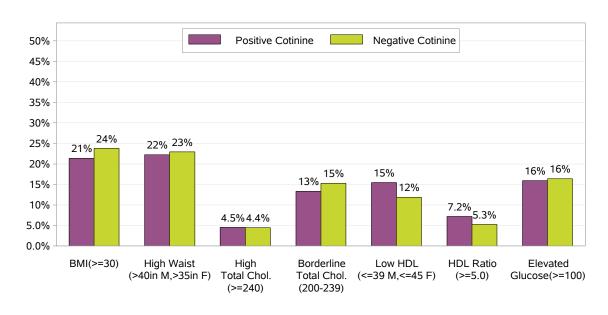
## **Throughout the Body (continued)**

**Cotinine:** Cotinine is a direct metabolite of nicotine. Nicotine, a highly abused, highly toxic alkaloid found in tobacco products such as cigars, cigarettes and chewing tobacco is metabolized into cotinine in the body. In general, cotinine can be detected between a few days and a week after smoking cessation.

Quest Diagnostics utilizes a very specific immunoassay to test for the presence of cotinine. This test has been validated with confirmation studies utilizing GC/MS technology. The screening immunoassay evaluation employs a very specific antibody to cotinine and this antibody will react with cotinine that is present in the bodily fluids from someone smoking or chewing tobacco, or wearing a nicotine patch.

Cotinine	Male	Female	Number in Range	Percent in Range	Company Average	Database Average	
Negative	727	2,277	3,004	85.90%	87.79%	88.64%	
Positive	132	361	493	14.10%	12.21%	11.35%	

## Comparison of Tobacco Users vs. Non-Tobacco Users (N=2,797)



# **Understanding Clinical Laboratory Data Throughout the Body (continued)**

#### **Total Vitamin D, 25-Hydroxy**

The term "vitamin D" refers to different forms of vitamin D. In humans, vitamin D2 (ergocalciferol) is produced by plants and vitamin D3 (cholecalciferol) is produced in our skins after exposure to sunlight. Vitamin D3 is converted from the inactive form to the active form by action of an enzyme produced in the kidneys. Thus, even mild forms of chronic kidney disease may lead to deficiencies of the active form of vitamin D3. Vitamin D is essential in maintaining the right levels of calcium and preserving bone strength. Individuals who are deficient in vitamin D are at increased risk of weakening of the bones (oseteoporosis) and bone fractures, muscle weakness, high blood pressure, cancer, and several forms of autoimmune disorders. Vitamin D deficiency is becoming increasingly common in India due to diets with inadequate vitamin D and inadequate sunlight exposure. Women who are pregnant have higher needs and are particularly at high risk for vitamin D deficiency and bone loss. Infants who are exclusively breastfed are also subject to vitamin D deficiency. Dietary sources of vitamin D include eggs, fish, and vitamin D fortified milk.

Test	Range	Male	Female	Out of	Percent Out of Range	Company Average	Database Average
Total Vitamin D, 25-Hydroxy	20-100 ng/mL	243	775	1,018	28.26%	26.36%	27.84%

# **Understanding Clinical Laboratory Data**

## **Throughout the Body (continued)**

#### **Complete Blood Count**

The complete blood count (CBC) is a common screen for anemia, infectious diseases and blood disorders. The CBC can provide evidence of silent conditions – disorders without symptoms – as well as the side-effects of certain therapeutic procedures.

### **Blood analysis examines:**

Red blood cells (RBC) – The most abundant cells in the blood – contain hemoglobin, the protein responsible for transporting oxygen from the lungs to all of the tissues and organs. The Red Blood Cell Count, Hemoglobin and Hematocrit as well as the MCV, MCH, and MCHC quantify the red blood cells.

White blood cells (WBC) – are critical to the body's immune system. The total white blood count can rise or fall with certain conditions and diseases. In addition to indicating the health of the immune system, this set of tests may provide evidence of existing diseases and infections, as well as valuable information about the body's ability to fight illness or infection.

Platelets – play a critical role in blood clotting. When a person bleeds, these small, cell-like structures clump together and form a sticky mass at the site of injury. Platelet counts are often assessed for individuals scheduled for surgery or for other medical procedures that may cause bleeding. This test can also help indicate the health of the bone marrow and is frequently used to monitor medications that can be toxic to this important tissue.

# **Understanding Clinical Laboratory Data Throughout the Body (continued)**

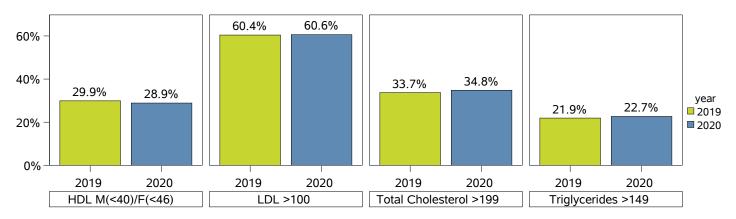
Test	Reference Range	Male	Female	Number Out of	Percent Out of	Company	Database
				Range	Range	Average	Average
Hemoglobin	11.7 - 15.5 g/dL	66	320	386	10.74%	10.80%	9.14%
Hematocrit	35.0 - 45.0%	67	349	416	11.57%	9.78%	9.05%
Red Blood Cell Count	3.80 - 5.10 Million/UL	68	283	351	9.77%	8.85%	7.90%
MCV	80.0 - 100 fL	40	234	274	7.62%	7.35%	5.54%
MCH	27.0 - 33.0 pg	89	450	539	15.00%	14.38%	12.15%
МСНС	32.0 - 36.0 g/dL	23	274	297	8.26%	8.72%	7.59%
RDW	11.0 - 15.0%	21	159	180	5.01%	5.22%	4.03%
White Blood Cell Count	3.8 - 10.8 Thousand/uL	45	187	232	6.46%	6.80%	6.22%
Platelet Count	140 - 400 Thousand/uL	29	163	192	5.36%	4.78%	4.22%
Absolute Neutrophils	1800-8000 cells/uL	50	169	219	6.11%	6.74%	6.49%
Absolute Lymphocytes	1200-5200 cells/uL	79	190	269	7.50%	7.01%	6.74%
Absolute Monocytes	200-900 cells/uL	14	46	60	1.67%	1.68%	1.67%
Absolute Eosinophils	15-500 cells/uL	31	72	103	2.87%	2.93%	2.81%
Absolute Basophils	0-200 cells/uL	0	0	0	0.00%	0.02%	0.02%
Absolute Nucleated RBC	0 cells/uL	0	0	0	0.00%	0.00%	0.02%

# **Cohort Clinical Data Report**

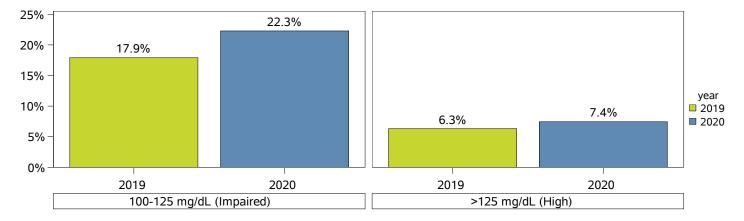
An analysis that includes the historical clinical and biometric results of those in your population who have consistently participated in screenings for added insight to important trends in your population's health.

#### Cohort: Those participants that took part in the screenings in 2020 and 2019.

The Lipid profile comparison charts represents the percent of **cohort** participants having a value that is **out of range** for the specified test. N=2,648.

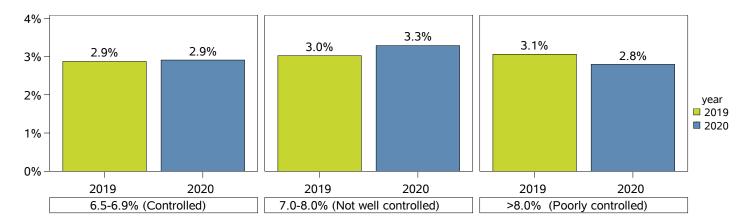


The Glucose comparison chart represents the percent of *cohort* participants having a value that is **out of range** for glucose. N=2,648.

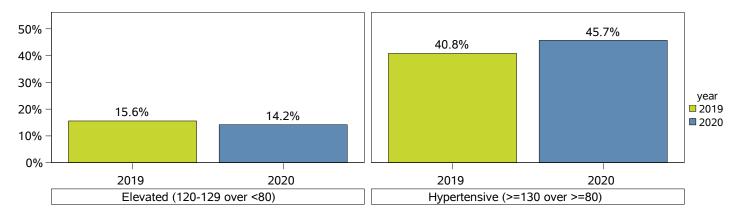


# **Cohort Clinical Data Report**

The HbA1c (Hemoglobin A1c) comparison chart represents the percent of *cohort* participants having a value that is **out of range** for HbA1c. N=2,648.



The Blood Pressure comparison chart represents the percent of *cohort* participants having a value that is **out of range** for Blood Pressure. N=2,645.



The comparison chart below represents the percent of *cohort* participants having a value that is **out of range** for the specific test. N=2,650.



# **Cohort Clinical Data Report**

Out of Range Migrated In

In Range Migrated Out

194 (7%)

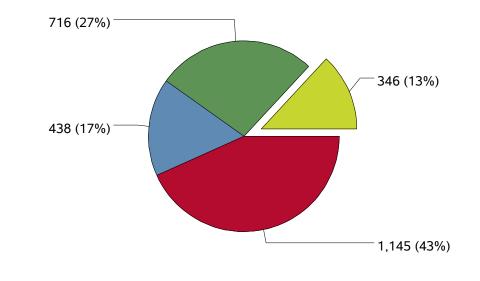
Migration: Movement of cohort participants into or out of range from 2019 to 2020.

In Range and Stayed In

Out of Range and Stayed Out

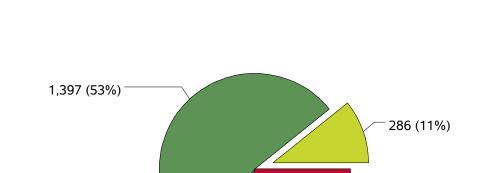
771 (29%)

The two clinical results showing **most** improvement from 2019 to 2020 were:



Blood Pressure 120-129 over <80 (N=2,645)

Of 1,491 cohort participants who were at risk in 2019, **346** (23% of the 1,491) moved to an in range status in 2020.

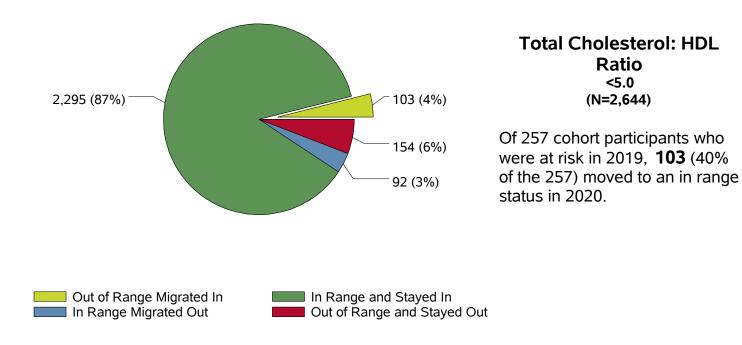


hsCRP <=3 (N=2,648)

Of 1,057 cohort participants who were at risk in 2019, **286** (27% of the 1,057) moved to an in range status in 2020.

Migration: Movement of cohort participants into or out of range from 2019 to 2020.

The clinical result showing **least** improvement from 2019 to 2020 were:



#### Table 1

The table below presents the number of participants in each range for the specified lab result in 2019 and for the same population in 2020.

Test Name	'	Test Name	
Reference Range	2019	Reference Range	2020
Blood Pressure			
Normal (<120 over <80)	1,154	Normal (<120 over <80)	716
		Elevated (120-129 over <80)	151
		Stage 1 High BP (130-139 over 80-89)	225
		Stage 2 High BP (140-180 over 90-120)	61
		Hypertensive Crisis (>180 over >120)	1
Elevated (120-129 over <80)	412	Normal (<120 over <80)	153
		Elevated (120-129 over <80)	88
		Stage 1 High BP (130-139 over 80-89)	129
		Stage 2 High BP (140-180 over 90-120)	42
Stage 1 High BP (130-139 over 80-89)	701	Normal (<120 over <80)	170
		Elevated (120-129 over <80)	107
		Stage 1 High BP (130-139 over 80-89)	283
		Stage 2 High BP (140-180 over 90-120)	139
		Hypertensive Crisis (>180 over >120)	2
Stage 2 High BP (140-180 over 90-120)	369	Normal (<120 over <80)	23
		Elevated (120-129 over <80)	29
		Stage 1 High BP (130-139 over 80-89)	109
		Stage 2 High BP (140-180 over 90-120)	198
		Hypertensive Crisis (>180 over >120)	10
Hypertensive Crisis (>180 over >120)	9	Stage 2 High BP (140-180 over 90-120)	8
		Hypertensive Crisis (>180 over >120)	1

Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
Body Mass Index			
Underweight (<18.5)	29	Underweight (<18.5)	19
		Ideal Weight (18.5-24.9)	9
		Overweight (25.0-29.9)	1
Ideal Weight (18.5-24.9)	700	Underweight (<18.5)	8
		Ideal Weight (18.5-24.9)	583
		Overweight (25.0-29.9)	107
		Obesity I (30.0-34.9)	2
Overweight (25.0-29.9)	855	Ideal Weight (18.5-24.9)	120
		Overweight (25.0-29.9)	621
		Obesity I (30.0-34.9)	106
		Obesity II (35.0-39.9)	4
		Extreme Obesity (>=40.0)	4
Obesity I (30.0-34.9)	514	Ideal Weight (18.5-24.9)	4
		Overweight (25.0-29.9)	91
		Obesity I (30.0-34.9)	334
		Obesity II (35.0-39.9)	80
		Extreme Obesity (>=40.0)	5
Obesity II (35.0-39.9)	294	Ideal Weight (18.5-24.9)	2
		Overweight (25.0-29.9)	6
		Obesity I (30.0-34.9)	56
		Obesity II (35.0-39.9)	187
		Extreme Obesity (>=40.0)	43
Extreme Obesity (>=40.0)	258	Obesity I (30.0-34.9)	6
		Obesity II (35.0-39.9)	49
		Extreme Obesity (>=40.0)	203
Waist Circumference			
Normal F(<=35in)/M(<=40in)	1,584	Normal F(<=35in)/M(<=40in)	1,403
		High F(>35in)/M(>40in)	181
High F(>35in)/M(>40in)	1,051	Normal F(<=35in)/M(<=40in)	184
		High F(>35in)/M(>40in)	867

#### Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
Triglycerides			
Normal (<=149)	2,068	Normal (<=149)	1,835
		Borderline High (150-199)	174
		High (>=200)	59
Borderline High (150-199)	310	Normal (<=149)	156
		Borderline High (150-199)	96
		High (>=200)	58
High (>=200)	270	Normal (<=149)	57
		Borderline High (150-199)	68
		High (>=200)	145
Total Cholesterol			
Low (<125)	105	Low (<125)	49
		Desirable (125-199)	53
		Borderline High (200-239)	2
		High (>=240)	1
Desirable (125-199)	1,650	Low (<125)	36
		Desirable (125-199)	1,347
		Borderline High (200-239)	245
		High (>=240)	22
Borderline High (200-239)	680	Low (<125)	2
		Desirable (125-199)	209
		Borderline High (200-239)	383
		High (>=240)	86
High (>=240)	213	Low (<125)	1
		Desirable (125-199)	29
		Borderline High (200-239)	82
		High (>=240)	101

Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
HDL Cholesterol			
High (Desirable) (>=60)	907	High (Desirable) (>=60)	702
		Acceptable M(40-59)/F(46-59)	196
		Low M(<=39)/F(<=45)	9
Acceptable M(40-59)/F(46-59)	1,188	High (Desirable) (>=60)	186
		Acceptable M(40-59)/F(46-59)	844
		Low M(<=39)/F(<=45)	158
Low M(<=39)/F(<=45)	551	High (Desirable) (>=60)	11
		Acceptable M(40-59)/F(46-59)	151
		Low M(<=39)/F(<=45)	389
LDL Cholesterol			
Optimal (<100)	1,047	<b>'</b>	791
		Borderline High (100-129)	232
		High (130-189)	24
Borderline High (100-129)	971	' '	212
		Borderline High (100-129)	572
		High (130-189)	185
		Significant High (>189)	2
High (130-189)	599	Optimal (<100)	36
		Borderline High (100-129)	158
		High (130-189)	388
		Significant High (>189)	17
Significant High (>189)	28	Optimal (<100)	3
		Borderline High (100-129)	8
		High (130-189)	11
		Significant High (>189)	6
Total Cholesterol: HDL Ratio			
Normal (<5.0)	2,387	, ,	2,295
		High (>=5.0)	92
High (>=5.0)	257	Normal (<5.0)	103
		High (>=5.0)	154

Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
hsCRP			
Low risk < 1.0 mg/dL	720	Low risk < 1.0 mg/dL	534
		Average Risk 1.0-3.0 mg/dL	165
		High Risk >3.0 mg/dL	21
Average Risk 1.0-3.0 mg/dL	871	Low risk < 1.0 mg/dL	176
		Average Risk 1.0-3.0 mg/dL	522
		High Risk >3.0 mg/dL	173
High Risk >3.0 mg/dL	1,057	Low risk < 1.0 mg/dL	47
		Average Risk 1.0-3.0 mg/dL	239
		High Risk >3.0 mg/dL	771
TSH			
Low (<0.4)	63	Low (<0.4)	26
		Normal (0.4-4.5)	31
		High (>4.5)	6
Normal (0.4-4.5)	2,477	Low (<0.4)	36
		Normal (0.4-4.5)	2,373
		High (>4.5)	68
High (>4.5)	108	Low (<0.4)	6
		Normal (0.4-4.5)	56
		High (>4.5)	46
Free T4			
Low (<0.8)	4	Low (<0.8)	2 2
		Normal (0.8-1.8)	
Normal (0.8-1.8)	76	Low (<0.8)	3
		Normal (0.8-1.8)	72
		High (>1.8)	1
High (>1.8)	4	Normal (0.8-1.8)	2 2
		High (>1.8)	2

#### Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
Creatinine			
Female Low (<0.5)	14	Female Low (<0.5)	3
		Female Normal (0.5-1.2)	11
Female Normal (0.5-1.2)	1,974	Female Low (<0.5)	12
		Female Normal (0.5-1.2)	1,954
		Female High (>1.2)	8
Male Normal (0.5-1.3)	614	Male Normal (0.5-1.3)	608
		Male High (>1.3)	6
Female High (>1.2)	13	Female Normal (0.5-1.2)	6
		Female High (>1.2)	7
Male High (>1.3)	33	Male Normal (0.5-1.3)	9
		Male High (>1.3)	24
EGFR			
Low (<60)	88	Low (<60)	61
		Normal (>=60)	27
Normal (>=60)	2,560	Low (<60)	36
		Normal (>=60)	2,524
Calcium			
Low (<8.6)	22	Low (<8.6)	6
		Normal (8.6-10.2)	16
Normal (8.6-10.2)	2,566	Low (<8.6)	21
		Normal (8.6-10.2)	2,507
		High (>10.2)	38
High (>10.2)	59	Normal (8.6-10.2)	42
		High (>10.2)	17

#### Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
Glucose			
Low (<65)	7	Normal (65-99)	4
		Impaired (100-125)	2
		High (>=126)	1
Normal (65-99)	2,000	Low (<65)	7
		Normal (65-99)	1,657
		Impaired (100-125)	313
		High (>=126)	23
Impaired (100-125)	474	Normal (65-99)	181
		Impaired (100-125)	233
		High (>=126)	60
High (>=126)	167	Low (<65)	1
		Normal (65-99)	11
		Impaired (100-125)	42
		High (>=126)	113

Table 1

Test Name		Test Name		
Reference Range	2019	Reference Range	2020	
HbA1c (Hemoglobin A1c)				
4.0-5.6%	1,779	4.0-5.6%	1,712	
		5.7-6.4%	63	
		6.5-6.9%	2	
		7.0-8.0%	2	
5.7-6.4%	632	4.0-5.6%	200	
		5.7-6.4%	388	
		6.5-6.9%	28	
		7.0-8.0%	12	
		>8.0%	4	
6.5-6.9%	76	4.0-5.6%	2	
		5.7-6.4%	30	
		6.5-6.9%	25	
		7.0-8.0%	11	
		>8.0%	8	
7.0-8.0%	80	4.0-5.6%	2	
		5.7-6.4%	7	
		6.5-6.9%	16	
		7.0-8.0%	37	
		>8.0%	18	
>8.0%	81	5.7-6.4%	6	
		6.5-6.9%	6	
		7.0-8.0%	25	
		>8.0%	44	
Total Protein				
Low (<6.2)	51	Low (<6.2)	14	
		Normal (6.2-8.3)	37	
Normal (6.2-8.3)	2,589		43	
		Normal (6.2-8.3)	2,539	
		High (>8.3)	7	
High (>8.3)	8	, ,	7	
		High (>8.3)	1	

Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
Albumin			
Low (<3.6)	23	Low (<3.6)	5
		Normal (3.6-5.1)	18
Normal (3.6-5.1)	2,621	Low (<3.6)	12
		Normal (3.6-5.1)	2,607
		High (>5.1)	2
High (>5.1)	4	Normal (3.6-5.1)	4
Globulin			
Female Low (<2.2)	79	Female Low (<2.2)	37
		Female Normal (2.2-3.9)	42
Male Low (<2.1)	19	Male Low (<2.1)	10
		Male Normal (2.1-3.7)	9
Female Normal (2.2-3.9)	1,912	Female Low (<2.2)	60
		Female Normal (2.2-3.9)	1,844
		Female High (>3.9)	8
Male Normal (2.1-3.7)	626	Male Low (<2.1)	20
		Male Normal (2.1-3.7)	604
		Male High (>3.7)	2
Female High (>3.9)	10	Female Normal (2.2-3.9)	5
		Female High (>3.9)	5
Male High (>3.7)	2	Male Normal (2.1-3.7)	1
		Male High (>3.7)	1
Albumin: Globulin Ratio			
Low (<1.0)	6	Low (<1.0)	4
		Normal (1.0-2.1)	2
Normal (1.0-2.1)	2,561	Low (<1.0)	1
		Normal (1.0-2.1)	2,509
		High (>2.1)	51
High (>2.1)	81	Normal (1.0-2.1)	45
		High (>2.1)	36

#### Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
Total Bilirubin			
Normal (0.2-1.2)	2,575	Normal (0.2-1.2)	2,543
		High (>1.2)	32
High (>1.2)	73	Normal (0.2-1.2)	39
		High (>1.2)	34
Direct Bilirubin			
Normal (<=0.2)	2,591	Normal (<=0.2)	2,569
		High (>0.2)	22
High (>0.2)	57	Normal (<=0.2)	30
		High (>0.2)	27
Alkaline Phosphatase			
Female 20-49 Low (<33)	23	Female 20-49 Low (<33)	10
		Female 20-49 Normal (33-115)	13
Female 50+ Low (<33)	2	Female 50+ Normal (33-130)	2
Male Low (<40)	35	Male Low (<40)	20
		Male Normal (40-115)	15
Female 20-49 Normal (33-115)	1,109	Female 20-49 Low (<33)	6
		Female 20-49 Normal (33-115)	1,044
		Female 50+ Normal (33-130)	46
		Female 20-49 High (>115)	13
Female 50+ Normal (33-130)	834	Female 50+ Low (<33)	3
		Female 50+ Normal (33-130)	822
		Female 50+ High (>130)	9
Male Normal (40-115)	603	Male Low (<40)	4
		Male Normal (40-115)	594
		Male High (>115)	5
Female 20-49 High (>115)	20	Female 20-49 Normal (33-115)	6
		Female 20-49 High (>115)	14
Female 50+ High (>130)	13	Female 50+ Normal (33-130)	4
		Female 50+ High (>130)	9
Male High (>115)	9	Male Normal (40-115)	6
		Male High (>115)	3

Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
GGT			
Female 20-29 Normal (3-40)	173	Female 20-29 Normal (3-40)	137
		Female 30-39 Normal (3-50)	33
		Female 20-29 High (>40)	3
Female 30-39 Normal (3-50)	415	Female 30-39 Normal (3-50)	350
		Female 40-49 Normal (3-55)	53
		Female 30-39 High (>50)	12
Female 40-49 Normal (3-55)	518	Female 40-49 Normal (3-55)	464
		Female 50-59 Normal (3-70)	44
		Female 40-49 High (>55)	10
Female 50-59 Normal (3-70)	547	Female 50-59 Normal (3-70)	485
		Female 60+ Normal (3-65)	54
		Female 50-59 High (>70)	7
		Female 60+ High (>65)	1
Female 60+ Normal (3-65)	259	Female 60+ Normal (3-65)	256
		Female 60+ High (>65)	3
Male 20-29 Normal (3-70)	59	Male 20-29 Normal (3-70)	44
		Male 30-39 Normal (3-90)	13
		Male 20-29 High (>70)	1
		Male 30-39 High (>90)	1
Male 30-39 Normal (3-90)	112	Male 30-39 Normal (3-90)	102
		Male 40-54 Normal (3-95)	9
		Male 30-39 High (>90)	1
Male 40-54 Normal (3-95)	230	Male 40-54 Normal (3-95)	203
		Male 55-59 Normal (3-85)	27
Male 55-59 Normal (3-85)	102	Male 55-59 Normal (3-85)	84
		Male 60+ Normal (3-70)	16
		Male 55-59 High (>85)	1
		Male 60+ High (>70)	1
Male 60+ Normal (3-70)	122	Male 60+ Normal (3-70)	119
		Male 60+ High (>70)	3

Table 1

Test Name	1	Test Name	
Reference Range	2019	Reference Range	2020
GGT			
Female 20-29 High (>40)	8	Female 20-29 Normal (3-40)	3
		Female 30-39 Normal (3-50)	1
		Female 20-29 High (>40)	3
		Female 30-39 High (>50)	1
Female 30-39 High (>50)	19	Female 30-39 Normal (3-50)	5
		Female 40-49 Normal (3-55)	1
		Female 30-39 High (>50)	11
		Female 40-49 High (>55)	2
Female 40-49 High (>55)	19	Female 40-49 Normal (3-55)	3
		Female 50-59 Normal (3-70)	2
		Female 40-49 High (>55)	14
Female 50-59 High (>70)	28	Female 50-59 Normal (3-70)	8
		Female 60+ Normal (3-65)	1
		Female 50-59 High (>70)	18
		Female 60+ High (>65)	1
Female 60+ High (>65)	15	Female 60+ Normal (3-65)	7
		Female 60+ High (>65)	8
Male 20-29 High (>70)	2	Male 30-39 Normal (3-90)	1
		Male 20-29 High (>70)	1
Male 30-39 High (>90)	5	Male 30-39 Normal (3-90)	4
		Male 40-54 High (>95)	1
Male 40-54 High (>95)	5	Male 40-54 Normal (3-95)	3
		Male 40-54 High (>95)	2
Male 55-59 High (>85)	6	Male 55-59 High (>85)	4
		Male 60+ High (>70)	2
Male 60+ High (>70)	4	Male 60+ Normal (3-70)	2 2
		Male 60+ High (>70)	2

Table 1

Test Name	-	Test Name	
Reference Range	2019	Reference Range	2020
AST			
Female 19-44 Low (<10)	7	Female 19-44 Low (<10)	3
		Female 19-44 Normal (10-30)	3
		Female 45+ Normal (10-35)	1
Female 45+ Low (<10)	6	Female 45+ Low (<10)	2
		Female 45+ Normal (10-35)	4
Female 19-44 Normal (10-30)	847	Female 19-44 Low (<10)	5
		Female 19-44 Normal (10-30)	771
		Female 45+ Normal (10-35)	48
		Female 19-44 High (>30)	21
		Female 45+ High (>35)	2
Female 45+ Normal (10-35)	1,059	Female 45+ Normal (10-35)	1,041
		Female 45+ High (>35)	18
Male 20-49 Normal (10-40)	308	Male 20-49 Normal (10-40)	281
		Male 50+ Normal (10-35)	18
		Male 20-49 High (>40)	9
Male 50+ Normal (10-35)	304	Male 50+ Normal (10-35)	293
		Male 50+ High (>35)	11
Female 19-44 High (>30)	41	Female 19-44 Normal (10-30)	23
		Female 45+ Normal (10-35)	1
		Female 19-44 High (>30)	16
		Female 45+ High (>35)	1
Female 45+ High (>35)	41	Female 45+ Normal (10-35)	27
		Female 45+ High (>35)	14
Male 20-49 High (>40)	15	Male 20-49 Normal (10-40)	9
		Male 20-49 High (>40)	6
Male 50+ High (>35)	20	Male 50+ Normal (10-35)	11
		Male 50+ High (>35)	9

#### Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
ALT			
Age 21+ Low M(<9)/F(<6)	6	Age 21+ Low M(<9)/F(<6)	3
		Age 21+ Normal M(9-60)/F(6-40)	3
Age 21+ Normal M(9-60)/F(6-40)	2,534	Age 21+ Low M(<9)/F(<6)	6
		Age 21+ Normal M(9-60)/F(6-40)	2,469
		Age 21+ High M(>60)/F(>40)	59
Age 21+ High M(>60)/F(>40)	108	Age 21+ Normal M(9-60)/F(6-40)	68
		Age 21+ High M(>60)/F(>40)	40
Uric Acid			
Female Low (<2.5)	19	Female Low (<2.5)	5
		Female Normal (2.5-7.0)	14
Male Low (<4.0)	26	Male Low (<4.0)	19
		Male Normal (4.0-8.0)	7
Female Normal (2.5-7.0)	1,915	Female Low (<2.5)	6
		Female Normal (2.5-7.0)	1,851
		Female High (>7.0)	58
Male Normal (4.0-8.0)	571	Male Low (<4.0)	15
		Male Normal (4.0-8.0)	530
		Male High (>8.0)	26
Female High (>7.0)	67	Female Normal (2.5-7.0)	34
		Female High (>7.0)	33
Male High (>8.0)	50	Male Normal (4.0-8.0)	20
		Male High (>8.0)	30

Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
Iron			
Female 20-49 Low (<40)	101	Female 20-49 Low (<40)	41
		Female 50+ Low (<40)	2
		Female 20-49 Normal (40-175)	53
		Female 50+ Normal (40-160)	2
		Female 20-49 High (>175)	3
Female 50+ Low (<40)	16	Female 50+ Low (<40)	5
		Female 50+ Normal (40-160)	11
Male 30+ Low (<45)	9	Male 30+ Low (<45)	3
		Male 30+ Normal (45-170)	6
Female 20-49 Normal (40-175)	1,008	Female 20-49 Low (<40)	45
		Female 50+ Low (<40)	1
		Female 20-49 Normal (40-175)	900
		Female 50+ Normal (40-160)	38
		Female 20-49 High (>175)	21
		Female 50+ High (>160)	3
Female 50+ Normal (40-160)	804	Female 50+ Low (<40)	12
		Female 50+ Normal (40-160)	771
		Female 50+ High (>160)	21
Male 20-29 Normal (45-175)	53	Male 20-29 Normal (45-175)	35
		Male 30+ Normal (45-170)	14
		Male 20-29 High (>175)	4
Male 30+ Normal (45-170)	544	Male 30+ Low (<45)	2
		Male 30+ Normal (45-170)	514
		Male 30+ High (>170)	28
Female 20-49 High (>175)	43	Female 20-49 Low (<40)	1
		Female 20-49 Normal (40-175)	35
		Female 20-49 High (>175)	7
Female 50+ High (>160)	29	Female 50+ Low (<40)	2
		Female 50+ Normal (40-160)	23
		Female 50+ High (>160)	4

#### Table 1

Test Name		Test Name	
Reference Range 2019		Reference Range	2020
Iron			
Male 20-29 High (>175)	8	Male 20-29 Normal (45-175)	6
		Male 30+ Normal (45-170)	1
		Male 20-29 High (>175)	1
Male 30+ High (>170)	33	Male 30+ Normal (45-170)	21
		Male 30+ High (>170)	12
TIBC			
Female Low (<250)	25	Female Low (<250)	12
		Female Normal (250-450)	13
Male Low (<250)	12	Male Low (<250)	4
		Male Normal (250-425)	8
Female Normal (250-450)	1,880	Female Low (<250)	8
		Female Normal (250-450)	1,828
		Female High (>450)	44
Male Normal (250-425)	613	Male Low (<250)	4
		Male Normal (250-425)	605
		Male High (>425)	4
Female High (>450)	96	Female Normal (250-450)	50
		Female High (>450)	46
Male High (>425)	22	Male Normal (250-425)	11
		Male High (>425)	11

#### Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
Iron: TIBC Percent Saturation			
Female Low (<15)	262	Female Low (<15)	138
		Female Normal (15-50)	120
		Female High (>50)	4
Male Low (<20)	58	Male Low (<20)	16
		Male Normal (20-50)	42
Female Normal (15-50)	1,687	Female Low (<15)	123
		Female Normal (15-50)	1,519
		Female High (>50)	45
Male Normal (20-50)	533	Male Low (<20)	41
		Male Normal (20-50)	452
		Male High (>50)	40
Female High (>50)	52	Female Low (<15)	3
		Female Normal (15-50)	38
		Female High (>50)	11
Male High (>50)	56	Male Low (<20)	2
		Male Normal (20-50)	36
		Male High (>50)	18

Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
Ferritin			
Female 20-39 Low (<10)	65	Female 20-39 Low (<10)	33
		Female 40-59 Low (<10)	1
		Female 20-39 Normal (10-154)	26
		Female 40-59 Normal (10-232)	3
		Female 20-39 High (>154)	1
		Female 40-59 High (>232)	1
Female 40-59 Low (<10)	71	Female 40-59 Low (<10)	51
		Female 40-59 Normal (10-232)	20
Female 60+ Low (<10)	8	Female 60+ Low (<10)	3
		Female 60+ Normal (10-288)	5
Male 20-39 Low (<20)	3	Male 20-39 Low (<20)	3
Male 40+ Low (<20)	20	Male 40+ Low (<20)	10
		Male 40+ Normal (20-380)	10
Female 20-39 Normal (10-154)	518	Female 20-39 Low (<10)	29
		Female 40-59 Low (<10)	3
		Female 20-39 Normal (10-154)	430
		Female 40-59 Normal (10-232)	44
		Female 20-39 High (>154)	11
		Female 40-59 High (>232)	1
Female 40-59 Normal (10-232)	984	Female 40-59 Low (<10)	43
		Female 40-59 Normal (10-232)	874
		Female 60+ Normal (10-288)	53
		Female 40-59 High (>232)	14
Female 60+ Normal (10-288)	254	Female 60+ Low (<10)	6
		Female 60+ Normal (10-288)	241
		Female 60+ High (>288)	7
Male 20-39 Normal (20-345)	167	` ′	1
		Male 20-39 Normal (20-345)	153
		Male 40+ Normal (20-380)	9
		Male 20-39 High (>345)	4

#### Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
Ferritin			
Male 40+ Normal (20-380)	396	Male 40+ Low (<20)	3
		Male 40+ Normal (20-380)	389
		Male 40+ High (>380)	4
Female 20-39 High (>154)	32	Female 20-39 Normal (10-154)	7
		Female 40-59 Normal (10-232)	1
		Female 20-39 High (>154)	22
		Female 40-59 High (>232)	2
Female 40-59 High (>232)	57	Female 40-59 Normal (10-232)	18
		Female 60+ Normal (10-288)	3
		Female 40-59 High (>232)	35
		Female 60+ High (>288)	1
Female 60+ High (>288)	12	Female 60+ Normal (10-288)	2
		Female 60+ High (>288)	10
Male 20-39 High (>345)	8	Male 20-39 Normal (20-345)	2
		Male 20-39 High (>345)	5
		Male 40+ High (>380)	1
Male 40+ High (>380)	53	Male 40+ Normal (20-380)	26
		Male 40+ High (>380)	27
PSA			
Normal (<=4.0)	343	Normal (<=4.0)	341
		High (>4.0)	2
High (>4.0)	8	Normal (<=4.0)	2
		High (>4.0)	6
Cotinine			
Negative	2,220	Negative	2,188
		Positive	32
Positive	428	3	110
		Positive	318
Fecal Globin			
Negative	13	Negative	12
		Positive	1

#### Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
Absolute Nucleated RBC			
Normal (0)	1	Normal (0)	1
Total Vitamin D, 25-Hydroxy			
Low (<20)	629	Low (<20)	399
		Normal (20-100)	230
Normal (20-100)	2,016	Low (<20)	217
		Normal (20-100)	1,796
		High (>100)	3
High (>100)	3	Normal (20-100)	2
		High (>100)	1
Microalbumin, Urine			
	79		79
Microalbumin/Creatinine Ratio			
Normal (< 30)	58	Normal (< 30)	54
		High (>29)	4
High (>29)	14	Normal (< 30)	3
		High (>29)	11
White Blood Cell Count			
Low (<3.8)	117	Low (<3.8)	55
		Normal (3.8-10.8)	62
Normal (3.8-10.8)	2,458	Low (<3.8)	53
		Normal (3.8-10.8)	2,374
		High (>10.8)	31
High (>10.8)	68	Normal (3.8-10.8)	43
		High (>10.8)	25

Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
Red Blood Cell Count			
Female Low (<3.8)	32	Female Low (<3.8)	12
		Female Normal (3.8-5.1)	20
Male Low (<4.2)	12	Male Low (<4.2)	10
		Male Normal (4.2-5.8)	2
Female Normal (3.8-5.1)	1,807	Female Low (<3.8)	27
		Female Normal (3.8-5.1)	1,706
		Female High (>5.1)	74
Male Normal (4.2-5.8)	601	Male Low (<4.2)	8
		Male Normal (4.2-5.8)	584
		Male High (>5.8)	9
Female High (>5.1)	158	Female Normal (3.8-5.1)	70
		Female High (>5.1)	88
Male High (>5.8)	33	Male Normal (4.2-5.8)	11
		Male High (>5.8)	22
Hemoglobin			
Female Low (<11.7)	166	Female Low (<11.7)	92
		Female Normal (11.7-15.5)	74
Male Low (<13.2)	25	Male Low (<13.2)	17
		Male Normal (13.2-17.1)	8
Female Normal (11.7-15.5)	1,776	Female Low (<11.7)	62
		Female Normal (11.7-15.5)	1,666
		Female High (>15.5)	48
Male Normal (13.2-17.1)	596	Male Low (<13.2)	8
		Male Normal (13.2-17.1)	571
		Male High (>17.1)	17
Female High (>15.5)	55	Female Low (<11.7)	1
		Female Normal (11.7-15.5)	32
		Female High (>15.5)	22
Male High (>17.1)	25	Male Normal (13.2-17.1)	17
		Male High (>17.1)	8

Table 1

Test Name		Test Name	
Reference Range	2019	Reference Range	2020
Hematocrit			
Female Low (<35)	113	Female Low (<35)	56
		Female Normal (35-45)	57
Male Low (<38.5)	19	Male Low (<38.5)	11
		Male Normal (38.5-50)	7
		Male High (>50)	1
Female Normal (35-45)	1,758	Female Low (<35)	58
		Female Normal (35-45)	1,627
		Female High (>45)	73
Male Normal (38.5-50)	596	Male Low (<38.5)	7
		Male Normal (38.5-50)	566
		Male High (>50)	23
Female High (>45)	126	Female Low (<35)	1
		Female Normal (35-45)	64
		Female High (>45)	61
Male High (>50)	31	Male Normal (38.5-50)	22
		Male High (>50)	9
MCV			
Low (<80)	184	Low (<80)	130
		Normal (80-100)	54
Normal (80-100)	2,443	Low (<80)	37
		Normal (80-100)	2,395
		High (>100)	11
High (>100)	16	Normal (80-100)	9
		High (>100)	7

Table 1

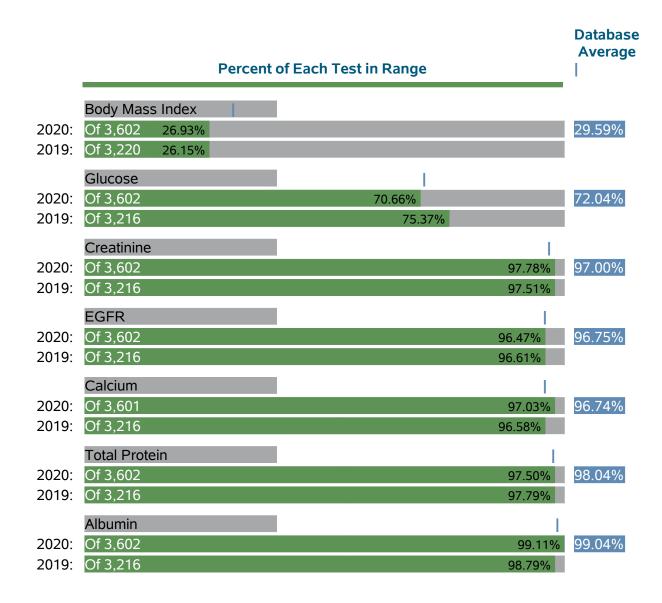
Test Name		Test Name	
Reference Range	2019	Reference Range	2020
MCH			
Low (<27)	302	Low (<27)	233
		Normal (27-33)	69
Normal (27-33)	2,264	Low (<27)	54
		Normal (27-33)	2,180
		High (>33)	30
High (>33)	77	Normal (27-33)	24
		High (>33)	53
мснс			
Low (<32)	231	Low (<32)	112
		Normal (32-36)	119
Normal (32-36)	2,407	Low (<32)	82
		Normal (32-36)	2,323
		High (>36)	2
High (>36)	5	Normal (32-36)	5
RDW			
Low (<11)	3	Low (<11)	2
		Normal (11-15)	1
Normal (11-15)	2,503	Normal (11-15)	2,459
		High (>15)	44
High (>15)	136	Normal (11-15)	61
		High (>15)	75
Platelet Count			
Low (<140)	21	Low (<140)	12
		Normal (140-400)	9
Normal (140-400)	2,487	Low (<140)	16
		Normal (140-400)	2,439
		High (>400)	32
High (>400)	125	Normal (140-400)	49
		High (>400)	76

Table 1

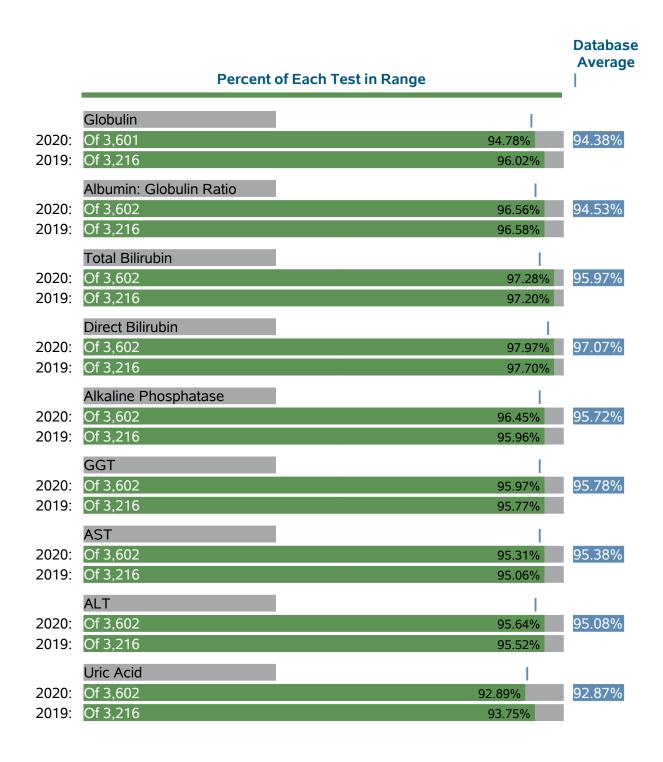
Test Name		Test Name	
Reference Range	2019	Reference Range	2020
Absolute Neutrophils			
Low (<1800)	120	Low (<1800)	59
		Normal (1800-8000)	61
Normal (1800-8000)	2,475	Low (<1800)	63
		Normal (1800-8000)	2,387
		High (>8000)	25
High (>8000)	37	Normal (1800-8000)	30
		High (>8000)	7
Absolute Lymphocytes			
Low (<1200)	199	Low (<1200)	120
		Normal (1200-5200)	79
Normal (1200-5200)	2,439	Low (<1200)	86
		Normal (1200-5200)	2,350
		High (>5200)	3
High (>5200)	1	Normal (1200-5200)	1
Absolute Monocytes			
Low (<200)	14	Low (<200)	3
		Normal (200-900)	11
Normal (200-900)	2,584	Low (<200)	16
		Normal (200-900)	2,557
		High (>900)	11
High (>900)	35	Normal (200-900)	28
		High (>900)	7
Absolute Eosinophils			
Low (<15)	19	Low (<15)	1
		Normal (15-500)	18
Normal (15-500)	2,559	Low (<15)	22
		Normal (15-500)	2,504
		High (>500)	33
High (>500)	55	Normal (15-500)	29
		High (>500)	26



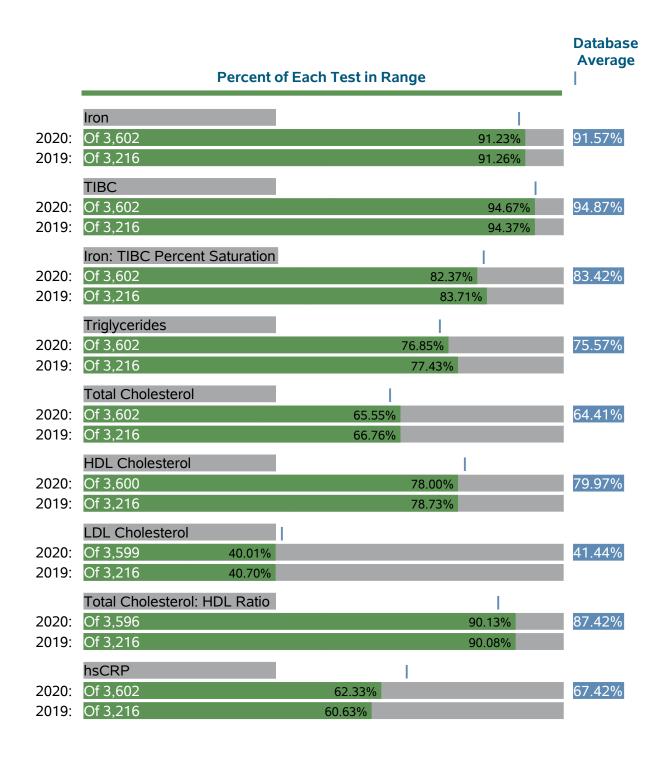
Laboratory tests were performed on 3,605 SampleOCP participants. The following is a summary of those results as compared to the Database Average. (This is a non-cohort comparison of aggregate participant data. Legacy wellness database years are denoted by an asterisk.)



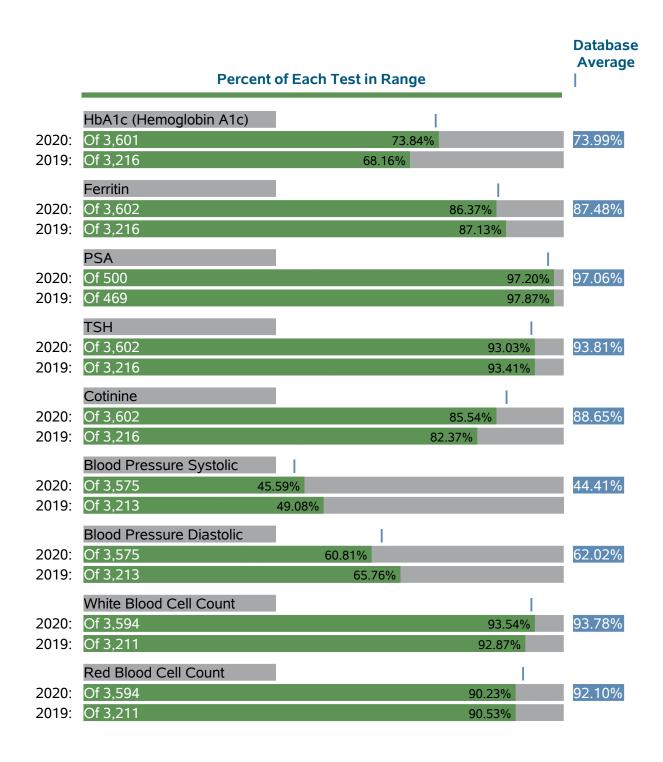




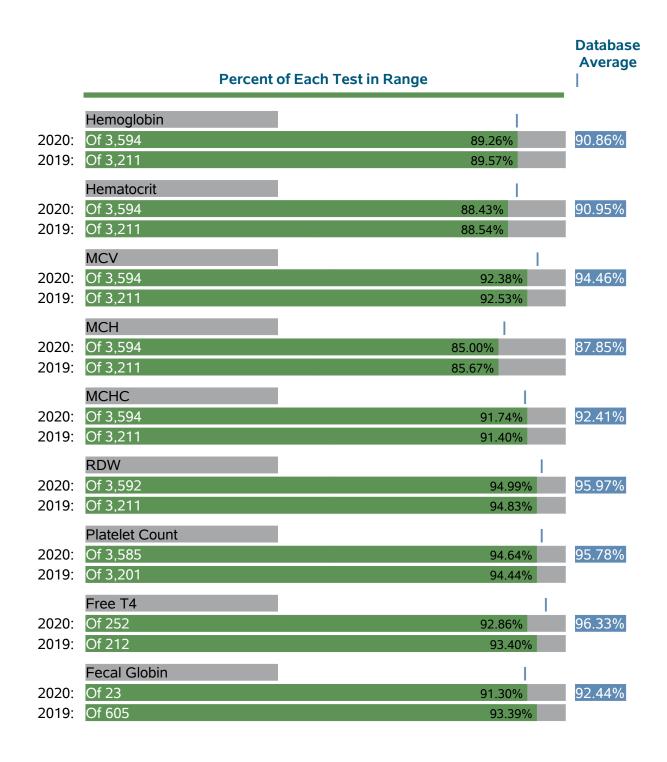




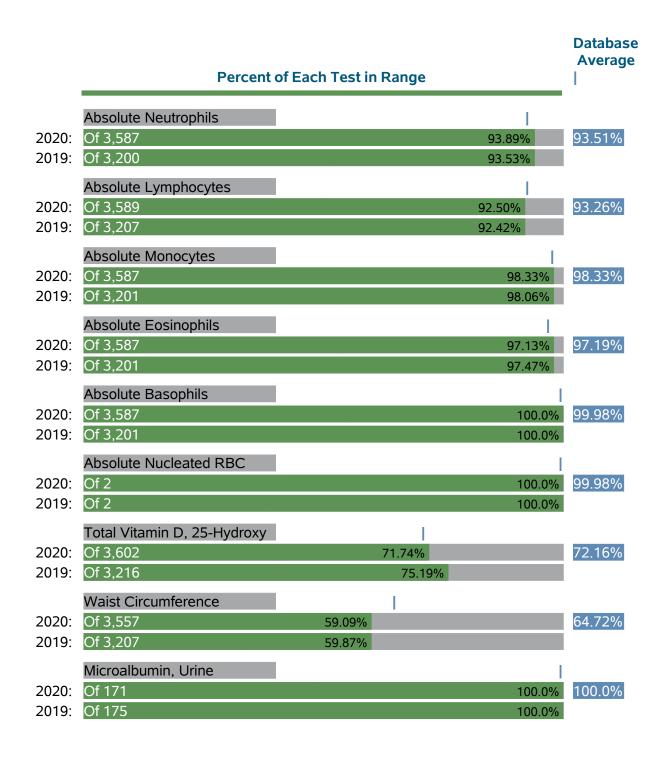




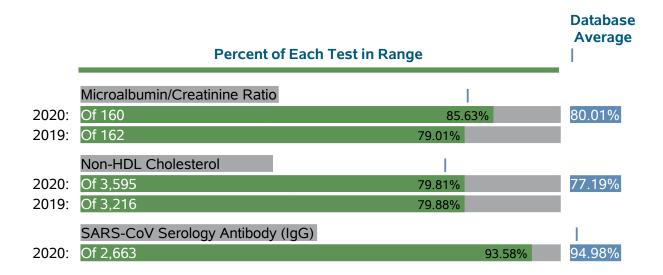














#### **Appendix B**

Quest Diagnostics® Health & Wellness | OurCompany Profile Frequently Asked Questions

#### 1. What does the "Clinical Data Report" include?

The Clinical Data Report includes an analysis of current or most recent program year aggregate data. Clinical data offers in and out of range status by individual laboratory and biometric results, including a comparison to Quest Diagnostics database averages for added insight.

#### 2. What is "Cohort" data?

Cohort data represents historical clinical and biometric results of those in the employer's population who have consistently participated in screenings. Cohort data provides added insight to important population health trends.

#### 3. What do the Executive Summary and Health Questionnaire Summary offer?

The Executive Summary and Health Questionnaire Summary highlights the most significant insights regarding a population, and includes participation and eligibility, male and female breakouts, and in some instances a financial savings analysis based on cohort results and change in risk status, where appropriate.

#### 4. What does "database average" mean?

Database average refers to the trailing four quarters of data in Quest Diagnostics Health & Wellness database, which at this time numbers over **three million** records each time the data is pulled.

# 5. What is the Health & Wellness database average for age of participants and average participation rate?

The average age of participants is **44 years of age**. The average participation rate is **35%** based on all customers' average of participation.

#### **6.** Why do the sample sizes (n=) vary within the OurCompany Profile?

Participation numbers may vary within each section of the report and within lab results. Different sections of the report look at different populations and a cohort report may only look at time-over-time participants (repeat participants) vs. all participants. The Health Questionnaire section only reviews data for those individuals with a scored Health Questionnaire while the lab section looks at all participants with a lab complete status. Sample sizes may vary by participant within tests, and may be different. Only valid results for participants are shown and if it was a reflex test, age or gender test, or an invalid/non-given result the result will not be counted as valid to report at the test level.



#### **Appendix B (continued)**

Quest Diagnostics® Health & Wellness | OurCompany Profile Frequently Asked Questions

#### 7. Are the results age and gender adjusted?

Lab tests are automatically age and gender adjusted by in and out of range. Result levels are not adjusted based on the employers' average age or gender.

#### 8. Why do my out of range blood pressure results appear so out of range?

The guidelines for blood pressure are defined as readings of **130** mm Hg and higher for the systolic blood pressure measurement, or readings of **80** and higher for the diastolic measurement. That is a change from the old definition of **140/90** and higher. When assessing a high BP risk category, if either the top number or the bottom number falls into a risk range, that is sufficient to be assigned to the higher risk category. A normal value for blood pressure is less than **120/80** mm Hg.

#### 9. Can Health & Wellness reports be provided that address specific data variables?

Health & Wellness reports provide insights to unique sub-populations based on eligibility data such as location level, or custom codes such as job class. The insights from these reports can prompt alternative intervention approaches based on risks identified in each sub-population. Breakout report variables that an employer wants included in the OurCompany Profile must be specified at the time an eligibility file is created. A Client Engagement Specialist can provide further guidance on the data variables required to pull this report. Eligibility data is used in a variety of ways within the reports. For example, the percent participation is calculated on the total eligible number provided. Age and gender breakouts are also provided within the reporting and are driven by eligibility information.

# 10. What insight can be shared on specific program additions/enhancements that other clients have made based on aggregate data?

Decisions clients have made based on insights gathered from aggregate reporting include, adding covered spouses to an employee-only program. Many Employers also decide to offer HbA1c (Hemoglobin A1c) to assess diabetes risk as a replacement or in addition to fasting glucose screenings. Offering non-fasting HbA1c as a replacement option or discussion point as reflex for participants with diabetes is another common consideration. Employers have also made the decision to dig deeper into their population's diabetes risk problems by offering up HbA1c instead of glucose only testing. Insights like these have helped employers make more informed decisions about their wellness programing, future program interventions and overall employee health.



#### **Appendix B (continued)**

Quest Diagnostics® Health & Wellness | OurCompany Profile Frequently Asked Questions

11. When is metabolic syndrome data analysis available and what does it provide?

Metabolic syndrome is a cluster of clinical risks that are highly modifiable, and this risk analysis provides additional insight into population risk for conditions like diabetes and cardiovascular disease. Metabolic syndrome analysis is provided to employers who have chosen testing for BMI, Blood Pressure, Glucose, HDL Cholesterol and Triglycerides. All five tests are required for metabolic syndrome testing analysis. This data is especially valuable where metabolic syndrome has been chosen as a framework for understanding health risks in participant-directed

communications and reporting, like the My5 to Health Profile and MyGuide to Health Profile.

- 12. How is the aggregate data included in the OurCompany Profile used to establish targets if an employer wants to move toward an outcomes-based design next year?

  Aggregate data is intended to be used to drive program design in areas of greatest concern to the company and one of those programs could be outcomes based program to increase the rate of improvement in those problem areas as shown in the OurCompany Profile. If it's available, aggregate data from previous program(s), can help determine the highest risk factors and cost drivers for your employee population. This information can be used to drive decision making about what measures to reward on as well as at what levels to set measures.
- **13.** How many participants do I need to get an aggregate report?

  To protect the anonymity of a population. **40** participants are the minimum.

To protect the anonymity of a population, **40** participants are the minimum legal requirement for completing an aggregate report. For example, if there are only **33** participants at a location for which a report was requested, a report cannot be pulled for that location.

14. Can an OurCompany Profile report include both an employer's Finger stick and Venipuncture participants?

The OurCompany Profile report can reflect combined testing modalities for the current year, but combined modalities for previous year's cohort data cannot be provided at this time.

15. Can comparative data against a select "Industry" be provided?

An industry—specific comparative data analysis report can be generated. Employers should discuss this report request with their designated specialist, account manager or strategic account executive as additional charges for this report will apply.



#### **Appendix B (continued)**

Quest Diagnostics® Health & Wellness | OurCompany Profile Frequently Asked Questions

16. Why is the Metabolic Syndrome section calculating BMI instead of waist circumference (or vice versa) for customers who do not have a My5 report or a MyHealth with MetS? The Metabolic Syndrome section of the OurCompany Aggregate report automatically calculates metabolic syndrome risk for MyTest and MyHealth customers using either BMI or waist circumference as the obesity risk factor. The obesity risk factor in these cases will be selected based on whichever metric has the higher number of participants regardless of which fasting panel the customer has purchased\*. My5 and MyHealth w/Mets customers will see metabolic syndrome risk in the OurCompany Profile using the obesity risk factor option (Metabolic – Use BMI or Waist) specified in their Master Service Agreement.

Customers that have not qualified to be a My5 or MyHealth w/MetS customer should note that BMI or Waist, whichever has the highest number of participants, will be used to calculate metabolic syndrome in the OurCompany Profile. Additional Metabolic Syndrome analysis using waist circumference or BMI should be requested with a designated Specialist, Account Manager or Strategic Account Executive as additional charges for this report will apply.

<sup>\*</sup> Metabolic syndrome analysis is not available for non-fasting panels because results from the glucose and triglyceride risk factors are required for metabolic syndrome analysis but are not provided in non-fasting panels.



#### References

- 1. Nicolaas P. Pronk; Michael J. Goodman; Patrick J. O'Connor; et al. *Relationship Between Modifiable Health Risks and Short-term Health Care Changes*. JAMA. 1999; 282(23): 2235-2239 (doi: 10.1001/jama.282.23.2235). [Retrieved 2008 Dec 4]. Available from: https://jama.ama-assn.org/cgi/content/full/282/23/2235.
- 2. Centers for Disease Control and Prevention (CDC). National Center for Chronic Disease Prevention and Health Promotion. *Chronic Disease Overview*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. [Retrieved 2008 Dec 3]. Available from: https://www.cdc.gov/NCCdphp/overview.htm#2.
- 3. Centers for Disease Control and Prevention (CDC). *Behavioral Risk Factor Surveillance System Survey Data*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2007.
- 4. Centers for Disease Control and Prevention (CDC). *Alcohol & Public Health*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. [Retrieved 2008 Dec 4]. Available from: https://www.cdc.gov/alcohol/.
- 5. U.S. Department of Health and Human Services. *The Health Consequences of Smoking: A Report of the Surgeon General.* U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2004. [Retrieved 2008 Dec 4]. Available from: https://www.cdc.gov/tobacco/data\_statistics/sgr/sgr\_2004/index.htm.
- 6. American Heart Association. *Physical Activity and Public Health: Updated Recommendation for Adults from the American College of Sports Medicine and the American Heart Association.* Circulation. 2007;116:1081-1093. [Retrieved 2008 Dec 4]. Available from https://www.americanheart.org/presenter.jhtml?identifier=3051617.
- 7. Smith, Suzanne; Joe Pergola. *Preventing Stress Through a Healthy Lifestyle*. University of Florida, Florida Cooperative Extension Service. Fact Sheet HE-2090; November 1991.
- 8. U.S. Department of Health and Human Services and U.S. Department of Agriculture. *Dietary Guidelines for Americans*, 2005. 6th Edition, Washington, DC: U.S. Government Printing Office, January 2005.



#### References (continued)

- 9. Centers for Disease Control and Prevention (CDC). *Behavioral Risk Factor Surveillance System Survey Data*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2007.
- 10. Centers for Disease Control and Prevention (CDC). Fact Sheets and At-A-Glance Reports: High Blood Pressure Fact Sheet. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention Division of Heart Disease and Stroke Prevention. National Center for Chronic Disease Prevention and Health Promotion. [Retrieved 2008 Dec 5]. Available from:

https://www.cdc.gov/dhdsp/library/fs bloodpressure.htm.

11. High blood pressure redefined for first time in 14 years: 130 is the new high. AHA/ASA Newsroom.

https://newsroom.heart.org/news/

high-blood-pressure-redefined-for-first-time-in-14-years-130-is-the-new-high. Published November 13, 17AD. Accessed June 14, 2018.