



Newtopia Over-65 Population Savings Estimate

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Executive Summary

The prevalence of Metabolic Syndrome (MetS) is estimated to be about a third of the U.S. population [1], with some estimates as high as 55%, depending on the definition of MetS and the population studied. [2] Newtopia's program for reducing MetS risk factors has demonstrated success in the commercial population in terms of improvement in both MetS risk factors and health care costs.

Newtopia engaged Santa Barbara Actuaries Inc. (SBA) to estimate potential cost savings from its program for MetS for a Medicare Advantage (MA) population, applying over-65 Commercial member experience to the MA population. We developed a high-level economic model that estimates the potential savings from the Newtopia program, for a given MA population and given MA costs.

Based on our high-level model, we estimate that if Newtopia's program were applied to a typical MA population, and demonstrated comparable results to Newtopia's Commercial results, the Newtopia program could generate savings of about \$1,700 per year for MA members who engage with Newtopia for at least 12 months. For an MA plan with 100,000 members, and assumptions for MetS prevalence rate and program participation, this translates to estimated potential savings of \$10.8 million to the plan.

Background: Management of Cardiometabolic Syndrome

Cardiometabolic disease continues to be a growing public health challenge and a major economic burden for Americans. The latest report by the American Heart Association [3] estimates that approximately 48% (121.5 million) of adults have cardiovascular disease (CVD), while the Centers for Disease Control and Prevention [4] found that diabetes affected 12.2% of adults, with 33.9% (84.1 million) having prediabetes. Heart disease was the leading cause of death in the US in 2017, while stroke and diabetes ranked 5th and 7th, respectively [5].

Current and projected economic and societal costs of obesity and its associated comorbidities, in terms of both healthcare expenditures and quality of life, accentuate the importance of implementing effective prevention strategies. On average, CVD and stroke cost Americans \$351.2 billion in 2014-2015, in terms of both direct health costs and indirect costs from loss of productivity. Total cost was projected to increase to \$1.1 trillion by 2035 [4]. The total direct and indirect estimated cost of diagnosed diabetes was \$327 billion in 2017, with \$237 billion attributed to direct medical costs, and \$90 billion in reduced productivity [6].

The total cost is projected to double to \$622 billion by 2030 [7]. Individuals paid approximately \$16,750 in medical costs per year, which was 2.3 times more than individuals without diabetes [6].

Cardiometabolic disease arises from a complex interaction of nonmodifiable factors, such as genetic predisposition, age, and sex; and modifiable factors, such as behavior and lifestyle. MetS has been identified as a cluster of five interrelated clinical and metabolic risk factors for CVD and Type 2 Diabetes Mellitus (T2DM) and is a predictor for the development of these diseases. Individuals with MetS have twice the risk of developing CVD over the next 5 to 10 years compared to individuals without the syndrome, have a 5-fold increase in T2DM risk, and an increased risk of all-cause mortality [8]. The five clinical risk factors defining MetS are:

1. Elevated waist circumference
2. Elevated triglycerides
3. Reduced HDL cholesterol
4. Elevated blood pressure; and
5. Elevated fasting glucose.

While the exact genetic, behavioral, and environmental causes are still unclear, metabolic syndrome is tied to the increasing levels of abdominal obesity and sedentary lifestyles [8]. Obesity is seen as the driving force behind the approximately one-third prevalence of MetS [9], [10], [11].

Body Weight Reduction as a Clinically Significant Target

The American Heart Association/National Heart, Lung, and Blood Institute guidelines state that weight reduction should be a priority for individuals with MetS and obesity, in order to reduce the severity of the metabolic risk factors [12]. Lifestyle therapies for weight loss should incorporate a reduced-calorie healthy meal plan, physical activity, and behavioral interventions [13], [14]. Current clinical guidelines for management of overweight and obesity states that a weight loss of greater than five percent of initial body weight, based on evidence from several clinical trials, produces clinically meaningful improvements in health targets, such as reductions in blood glucose, hemoglobin A1c, blood pressure, triglycerides, and the risk of developing type 2 diabetes [12], [15]. The resulting benefits in obesity-related medical conditions and cardiovascular risk factors are more pronounced with greater weight loss. Overall, achieving modest weight loss results in improved health outcomes, reduced healthcare costs, and enhanced workplace performance and attendance [15] [16]. Newtopia utilizes ongoing weight loss tracking as a proxy for measuring the successful reduction of MetS risk.

Weight Loss Results for Newtopia's Over-65 Commercial Population

We were provided with a dataset of Newtopia's over-65 Commercial population, showing each member's weight loss during the member's period of engagement with the Newtopia program. We received data on 292 over-65 participants. 173 participants had weight data through 6 months; 127 of them had weight data through at least 12 months.

Of the 127 12-month participants, 114 (90%) lost weight over the 12-month period, while 13 (10%) maintained or gained weight. At 12 months, the 10th percentile of participants (the

decile with the least amount of weight lost) had weight gain of 1% of bodyweight, while the 90th percentile (the decile with the most amount of weight lost) experienced weight loss of 13% of bodyweight. The average change in bodyweight for Newtopia’s over-65 participating population was a loss of 5.5%.

The percentile distributions of the 127 12-month participants are illustrated in Figure 1; the distribution of participants based on change in bodyweight for these same participants is illustrated in Figure 2.

Figure 1

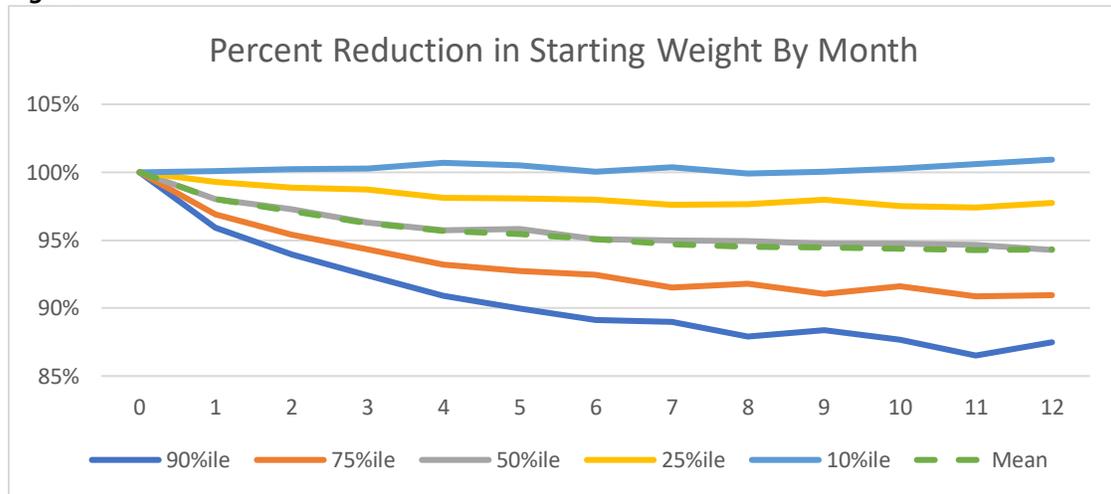
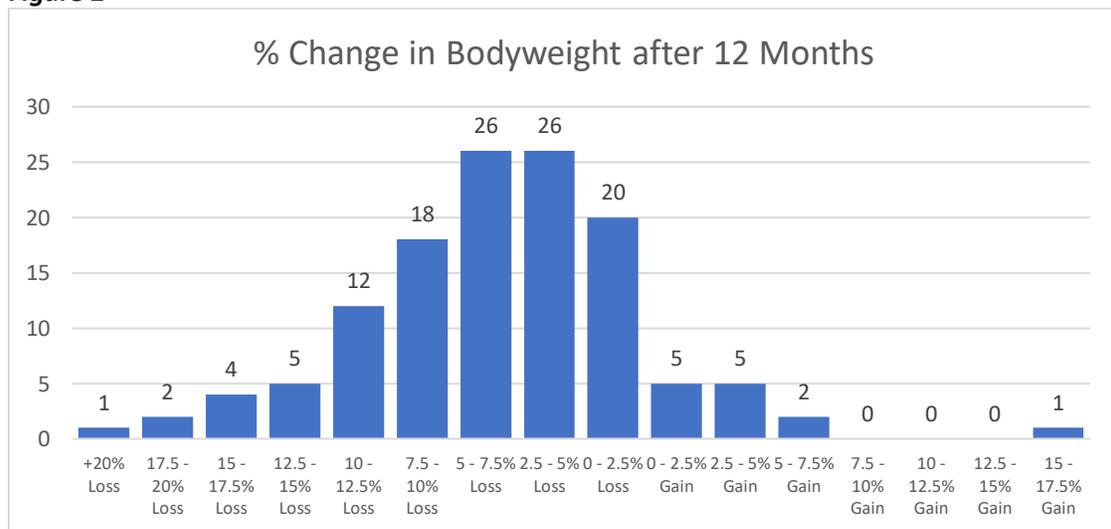


Figure 1 shows that all but those in the lowest-performing decile (10th percentile) lost weight over the whole 12-month period, and all but the lowest-performing quartile consistently lost weight throughout the 12-month period.

Figure 2



The distribution in Figure 2 provides another view of bodyweight loss for participants in the Newtopia program.

Extrapolated Savings

Study Results: Commercial Population

The Newtopia program was the subject of a peer-reviewed, randomized study performed by Steinberg et al, [17] (the Study), which analyzed the data of a large employer whose employees participated in Newtopia's targeted, personalized wellness program to reduce future risk of MetS.

The Study aimed to determine the impact of a targeted personalized program on reducing employees' future risk of MetS and to quantify reductions in medical costs. The Study Population consisted of Aetna employees over age 18 who had undergone biometric screening and were found to have at least two out-of-range MetS components, one of which had to be waist circumference. Employees were invited to join the program (except for employees enrolled in external weight loss/wellness programs, who were excluded from the study).

All employees received the results of the evaluation of their MetS risk. Each employee assigned to the coaching program was provided with personal coaches and client care managers to achieve high levels of engagement and sustained behavioral change, as well as an individualized online portal and mobile application to track nutritional and activity data. Each personalized nutrition and activity plan was tailored to each employee's psychosocial profile characteristics and genetic makeup (obesity, appetite, and compulsive behavior genes). Employees not randomized to the coaching program were subject to "usual care," with additional MetS risk information.

The Study segmented employees into the Control group (no invitation to participate), and the Invited group (invited to participate). The Invited group was further segmented into Participants (employees who chose to engage in the Newtopia program) and Non-Participants (employees who did not choose to engage in the Newtopia program).

The Study demonstrated favorable results in terms of MetS metrics between the Invited group and the Control group, but especially between the Participant group and the Control group. In addition, average weight loss for Program enrollees in the Study was 4.3% of bodyweight.

The Study also demonstrated favorable results in terms of health care costs between the Invited and Control, and the Participant and Control groups. The per-member-per-month costs after 12 months in the Program, as well as the number of employees in each category, are summarized as follows:

	Costs PMPM			Number
	Medical	Pharmacy	Total	
Control	\$434.00	\$109.00	\$543.00	945
Invited	\$389.00	\$116.00	\$505.00	1,890
Participants (subset of Invited)	\$312.00	\$127.00	\$439.00	264

The Control and Invited groups have similar numbers of MetS factors and similar episode risk scores, and based on follow-up information published after the Study [18], pre-program costs were not statistically significantly different between the control and invited groups.

Since the Participant group is a subset of the Invited group, we calculated the costs for the Non-participant group (based on the aggregate costs for Invited less aggregate costs for Participants):

	Costs PMPM			Number
	Medical	Pharmacy	Total	
Non-Participants	\$401.50	\$114.21	\$515.72	1,626

Comparing the Participant costs to the Non-participant costs implies program savings of 14.9%:

	Costs PMPM		
	Medical	Pharmacy	Total
Non-Participants	\$401.50	\$114.21	\$515.72
Participants	\$312.00	\$127.00	\$439.00
Difference (PMPM)	-\$89.50	\$12.79	-\$76.72
Difference (%)	-22.3%	11.2%	-14.9%

Pharmacy costs are higher for the Participant group than the Non-participant group, implying that Participants took prescribed medications and improved their adherence to medication over the course of the program to manage their MetS risk factors.

Extrapolating to Medicare Advantage: Individual Participant Savings Estimate

As discussed in the first section, mean weight loss for Newtopia's over-65 participant population was 5.5%. This amount is similar to, and greater than, the Study's 4.3% for program enrollees. Assuming weight loss is a proxy for improvement in other MetS metrics, and assuming that the Newtopia program's impact is similar for MA members compared to over-65 working members, we can extrapolate the cost differences outlined above to savings in the MA population.

	Costs PMPM		
	Medical	Pharmacy	Total
Average MA Allowed Costs	\$762.60	\$277.20	\$1,039.80
Impact of Newtopia Program	-22.3%	11.2%	
Costs for Newtopia MA Participants	\$592.60	\$308.23	\$900.83
Savings Percent			13.4%
Savings Per Participant Per Month			\$138.97
Savings Per Participant Per Year			\$1,668

* The average MA costs used in the calculation above are described in more detail in the “Assumptions and Methodology” subsection.

Identification of MetS within an MA population requires clinical information that is not available in claims datasets. Because we cannot identify the MetS population within the MA population, we have applied the Newtopia savings to the average population cost. The MetS population is likely to have higher costs than the average population, and therefore the \$1,668 estimate above is likely to be conservative (low).

Extrapolating to Medicare Advantage: Population Savings Estimate

We have used program experience of weight loss as a proxy for the effect of the MetS program. We also assume that the risk profile of a retired MA population is similar to that of a working over-65 population. Offsetting the uncertainty around these assumptions, we did not make any adjustment for the fact that the MA population is likely to have higher prevalence of MetS because an average MA population would be expected to be older on average than the working post-65 population (and MetS prevalence increases with age). Newtopia’s post-65 (working) population has an average age of 66.8, which is likely lower than the average age of a typical MA population; the SBA MA dataset used to generate these costs had an average age of 73.1.

It is important to note that the 13.4% savings shown in the Individual Participant Savings Estimate above would apply only to program participants and not to the overall population. We inferred invitation rates and screening rates from the Study using book-of-business data for the two-factor definition of MetS. We then applied a stricter definition of MetS from the literature [1], and also assumed that all MA members who screened for MetS were invited to participate, even if some of these members may also be identified by other disease intervention programs.

We applied these assumptions to an assumed population of 100,000 MA enrollees. The resulting savings estimate is \$10.8 million, or \$9.00 PMPM. The full calculation of the population savings estimate is provided in the Appendix.

Assumptions and Methodology

The average MA cost is developed based on SBA’s MA dataset which includes approximately 2.5 million members per year. 2019 costs were trended to 2020 at trend rates of 2.5% for medical and 5% for pharmacy, rates that are based on data published by the Centers for Medicare and Medicaid Services (CMS).¹ These cost and trend assumptions generated the MA costs used in the savings calculation as follows:

	Medical	Pharmacy	Total
Average MA Allowed Costs, 2019	\$744.00	\$264.00	\$1,008.00
Trend	1.025	1.05	
Average MA Allowed Costs, 2020	\$762.60	\$277.20	\$1,039.80

Limitations

Our model is based on the weight-loss experience of the over-65 actively employed sub-population only. The participation, behavior change and utilization of the actively-employed sub-population may be different to that of a retired, Medicare Advantage population.

This savings estimate is based on bodyweight loss only. We have assumed that change in bodyweight is a proxy for favorable improvement in other MetS risk factors, and that the Study’s results are generalizable to this proxy. In the study, MetS improvement and financial savings were associated with loss of bodyweight.

We have assumed that the cost savings *percentage* is the same for the MA population as for a commercial population (although we apply this percentage to MA population costs). People over 65 generally have different health risks and higher costs, and the impact of a MetS program could have lesser (or greater) impact on an MA population.

We have also assumed that the full MetS population is included in the Newtopia program. Because payers sponsor different programs (for example for people with diabetes or for weight loss) not all MetS patients may be included in the Newtopia program, which will affect the potential savings.

Conclusion

The Newtopia program shows promise of significant savings for the MA population.

¹ <https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Ratebooks-and-Supporting-Data-Items/2020Rates>

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APPENDIX

Estimation of MA Population Savings

It is important to note that the 13.4% savings shown in the Individual Participant Savings Estimate above would apply only to program participants and not to the overall population.

In order to calculate savings for the overall population, we applied various assumptions.

- Because the number of employees invited to participate in the program in the Study was limited to 600 employees, we calculated what the 264 participant population would have been without the 600 participant limit, which is 1,247 assumed participants.
- Next, we applied a book-of-business prevalence rate of participants with two or more MetS factors, to infer the total population who would have received the biometric screen without the 600 limit. The prevalence rate is 43%, and the total inferred population that would have received the biometric screen in the Study is 6,595.
- From these estimates we calculated the assumed participation rate among the invited members, which is 18.9%.
- For purposes of the MA estimates, we used a more common (and more restrictive) definition of MetS, where MetS is defined as having three of the five factors instead of two. That prevalence rate of participants with three or more MetS factors is 34.2% [1].
- We assumed that all members with MetS will be invited to participate in the program, and applied the 3+ factor prevalence rate to the invited participation rate, resulting in the participation rate applicable to an overall population, which is 6.5%.
- Spread across an entire population of an assumed MA plan with 100,000 members, this translates to potential savings of \$10.8 million.

These calculations are summarized as follows:

a) Participants from the Study	264
b) Size of the Study's invited pool, after capping participation	600
c) Participation rate from invited pool = a) / b)	44.0%
d) Total number of participants in the Study (invited + control)	2,835
e) Assumed number of participants without the participation cap = c) x d)	1,247
f) Book of business prevalence with 2 or more MetS factors	43.0%
g) Total inferred Study population receiving biometric screen = d) / f)	6,595
h) Assumed participation rate for the Study = e) / g)	18.9%
i) Prevalence with 3 or more MetS factors [1]	34.2%
j) Assumed overall participation rate for a program with 3+ MetS factors = h) x i)	6.5%
k) Savings Per Participant Per Year	\$1,668
l) Assumed Plan Enrollment	100,000
m) Plan-wide Savings = j) x k) x l)	\$10,788,000