



**UPSWING
HEALTH**

A POPULATION HEALTH MANAGEMENT APPROACH TO MUSCULOSKELETAL CARE:

**AN ANALYSIS OF UPSWING HEALTH AND
THE STATE OF CONNECTICUT HEALTH PLAN**



EXECUTIVE SUMMARY

Upswing Health (Upswing) is a virtual musculoskeletal (MSK) population health management company founded by two orthopedic surgeons to address the exorbitant waste, inefficiency, and mismanagement associated with today's common orthopedic delivery paradigm while improving outcomes for patients.



Considering both direct treatment expenses and those related to lost productivity, the total annual cost of managing MSK conditions in the United States (U.S.) is estimated to be between \$560 billion and \$635 billion. When emergency room visits for MSK problems are added, the total cost of MSK care in the U.S. is likely closer to \$1 trillion.

An estimated one-third of that spend has been attributed to abject waste, inefficiency, unnecessary surgery, and other misused MSK-related services.

For example, it has been reported that 50% of spine surgeries and 22% of total joint surgeries are unnecessary.

When plan sponsors assess their total annual healthcare spend, MSK costs consistently rank among the top three expenditure categories.

Unlike other high-cost categories, MSK costs are uniquely positioned for rapid intervention and reduction through targeted care strategies and population health management. Upswing's unique innovation addresses the majority of a plan sponsor's MSK spend. Tackling MSK early not only delivers immediate financial impact, but also enhances overall plan efficiency and member outcomes. Further, Upswing's commitment to member engagement and satisfaction is reflected in its outstanding Net Promoter Score (NPS) of 85, underscoring the trust and value we provide to our users.

Upswing combines AI-driven technology with the human touch and expertise of athletic trainers and orthopedic specialists to enhance access to care. Upswing then rapidly and conveniently assesses, manages, and triages low- and medium-acuity MSK injuries from the moment they occur.

The State of Connecticut (SOCT) Health Plan provides health coverage to state employees, retirees under 65, and municipal employees and retirees participating in the state's Partnership Plan. In all, approximately 225,000 members participate in the plan. The SOCT initially implemented Upswing's MSK program in January 2021 on a pilot basis to assess the impact of Upswing's solution before a broader implementation. The pilot was offered to a small subset of the Health Plan membership. The SOCT Health Plan retained Segal Company (Segal), an independent third-party health benefits and consulting company, to conduct an evaluation of the Pilot Program. This analysis showed that members

who enrolled in Upswing's program utilized fewer MSK-related services than a control group of non-participating members. Furthermore, survey data collected from Upswing's Pilot Program participants indicated a high level of patient satisfaction.

74% of Upswing users indicated they would use Upswing's virtual providers for their future orthopedic needs. 59% reported using Upswing to avoid an urgent care or an emergency room visit.

Based on the strength of the Pilot Program, the SOCT Health Plan expanded the implementation of the Upswing program, making it available on a voluntary basis to all covered active employees, early retirees (non-Medicare), and their eligible dependents (collectively Members). The program launched in January 2023. Segal recently conducted an independent follow-up analysis of the effectiveness of Upswing's program on members who engaged with Upswing between January 2023 and May 2023. In this study, Segal used best practice matching methodology to evenly match Upswing participants to non-participants to create a comparison group and adjust for treatment selection bias. The results of this analysis validated the effectiveness of the Upswing model in improving outcomes for Members with MSK injuries while reducing costs. Key findings from the program analysis include the following:

- Medical cost savings: After accounting for incremental Upswing expenditures, program participants had lower MSK-related cost trends of 72.3% versus non-participants and lower overall medical cost trends of 39.6% versus non-participants;
- Program participants had no MSK-related emergency room visits in the 12 months following enrollment, compared with 54.1 per 1,000 in the 12 months prior to enrollment;
- Aside from one ankle surgery, there have been no MSK-related surgeries for program participants in the 12 months following enrollment;
- Pharmacy under medical allowed costs per member per month (PMPM), which includes MSK injections, decreased 42.3% for participants and increased 22.7% for non-participants;
- Overall, medical and prescription drug costs increased 17.7% for program participants compared to 23.5% for non-participants; and
- Program participants are utilizing opioids for pain management far less than non-participants.



THE UPSWING APPROACH

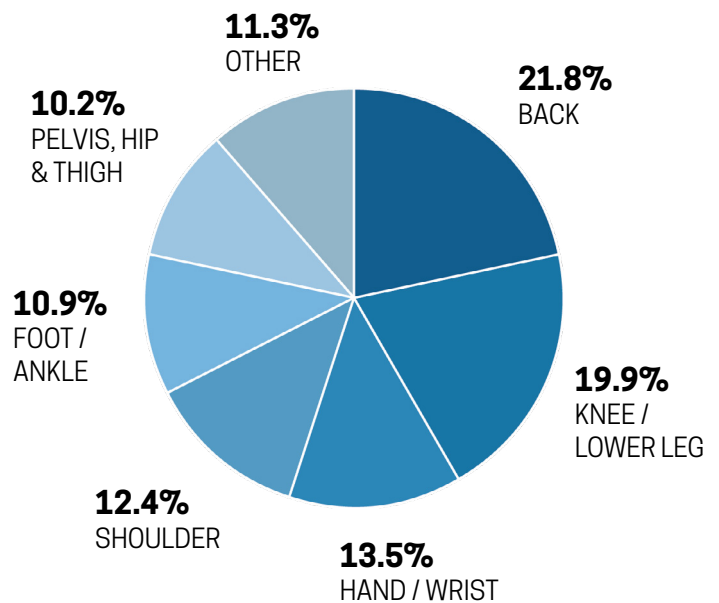
Upswing combines AI-driven technology with athletic trainers and orthopedic specialists to deliver on its mission. SOCT Health Plan Members access Upswing through Upswing’s website on their smartphone or computer and within fifteen minutes (after a real-time eligibility verification) are connected with an Upswing coach (a certified athletic trainer) via their preferred communication modality (text, email, or virtual meeting room). Upswing’s coaches assist the member in answering a series of questions on Upswing’s online symptom assessment tool, much in the same way that a patient would respond to questions in a doctor’s office.

Once completed, Upswing’s algorithms provide the member with the MSK conditions they are most likely experiencing. The Member can then choose to read about their condition using Upswing’s curated list of injury-specific PDFs and watch video-based exercises. Upswing’s coaches may also suggest healthier lifestyle choices while creating personalized self-help rehabilitation programs tailored for the member’s condition. Importantly,

Upswing’s coaches then follow the member closely with multiple touchpoints during their period of engagement.

Should the patient’s condition not improve, a telehealth visit with an Upswing orthopedic specialist is arranged within 24 hours from the time of request for further diagnostic evaluation and additional treatment recommendations. Upswing’s physicians can e-prescribe non-opioid medications, and when X-Rays or MRI scans are necessary, Upswing’s physicians can also order these studies—the Member remains under the care of Upswing’s physicians. When appropriate based on the results of further testing or other indications, Upswing’s physicians can also refer Members to brick and mortar specialists consistent with Health Plan requirements.

The Upswing program covers a wide range of MSK-related conditions, including both chronic injuries (71.4% of participants) and acute injuries (28.2% of participants). To date, for the SOCT Health Plan, Upswing has provided musculoskeletal treatment for the following impacted body areas:



STUDY METHODOLOGY

For this study, Segal analyzed patient data for Members enrolled in the Upswing program between January 2023 and May 2023, with at least 12 months of both pre- and post-enrollment experience. Segal identified 135 Members that met this criterion. To create a control group and adjust for treatment selection bias, Segal utilized the coarsened exact matching (CEM) methodology to match these Full Program participants to a cohort of non-participants. CEM is a statistical method used to balance covariates between intervention and control groups to determine causal effects of population health management programs. It does so by rigorously matching groups based on “bin signatures” of pre-specified variables, which can help reduce bias and improve comparability between groups. CEM compensates for small sample size by optimizing covariate matching, which strengthens the validity of the comparison between groups. This means that smaller, but more rigorously matched samples can still yield meaningful and reliable results.

Segal used the following six covariates for matching:

1. Age
2. Gender
3. Total MSK spend during the prior year. MSK-spend includes all medical claims with a musculoskeletal-related primary diagnosis code.
4. Alpha diagnosis code (the first three digits of the ICD-10 diagnosis)
5. Obesity status
6. GLP-1 utilization. Members with at least three prescriptions for a GLP-1 medication during the experience period were considered a GLP-1 utilizer.

Members were assigned a bin signature based on these covariates and matched to non-participants with identical bin signatures. Program participants without a suitable match were excluded from the analysis. After application of the methodology, 111 participants in the Full Program (98.2% of the eligible 113) matched to 6,476 non-participants. Program participants were demographically similar to non-participants, with minor differences adjusted through matching. On average, participants were slightly older (50.1 years vs. 49.3 years) and equally likely to be female (70.8% vs. 70.9%).

Segal evaluated medical and prescription drug claims data for these Members to measure MSK healthcare utilization and cost outcomes. Total MSK costs and utilization were compared between the baseline period (12 months prior to Upswing enrollment) and the measurement period (12 months after Upswing enrollment, excluding the enrollment month). Claims experience for non-participants was weighted to reflect the distribution of bin signatures within the matched cohort.

DETAILED ANALYSIS OF FOLLOW-UP STUDY FINDINGS

LOWER MEDICAL COST TRENDS

Participants demonstrated more favorable medical cost trends compared to non-participants over the measurement period. Total medical costs per member per month (PMPM) increased by 13.9% for participants (\$891 to \$1,015) compared to a 25.7% increase for non-participants (\$1,094 to \$1,375). Importantly, though the baseline MSK-related costs for the Upswing participants and the non-Upswing control group were closely aligned (\$252 vs. \$272), the MSK-related trend for Upswing enrollees (including all Upswing program costs) decreased by 35.9% for participants (\$252 to \$162) while increasing by 36.4% for non-participants (\$272 to \$371).

MSK-related outpatient medical spending decreased significantly for participants (73.4% reduction; \$153 PMPM to \$41 PMPM)

while increasing for non-participants (50.4% increase; \$134 PMPM to \$202 PMPM). Pharmacy costs for MSK-related injections under the medical benefit decreased by 42.3% for participants (\$4 PMPM to \$2 PMPM), contrasting with a 22.7% increase for non-participants (\$4 PMPM to \$6 PMPM).

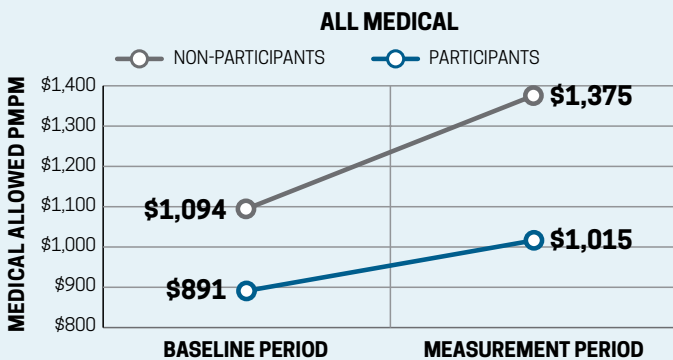


Figure. Graph of all medical costs.

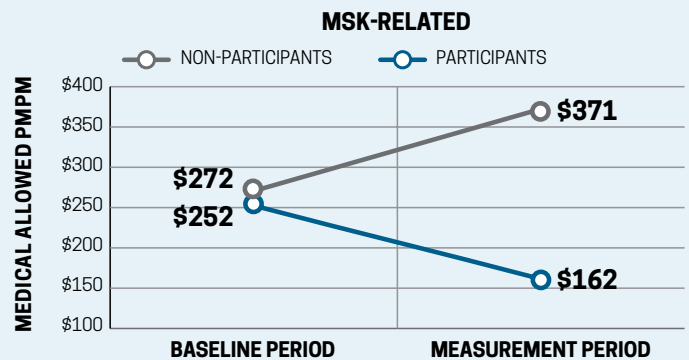


Figure. Graph of all MSK-related costs.

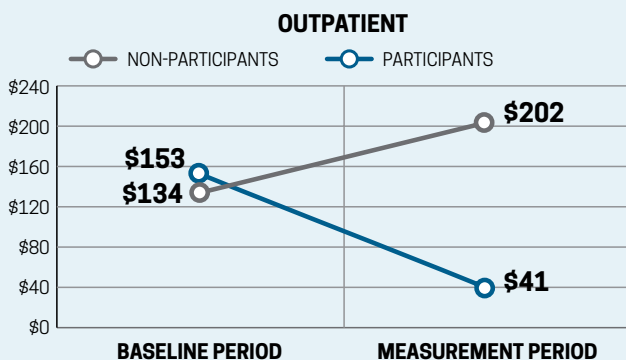


Figure. Graph of outpatient MSK-related costs. Includes all outpatient MSK services, such as outpatient surgery, imaging, chiropractic care and physical therapy.

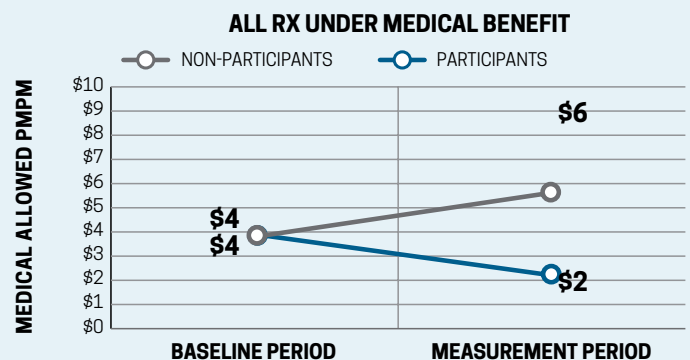


Figure. Graph of pharmacy benefit costs, including injections.

FAVORABLE SHIFTS IN UTILIZATION OF SERVICES

The Upswing program also positively influenced service utilization patterns, increasing utilization of lower cost alternatives among Upswing program participants while decreasing utilization of higher cost services.



For example, during the baseline period, Upswing participants had 54.1 emergency room (ER) visits/1,000 and 18 urgent care (UC) visits/1,000 for a combined total of 72.1 visits/1,000. On the other hand, non-participants had 34.7 ER visits/1,000 and 23.3 UC visits/1,000 for a combined total of 58 visits/1,000. During the measurement period, however, Upswing participants had no ER visits and 45 UC visits/1,000 while non-participants had 38.3 ER visits/1,000 and 25.2 UC visits/1,000. In short, though Upswing participants had greater ER utilization in the baseline period, the Upswing population shifted from ER to UC utilization in the measurement period (with a reduction in the aggregate from the baseline period) while the non-participating cohort saw an increase in both areas, eclipsing the Upswing participants in the combined total (45 visits /1,000 vs. 63.5 visits/1,000).

Among the Upswing participants, utilization of therapy services increased 50.1%. Utilization of therapy services also increased among non-participants but at a significantly lower pace (24.7%). However, while the number of surgeries per 1,000 during the baseline period were closely aligned for Upswing participants and non-participants (45/1,000 and 47.1/1,000, respectively), during the measurement period Upswing participants had only one ankle surgery while non-participants saw a significant increase in surgeries/1,000. This data suggests that the Upswing population was successfully utilizing therapy services to manage their conditions, avoiding surgical intervention.

EFFECTIVE PAIN MANAGEMENT WITH ROUTINE, NON-OPIOID, PHARMACEUTICALS

The Upswing Program demonstrated important shifts in the usage of pharmaceuticals to control pain. Specifically, Upswing participants have significantly lower opioid utilization versus non-participants but saw their utilization of non-opioid pain medication increase in the measurement period, while the use of non-opioid pain medication under the pharmacy benefit decreased among non-participants. Moreover, aggregate Rx spend, which includes pharmaceuticals covered under the pharmacy benefit as well as those, like costly injectables, covered under the medical benefit, was \$4 PMPM for both Upswing participants and non-participants during the baseline period. In the measurement period, however, the PMPM costs for the Upswing participants decreased to \$2 PMPM while it increased to \$6 PMPM for the non-participating cohort. This provides a strong positive indication that the Upswing program is successful at managing pain and members are not resorting to addictive medication or costly injections for pain management.

OTHER DATA POINTS OUTSIDE THE SEGAL ANALYSIS

Though the results seen in the Segal analysis are compelling, there are important data points outside of the Segal study that corroborate the findings and point to a causal relationship between participation in the Upswing program and improved outcomes at reduced costs. For example, in Upswing's participant surveys, participants reported an average 51% improvement in pain levels, post

enrollment, highlighting the program's effectiveness in addressing and managing musculoskeletal discomfort. These survey results are reflected in the Segal analysis of pharmaceutical cost and utilization. In addition, the average engagement period of Upswing's participants was 54 days. This suggests sustained participation in the program, successful navigation to appropriate care, and adherence to recommended care pathways. This may account for the reduction in surgical intervention among Upswing participants. Finally, Upswing achieved an impressive 85 NPS, reflecting high participant satisfaction with the care received.

CONCLUSION

Healthcare spending in the U.S. reached \$4.867 trillion in 2023, a 7.5% increase from the previous year, and shows no signs of abating. Americans spent an average of \$4,000 out-of-pocket on health insurance in 2023, up nearly 20% from five years earlier. MSK currently consumes 16 - 20% of that total cost and will continue to rise as the population ages.

The results of this Segal analysis clearly demonstrate that Upswing's population health management program significantly reduced costs while improving quality outcomes for the State of Connecticut Health Plan members with MSK conditions.

Prior patient survey data further corroborates the causal relationship between the results and the Upswing intervention.

Future analysis, already underway, will explore Upswing's impact on functional improvement measured by specific patient-reported outcomes to provide a more holistic and granular evaluation of clinical outcomes.

Upswing's success within the State of Connecticut Health Plan highlights the potential benefits of widespread adoption of this model across other populations. By prioritizing early intervention, personalized care, and non-invasive therapies, Upswing not only reduces costs but also delivers better patient-centered outcomes. Upswing's program is a game-changer for MSK care, delivering a proven, cost-effective, and scalable solution that benefits patients, employers, and health plans alike. By transforming how MSK injuries are managed and driving meaningful savings, Upswing sets a new standard for value-based care in musculoskeletal health.



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