MEDICARE

SECONDARY DATA ANALYSES

REPORT FOR:

MERCEDES GODFRY

REPORT BY:

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Executive Summary

Introduction

Mercedes Godfrey is an ACE certified Personal Trainer and Group Fitness Instructor who leads fitness classes aimed at improving endurance, strength, balance, and flexibility among adults aged 50 and over. HARC has partnered with Ms. Godfrey to conduct a program evaluation to examine her work in advancing the physical fitness and health needs of adults aged 50 and over.

Ms. Godfrey has sought out HARC for a secondary data analysis report detailing the health of Coachella Valley residents as it pertains to obesity, knee/hip replacements, diabetes, high blood pressure, among others and the associated medical costs. In particular, Ms. Godfrey was interested in additional information pertaining to the above topics and how they relate to Medicare, as well as potential healthcare costs savings due to healthier lifestyles.

Results

Medicare Expenditures

In 2017, there were roughly 57.2 million enrollees in Medicare, with an estimated cost of $12,347 per enrollee. Thus, the National Medicare expenditures for all types of care were $705.9 billion in 2017.

These Medicare expenditures are expected to continue rising over the coming years. For example, in 2027, the estimated cost per enrollee is $19,546. This will increase the expected annual Medicare expenditure to $1,436.8 billion.

When looking at personal healthcare expenditures for the most recent year available (2014), a total of $580,533 million was spent on Medicare, nationally. About $460,533 million of this total was spent by the age demographic 65 and older.

For California, in 2014, there were about 5,476 thousand people enrolled in Medicare, with an annual estimated cost of about $11,833 per enrollee. That brings personal healthcare expenditures for Medicare to about $64,795 million for California.

Medicare-Severity Diagnosis Related Groups (MS-DRGs)

MS-DRGs are classifications for sets of patient attributes and help to determine the costs that Medicare should pay to a hospital for treating a Medicare patient. The Coachella Valley has three hospitals (i.e., Eisenhower Medical Center, Desert Regional Medical Center, and John F. Kennedy Memorial) and thus, data that follows refers to diagnoses/procedures in the Coachella Valley.

The MS-DRGs listed below are in some way associated with chronic diseases or major risk factors for chronic diseases. Chronic diseases include areas such as heart disease, stroke, cancer, and diabetes. Moreover, these diseases can be prevented by engaging in healthier lifestyles such as improving nutrition and physical activity levels.

MS-DRGs and Associated Costs

Average costs reported in this section refer to the charges that the hospitals billed. Additionally, as mentioned earlier, these MS-DRGs help to determine the costs that Medicare should pay to a hospital for treating a Medicare patient. In other words, based on these MS-DRGs, Medicare pays the hospital on a per inpatient case, or per inpatient discharge basis.

Heart failure is a condition in which the heart does not pump enough blood and typically due to ischemic heart diseases, diabetes, high blood pressure, and other heart conditions. The average charge per stay for heart failure and shock is $104,391 across all three hospitals in the Valley.

Percutaneous coronary interventions involve opening arteries which have been blocked or narrowed by a buildup of atherosclerotic plaque or fat, cholesterol, calcium, and other substances in the arteries. Across the Valley, average percutaneous cardiovascular procedures with drug-eluting stent without major complications/comorbidities were $152,796.

Laparoscopic cholecystectomy procedures typically involve removal of the gall bladder and is caused by an ineffective gallbladder leading to cholesterol gallstones, black stones, and brown stones. Additionally, people who are overweight/obese may have increased chances of developing gallstones. The average costs across the Valley for laparoscopic cholecystectomy without major complications or comorbidities is about $80,136.

Circulatory disorders involve conditions such as high blood pressure and coronary artery disease, which can result in stroke or heart attack. The average costs per stay for circulatory disorders without AMI without major complications or comorbidities are about $91,176.

End-stage renal disease (i.e., kidney failure) is a disease in which the kidneys stop removing waste from the body and is typically caused by diabetes and high blood pressure. The average costs associated with renal failure in the Valley is about $75,807.

Arrhythmia is a deviation in the heart beat resulting in blood being pumped ineffectively. Cardiac arrhythmia and conduction disorders without complications and comorbidity have an average associated cost of $41,145.

A final area of interest is the issue of major joint replacements in the Valley. The average costs per stay across all three hospitals in the Valley for major joint replacements was $113,808.

The Aging Population

All of the above expenditures are important to consider as the senior population enters Medicare eligibility. For example, according to a microsimulation modeling study published in Forum for Health Economics and Policy, by the year 2030, millions more seniors will enter Medicare insurance plans. From this study, it is expected that rates of chronic conditions such as obesity, high blood pressure, heart disease, diabetes, cancers, stroke, and lung disease will also increase among these projected enrollees.

There are many preventative lifestyle choices that could alleviate some of the chronic conditions that will impact the senior population. One of these lifestyle choices includes engaging in physical activity, which could not only help to improve health at older ages, but also minimize some of the medical costs that Medicare absorbs, as a result of unhealthy lifestyles.

Coachella Valley Activity, Weight, and Nutrition – 2016 Data

The Coachella Valley is a unique community consisting of nine cities and seven unincorporated areas, totaling about 414,023 people. Looking at those who are eligible for Medicare (based on age alone), there are about 26,094 seniors who engage in aerobic activity for either no days in the week or a maximum of two days in the week. The number equates to about a third (32.2%) of the Coachella Valley senior population.

Aside from aerobic activity, many more seniors do not engage in strength training activities. Specifically, 49,033 seniors (61% of the senior population) do not engage in strength training. Another area of need includes the obesity status of many Coachella Valley residents. For example, there are about 44,390 seniors (57% of the senior population) who are overweight or obese, in the Coachella Valley.

Thousands of seniors in the Coachella Valley have a range of major diseases. For example, 58.4% (47,291 seniors) have high blood pressure, 16% (12,855 seniors) have heart disease, and 7.6% (6,173 seniors) have had a heart attack.

Potential Medical Care Costs Savings

Part of the secondary analysis was to attempt to include a hypothetical cost savings projection. In other words, Ms. Godfrey sought HARC to answer the question, "If adults improve physically active lifestyles, what is the expected medical costs savings?"

If we examine seniors (age 65+) who are overweight or obese and do not have a disability, then there are about 4,586 seniors who do not engage in any physical activity.

According to a study published in the journal of *Progress in Cardiovascular Diseases*, when controlling for demographics, residents who are inactive spend an average of $1,015 more on healthcare compared to adults who are active (i.e., 150+ minutes of moderate-intensity activity on a weekly basis), over a four-year period. Following the logic of the aforementioned study, if the 4,586 seniors without a disability in the Coachella Valley increased their physical activity to moderate-intensity, then there would be an average, aggregated healthcare savings of $5,168,422.

It is important to note here that the analysis above is purely hypothetical, and only considers the relationship, not the causality, between physical activity and health care expenditures. Suffice it to say, it is not possible to increase the physical activity of this entire particular group of seniors, especially to moderate-intensity activity. However, there certainly would be medical care cost savings among those who do decide to become more physically active and adopt a healthier lifestyle.

Conclusion

This report details secondary data and narratives pertaining to Medicare expenditures and projected costs, the aging population and benefits of exercise, and Coachella Valley level data pertaining to obesity, activity levels, and MS-DRGs. Specific sources of data are provided throughout the report.

Full Report

Medicare:

Secondary Data Analyses

Introduction

About HARC

HARC, Inc. is a 501(c)(3) nonprofit organization that specializes in research and evaluation services. HARC was founded to help tell the story of the Coachella Valley through a quantitative lens, as the only data available to our region was at the county-level. Having a local research firm enables health leaders and service providers to identify health disparities, inequities, unhealthy behaviors, and trends. HARC has since expanded to not only continue the survey, but to provide other research and evaluation-based services. These services include, but are not limited to needs assessments, program evaluations, analyses of existing data, and much more.

About this Report

Mercedes Godfrey is an ACE certified Personal Trainer and Group Fitness Instructor who leads fitness classes aimed at improving endurance, strength, balance, and flexibility among adults aged 50 and over. HARC has partnered with Ms. Godfrey on a program evaluation study covering her work in advancing the physical fitness and health needs of adults aged 50 and over.

Ms. Godfrey has sought out HARC for a secondary data analysis report detailing the health of Coachella Valley residents as it pertains to obesity, knee/hip replacements, diabetes, high blood pressure, among others and the associated medical costs. In particular, Ms. Godfrey was interested in additional information pertaining to the above topics and how they relate to Medicare, as well as potential healthcare costs savings due to healthier lifestyles.

Many healthcare costs can be minimized with a healthier lifestyle that includes regular physical activity and healthier eating habits. Engaging in physical activity could not only help to improve health at older ages, but also minimize some of the medical costs that Medicare absorbs, as a result of unhealthy lifestyles.[a]

For the reasons mentioned above, the primary goal of the secondary data analysis report is to report on the following:

- Medicare expenditures and projected costs.
- The aging population and benefits of exercise.
- Those who are potentially in need at the Coachella Valley level and associated medical costs.

Results

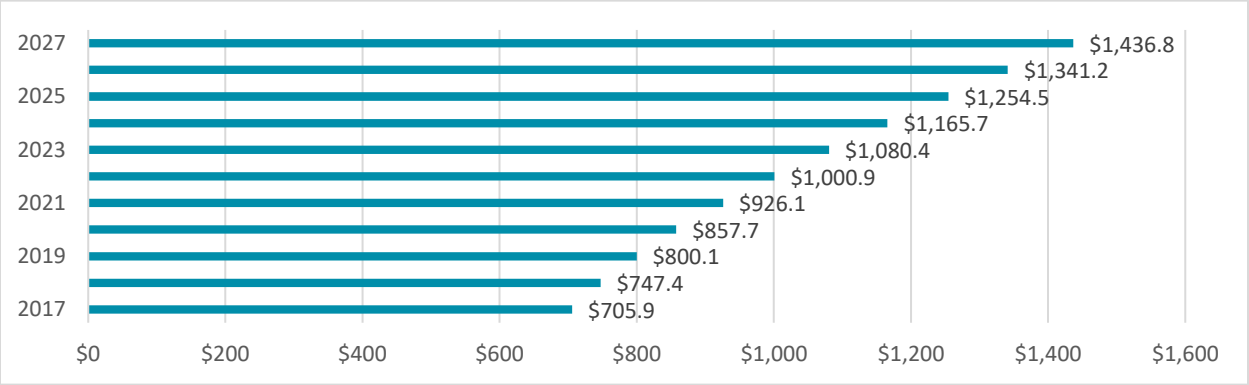
Medicare Expenditures

Medicare is a federal health insurance program for people who are age 65 or older, certain people who are younger and with a disability, or people with end-stage renal disease.[b] In 2017, there were roughly 57.2 million enrollees in Medicare[c], with an estimated cost of $12,347 per enrollee.[d] Thus, the National Medicare expenditures for all types of care were $705.9 billion in 2017. [e]

Of these expenditures, $324.7 billion (46% of Medicare spending) of Medicare spending is accounted for by the federal government while $32.9 billion (4.7% of Medicare spending) is accounted for by state and local governments.[f] The remaining is accounted for by private business and households.

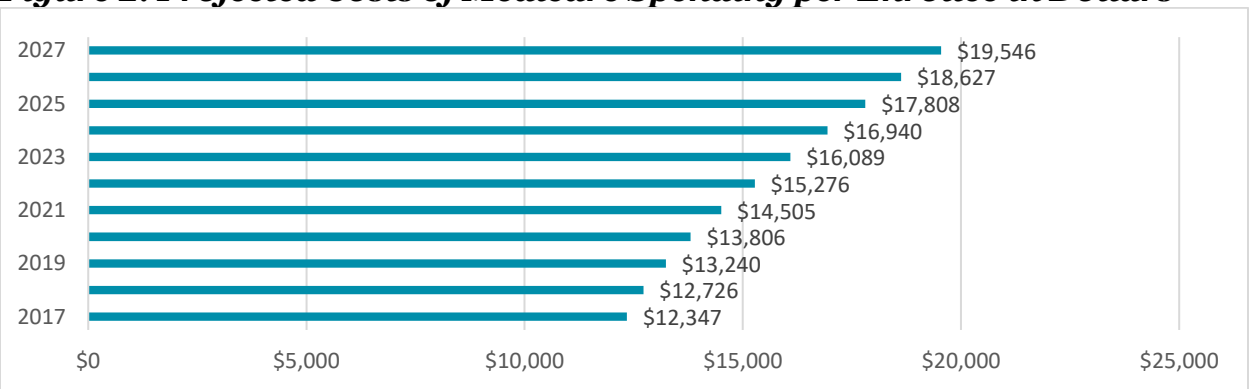
These Medicare expenditures are expected to continue rising over the coming years. For example, in 2027, the expected annual Medicare expenditure is $1,436.8 billion[g], representing a 103.5% increase from the 2017 year. This trend can be seen in Figure 1 below.

Figure 1. Projected Costs of Medicare Expenditures in Billions[h]



Additionally, the expected annual cost per enrollee in the year 2027 is projected at $19,546, a 58.3% increase from the 2017 year, as illustrated in Figure 2.[i]

Figure 2. Projected Costs of Medicare Spending per Enrollee in Dollars[j]

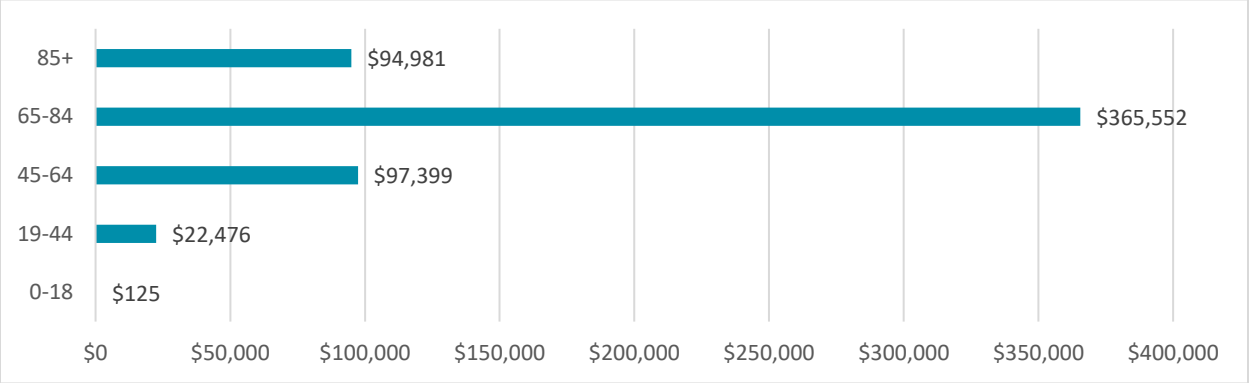


Age Groups

Personal healthcare expenditures refer to total cost of treating individuals with specific medical conditions.[k] When looking at personal healthcare expenditures for the most recent year available (2014), a total of $580,533 million was spent on Medicare, nationally.[l] About $460,533 million of this total was spent by the age demographic 65 and older[m], as illustrated in Figure 3.

Essentially, about 79.3% of the funds are utilized by the senior population, which makes sense as Medicare is designed for people of this age demographic. The lower expenditures for the 85 and older age group is likely due to the smaller number of people in this age demographic.

Figure 3. Medicare Spending by Age for 2014[n]



State Level

For California, in 2014, there were about 5,476 thousand people enrolled in Medicare[o], with an annual estimated cost of about $11,833 per enrollee.[p] That brings personal healthcare expenditures for Medicare to about $64,795 million for California.[q]

Medicare-Severity Diagnosis Related Groups (MS-DRGs)

The next section of tabulated data[r] includes the MS-DRGs and their average associated costs. These are classifications for sets of patient attributes, principal diagnoses, specific secondary diagnoses, procedures, sex, and discharge status.[s] These classifications help to determine the costs that Medicare should pay to a hospital for treating a Medicare patient.[t] In other words, based on these MS-DRGs, Medicare pays the hospital on a per inpatient case, or per inpatient discharge basis.[u]

The Coachella Valley has three hospitals (i.e., Eisenhower Medical Center, Desert Regional Medical Center, and John F. Kennedy Memorial) and thus, data that follows refers to diagnoses/procedures in the Coachella Valley for the most recent timeframe of 10/2016 to 9/2017.

The MS-DRGs listed below are in some way associated with chronic diseases or major risk factors for chronic diseases. Chronic diseases include areas such as heart disease, stroke, cancer, and diabetes.[v] Moreover, these diseases can be prevented by engaging in healthier lifestyles such as improving nutrition and physical activity levels.[w]

MS-DRGs and Associated Costs

Heart failure is a condition in which the heart does not pump enough blood and is typically due to ischemic heart diseases, diabetes, high blood pressure, and other heart conditions.[x] As illustrated in Table 1, the average charge per stay for heart failure and shock is $104,391 across all three hospitals in the Valley. There is only one hospital in which heart failure and shock with only complications/comorbidities average costs per stay is available. That cost is an average of $58,803.

Table 1. Heart Failure and Shock w/ Major Complications/Comorbidities

Hospital	Discharges	Average Charge Per Stay	Total Charges
Eisenhower	458	$87,023	$39,856,546
Desert Regional	199	$120,288	$23,937,296
JFK	59	$105,862	$6,245,868
TOTAL	**716**	**$104,391**	**$70,039,710**

Percutaneous coronary interventions involve opening arteries which have been blocked or narrowed by a buildup of atherosclerotic plaque[y] (fat, cholesterol, calcium, and other substances in the arteries). Across the Valley, average percutaneous cardiovascular procedures with drug-eluting stent without major complications/comorbidities were $152,796, as illustrated in Table 2.

Table 2. Percutaneous Cardiovascular Procedures with Drug-Eluting Stent

Hospital	Discharges	Average Charge Per Stay	Total Charges
Eisenhower	237	$124,163	$29,426,573
Desert Regional	223	$181,430	$40,458,811
JFK	-	-	-
TOTAL	**460**	**$152,796**	**$69,885,384**

Laparoscopic cholecystectomy procedures typically involve removal of the gall bladder and is caused by an ineffective gallbladder leading to cholesterol gallstones, black stones, and brown stones.[z] Additionally, people who are overweight/obese may have increased chances of developing gallstones.[aa] As illustrated in Table 3, the average costs across the Valley for laparoscopic cholecystectomy without major complications or comorbidities is about $80,136.

Table 3. Laparoscopic Cholecystectomy

Hospital	Discharges	Average Charge Per Stay	Total Charges
Eisenhower	212	$62,391	$13,226,890
Desert Regional	197	$93,236	$18,274,162
JFK	90	$84,780	$7,630,219
TOTAL	**499**	**$80,136**	**$39,131,271**

Circulatory disorders involve conditions such as high blood pressure and coronary artery disease, which can result in stroke or heart attack.[bb] The average costs per stay for circulatory disorders without AMI without major complications or comorbidities are about $91,176, as illustrated in Table 4.

Table 4. Circulatory Disorders

Hospital	Discharges	Average Charge Per Stay	Total Charges
Eisenhower	200	$79,031	$15,806,290
Desert Regional	172	$103,320	$17,770,984
JFK	-	-	-
TOTAL	**372**	**$91,176**	**$33,577,274**

End-stage renal disease (i.e., kidney failure) is a disease in which the kidneys stop removing waste from the body and is typically caused by diabetes and high blood pressure.[cc] As illustrated in Table 5, the average costs associated with renal failure in the Valley is about $75,807.

Table 5. Renal Failure with Major Complications/Comorbidities

Hospital	Discharges	Average Charge Per Stay	Total Charges
Eisenhower	195	$71,869	$14,014,542
Desert Regional	168	$79,744	$13,397,070
JFK	-	-	-
TOTAL	**363**	**$75,807**	**$27,411,612**

Arrhythmia is a deviation in the heart beat resulting in blood being pumped ineffectively.[dd] As illustrated in Table 6, cardiac arrhythmia and conduction disorders without complications and comorbidity have an average associated cost of $41,145.

Table 6. Cardiac Arrhythmia and Conduction Disorders

Hospital	Discharges	Average Charge Per Stay	Total Charges
Eisenhower	173	$39,213	$6,783,770
Desert Regional	142	$44,918	$6,288,512
JFK	71	$39,304	$2,790,615
TOTAL	**386**	**$41,145**	**$15,862,897**

A final area of interest to Ms. Godfrey were major joint replacements in the Valley. Major joint replacements are needed when there is damage to cartilage lining the ends of the bones, typically caused by arthritis, fractures, or other conditions.[ee]

Table 7 refers to "major joint replacements or reattachement of lower extremities without MCC" (major complications or comorbities). This group of diagnoses predominantly refers to hip and knee joint replacements.[ff] The average costs per stay across all three hospitals in the Valley was $113,808.

Table 7. Major Joint Replacements

Hospital	Discharges	Average Charge Per Stay	Total Charges
Eisenhower	1,410	$96,103	$135,505,403
Desert Regional	451	$110,132	$49,669,486
JFK	207	$135,189	$27,984,110
TOTAL	**2,068**	**$113,808**	**$213,158,999**

The Aging Population and Medicare

All of the above expenditures are important to consider as the senior population enters Medicare eligibility. For example, according to a microsimulation modeling study published in Forum Health Econ Policy[gg], by the year 2030, millions more seniors will enter Medicare insurance plans. From this study, it is expected that chronic conditions such as obesity, high blood pressure, heart disease, diabetes, cancers, stroke, and lung disease will also increase among these projected enrollees. Accordingly, considering the rate of the senior population increase, in addition to increasing medical costs and chronic condition rates, Medicare spending is expected to double by the year 2030, from $507 billion in 2010 to $1.2 trillion in 2030.

The Benefits of Regular Exercise

There are many preventative lifestyle choices that could alleviate some of the chronic conditions that will impact the senior population. One of these lifestyle choices includes engaging in physical activity, which could not only help to improve health at older ages, but also minimize some of the medical costs that Medicare absorbs, as a result of unhealthy lifestyles.[hh]

For example, research has indicated that Medicare-eligible adults who participate in community-based exercise programs, at least once per week, have lower annual total healthcare costs, compared to those who do not participate in these programs.[ii] Additional research has found that although limited, there is evidence for the cost-effectiveness of healthcare-based interventions among high risk groups of people with poor health that was brought on by physical inactivity.[jj]

In one study, in which the researchers were utilizing an econometric model, estimated that average healthcare expenditures for inactive people were $1,437 more than sufficiently active people.[kk] Another study found that seniors (60+) who were insufficiently active and then participated in a community-based wellness program experienced medical cost savings over a six-month period.[ll] Increasing physical activity, however, is not enough to improve health, as there should also be changes to diet. For example, in another health economic assessment study[mm], U.S. adults who improve their diets to achieve 80% of the healthy eating index 2015 were associated with an estimated $55.1 billion in costs savings.

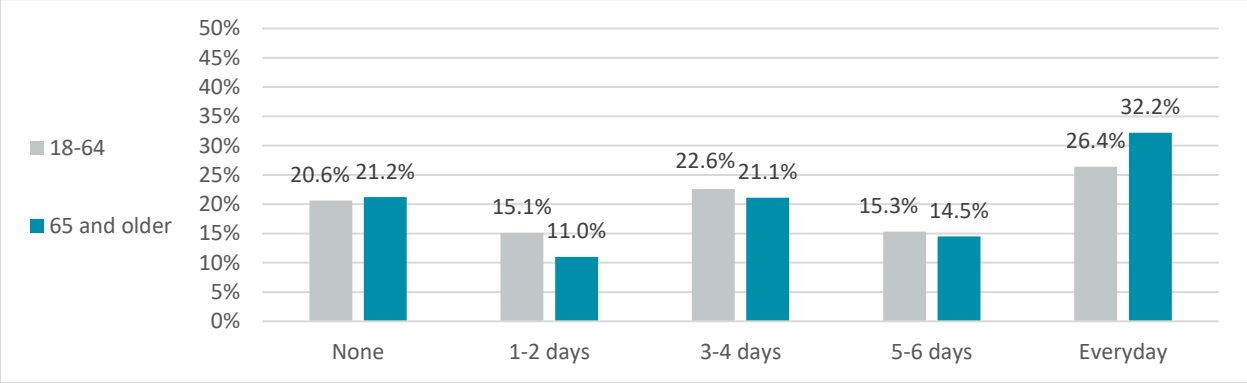
Coachella Valley Weight, Activity, and Nutrition – 2016 Data

It is important to be physically active to not only minimize healthcare costs, but to also have an overall, healthier life. That said, there are many in the Coachella Valley who do not maintain a physically active lifestyle.

The Coachella Valley is a unique community consisting of nine cities and seven unincorporated areas, totaling about 414,023 people.[nn] In order to understand the needs of the Coachella Valley population, HARC conducts a population-based health survey of about 2,500 residents every three years. This survey enables local service providers to identify community need and to develop programs to meet those needs.

When looking at those who are eligible for Medicare (based on age alone), there are about 26,094 seniors (aged 65 and older) who engage in aerobic activity for either no days in the week or a maximum of two days in the week. That number equates to about a third (32.2%) of the Coachella Valley senior population.

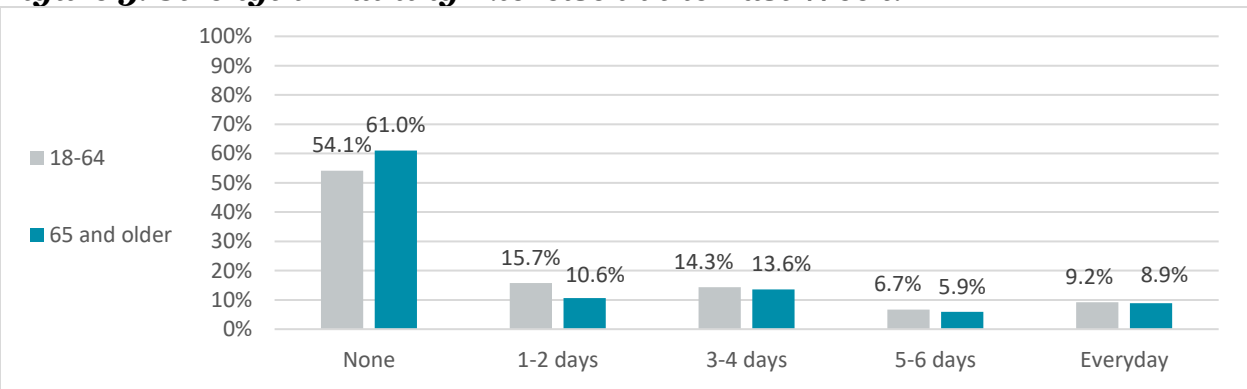
Figure 4. Aerobic Exercise in the Past Week[oo]



Note: Ages 18-64 population estimate = 224,899; 65 and older population estimate = 81,076.

Aside from aerobic activity, many more seniors do not engage in strength training activities. Specifically, 49,033 seniors (61% of the senior population) do not engage in strength training, as illustrated in Figure 5.

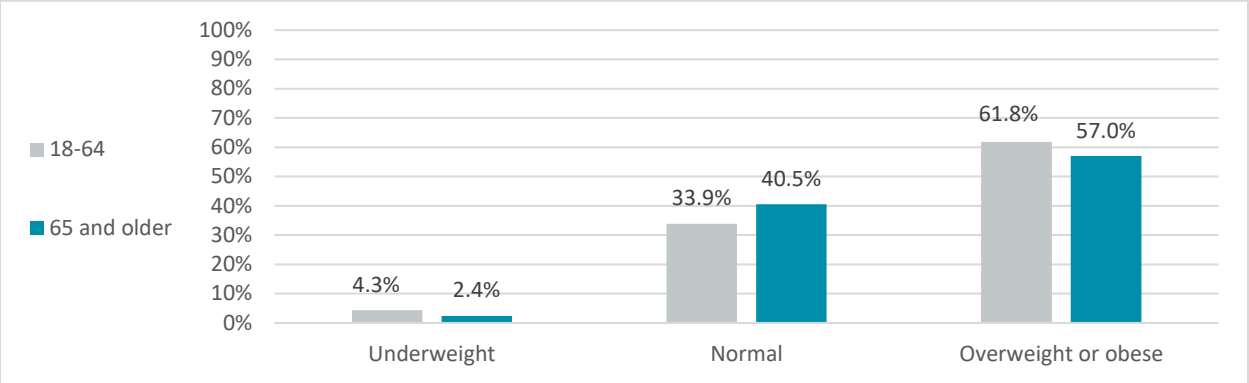
Figure 5. Strength Training Exercise in the Past Week.[pp]



Note: Ages 18-64 population estimate = 224,412; 65 and older population estimate = 80,359.

Another area of need includes the obesity status of many Coachella Valley residents. For example, there are about 44,390 seniors (57% of the senior population) who are overweight or obese, in the Coachella Valley.

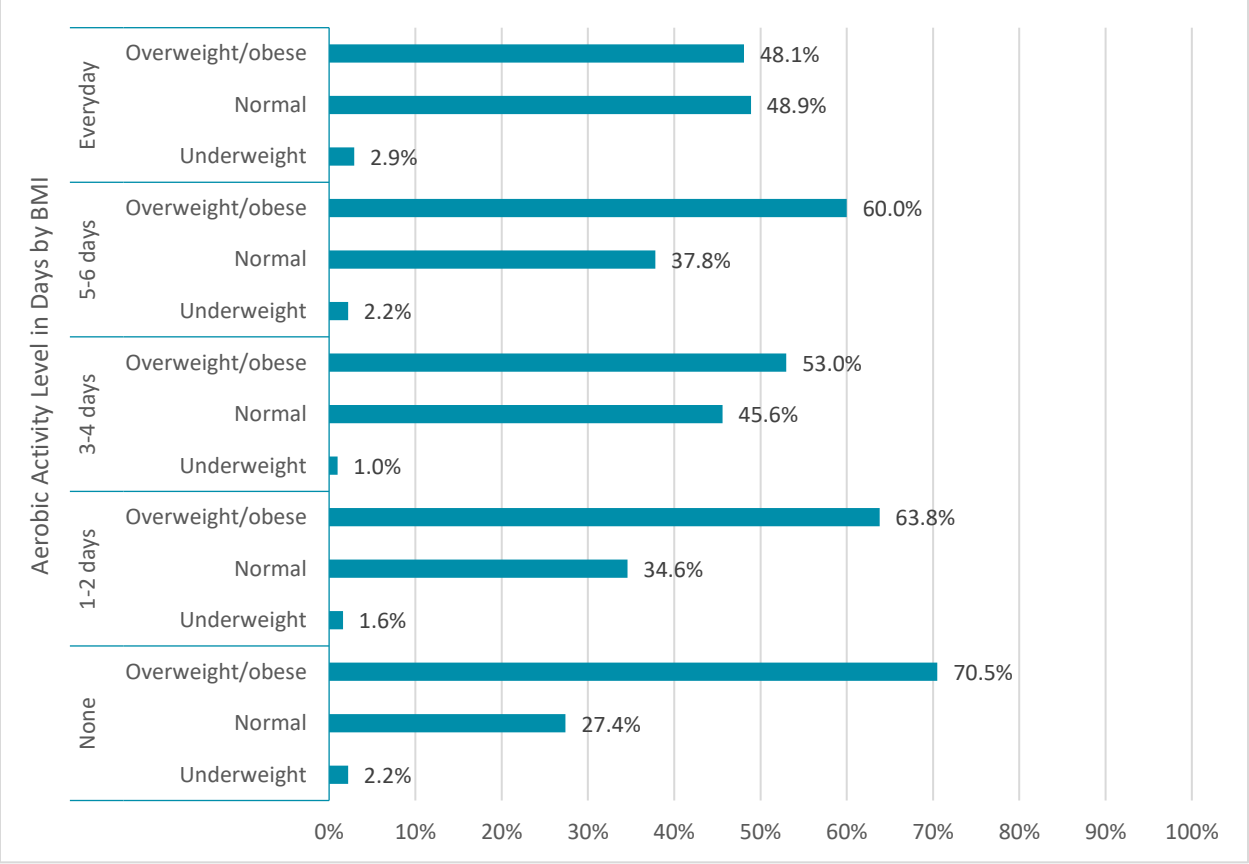
Figure 6. Body Mass Index BMI[qq]



Note: Ages 18-64 population estimate = 212,648; 65 and older population estimate = 77,817.

Those who are not active, or active only 1-2 days per week typically have higher BMIs, among seniors. This can be seen in Figure 7 in which senior BMIs are groups by their levels of aerobic activity in the week. As illustrated in Figure 7, about 70.5% of seniors who exercise no days of the week and 63.8% of seniors active 1-2 days per week are overweight or obese.

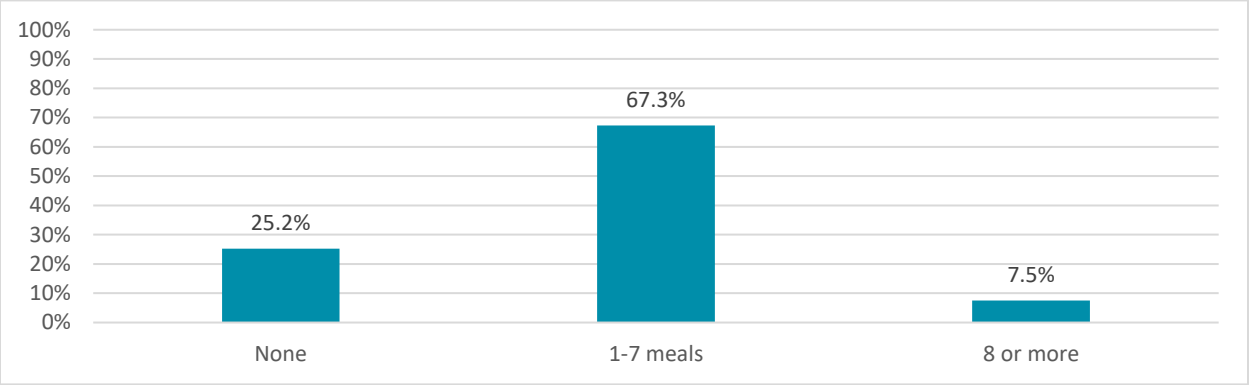
Figure 7. Seniors (65+) Aerobic Activity Level by BMI[rr]



Note: Population estimate = 77,543

Nutrition is also important to consider for one's health. Among those who are aged 65 and older, 7.5% (5,978 seniors) consumed eight or more meals away from home in the last week.

Figure 8. Eating Meals Away from Home[ss]

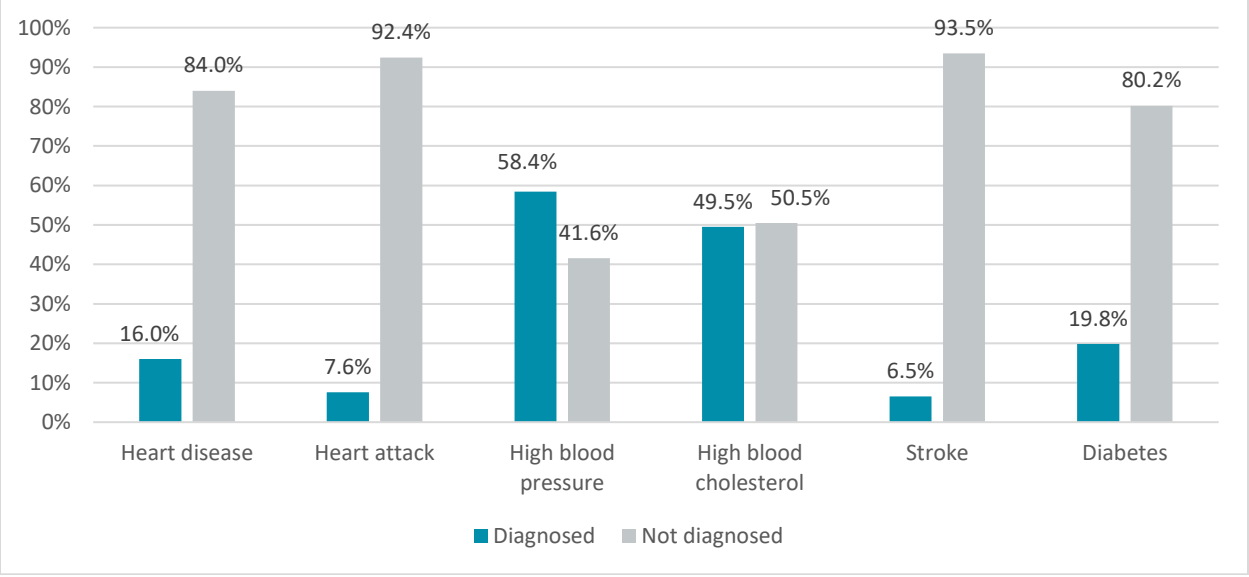


Note: 65 and older population estimate = 80,060.

Coachella Valley Major Diseases Among Seniors

Chronic diseases are quite common, yet they can also be prevented by making healthier lifestyle choices. Thousands of seniors in the Coachella Valley have a range of major diseases, as illustrated in Figure 9 below. For example, 58.4% (47,291 seniors) have high blood pressure, 16% (12,855 seniors) have heart disease, and 7.6% (6,173 seniors) have had a heart attack.

Figure 9. Major Diseases Among Seniors (65+) in Coachella Valley[tt]



Note: Heart disease, population estimate = 80,333; Heart attack, population estimate = 80,941; High blood pressure, population estimate = 80,942; High blood cholesterol, population estimate = 80,017; Stroke, population estimate = 80,966; Diabetes, population estimate = 81,044

Potential Medical Care Costs Savings

Part of the secondary analysis was to attempt to include a hypothetical cost savings projection. In other words, Ms. Godfrey sought HARC to answer the question, "If adults improve to have physically active lifestyles, what is the expected medical costs savings?"

Based on HARC's 2016 population data,[uu] there are about 14,864 seniors (aged 65 and older) in the Coachella Valley who do not engage in aerobic exercises or strength training at all. If we examine seniors who are also overweight or obese and do not have a disability, then there are about 4,586 seniors who do not engage in any physical activity.

There are additional seniors who exercise about 1-2 days per week, but the level of their exercise is unknown. Thus, the hypothetical medical savings analysis will solely focus on seniors with no regular physical activity, who are overweight/obese.

According to a study[vv] published in the journal of *Progress in Cardiovascular Diseases*, when controlling for demographics (i.e., sex, age group, race/ethnicity, census region, metropolitan statistical area, marital status, education, poverty level, health insurance status, smoking status, and medical expenditure survey year), there are average healthcare expenditure differences per capita. That is, residents who are insufficiently active (i.e., less than 150 minutes of moderate-intensity activity on a weekly basis) or inactive (i.e., no activity at all), spend more money on average for healthcare compared to adults who are active (i.e., 150+ minutes of moderate-intensity activity on a weekly basis), over a four-year period. These estimates are provided in the Table below.

Table 8. Healthcare Expenditure Differences – 2012 Dollars

Physical Activity Level	Health Care Expenditure Per Capita (compared to active)
Active	-
Inactive	$1,015
Insufficiently active	$603

Using the CPI Inflation Calculator[ww] from the Bureau of Labor Statistics, $1,015 in 2012 has an equivalent purchasing power of $1,127 for 2019. So hypothetically, utilizing the average expenditures from the above study, if the 4,586 seniors without a disability in the Coachella Valley increased their physical activity to moderate-intensity, then there could be an average, aggregated healthcare savings of $5,168,422.

It is important to note here that the analysis above is purely hypothetical, and only considers the relationship between physical activity and health care expenditures; it does not consider the causality. Suffice it to say, it is not possible to increase the physical activity of this entire population of seniors, especially to moderate-intensity activity.

Despite that, there certainly would be medical care cost savings among those who do decide to become more physically active and adopt a healthier lifestyle.

Conclusion

This report details secondary data and narratives pertaining to Medicare expenditures and projected costs, the aging population and benefits of exercise, and Coachella Valley level data pertaining to obesity, activity levels, and the MS-DRGs.

A summary, by the numbers:

- In 2017, there were roughly 57.2 million enrollees in Medicare, with an estimated cost of $12,347 per enrollee. Thus, the National Medicare expenditures for all types of care were $705.9 billion in 2017.
- These Medicare expenditures are expected to continue rising over the coming years. For example, in 2027, the expected annual Medicare expenditure is $1,436.8 billion, or $19,546 per enrollee.
- MS-DRGs are reported, but of particular relevance, the average charge per stay for heart failure and shock is $104,391 across all three hospitals in the Valley.
- Looking at those who are eligible for Medicare (based on age alone), there are about 26,094 seniors who engage in aerobic activity for either no days in the week or a maximum of two days in the week. The number equates to about a third (32.2%) of the Coachella Valley senior population.
- Another area of need includes the obesity status of many Coachella Valley residents. For example, there are about 44,390 seniors (57% of the senior population) who are overweight or obese, in the Coachella Valley.

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