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Controlling Giveaway: A Six Sigma Approach to an Unmeasured Manufacturing Cost

Overfill as an Unmeasured Source of Margin Loss in Food and Beverage Manufacturing

ADONIS PARTNERS | RESEARCH BRIEF

Executive Summary

Food and beverage manufacturers routinely distribute a portion of their finished product to customers without compensation. This phenomenon, referred to within the industry as “giveaway” or “overfill,” occurs when the actual weight or volume of a packaged good exceeds its labeled quantity. Unlike scrap, rework, or unplanned downtime, giveaway product is fully conforming and fully shipped, which helps explain why it is seldom measured and rarely subjected to formal improvement efforts. In Adonis’s experience, it is one of the least examined sources of margin erosion in the sector.

This brief draws on two documented projects at Adonis client engagements in North America. In the first, average over-volume on four filling lines at a single facility ranged from 1.13 percent to 2.01 percent above declared fill volume, against an internal target level of 1.20 percent. The project charter values the resulting over-volume at approximately $826,973 in annualized raw material. That project remained in progress at the time of writing, so its figures are a baseline and not a result. In the second, giveaway on a single packaged item was recorded at 11.53 percent over the preceding year, valued at $23,209 for that item alone. A weight control chart, a response plan, and a standard operating procedure reduced it to 4.63 percent, an estimated annualized saving of approximately $13,889. Neither project’s documented approach relied on new equipment. The first was chartered with a no-capital-investment constraint, and the second’s documented changes were process controls.

Source of Data

The data in this brief comes from two documented projects at Adonis client engagements in North America. Both clients are food and beverage manufacturers, and neither is named. Each project was a Yellow Belt improvement project documented in Adonis's standard project format.

Period. Case One reports measurements taken between January 1 and August 18, 2026, with project status as of October 2026. Case Two reports a baseline measured over the year preceding the project's July 2025 summary, together with the results recorded in that summary.

Selection and exclusions. The two projects were identified through a review of Adonis client project files and were not drawn from an exhaustive census of Adonis engagements. They were included because overfill or giveaway was the specific subject of the project and a quantified measurement was documented. Measurements from the same engagements in which giveaway appeared only as one contributing loss among several are not reported. All figures are as recorded in the project documents, apart from rounding. No figure in this brief was estimated or modeled by the authors.

Case One measurement. Over-volume is the percentage by which fill exceeds declared volume, as reported by the manufacturer's production monitoring, with a target level of 1.20 percent. The project was in progress at the time of writing, so the figures are a baseline and not a result. During the project's cause analysis, operators questioned whether the weight-to-volume conversion used in this reporting accounts for the weight of the packaging material, and the project team was testing the difference at the time of writing. The baseline should therefore be read as reported, not as audited. Dollar figures are the project charter's annualized estimates.

Case Two measurement. The project documents give the 11.53 percent baseline as giveaway over the preceding year and describe the reduction as a reduction in overweight waste above the item's upper weight limit. The documents do not state the basis against which the percentage is calculated. Dollar figures are estimated annualized values, and the project sponsor noted that the sustainability of the new controls remained to be confirmed.

References. Both engagements are referenceable. On request, Adonis can provide further detail on the projects and arrange client references.

Introduction

In Adonis's experience, operations leadership within food and beverage manufacturing generally acknowledges, at least in qualitative terms, that finished product tends to run somewhat heavier than its labeled specification. Considerably less common is a precise quantification of the associated annual cost. This disparity between qualitative awareness and quantitative measurement is the subject of the present analysis.

Giveaway occurs when the realized contents of a package exceed its declared net weight or volume: additional grams of a dry good, additional milliliters of a liquid, or an oversized portion of a solid component. Across production volumes measured in the hundreds of thousands or millions of units annually, incremental overages accumulate into substantial financial loss. This loss is not reflected in scrap reporting, as no unit is rejected and no quality nonconformance occurs. The product is shipped in full conformance with customer expectations, and the manufacturer absorbs the cost of the surplus.

This characteristic helps explain why giveaway can persist across successive rounds of continuous improvement activity. Six Sigma and lean methodologies are generally oriented toward the identification of defects, downtime, and waste that manifest as a rejected unit or an interrupted process. Giveaway manifests as neither. It remains embedded within a metric that, absent deliberate investigation, appears entirely nominal.

Etiology of the Problem: A Variation-Control Failure

The underlying cause is an asymmetry in regulatory risk. In the United States, net-content regulation is concerned with shortage. NIST Handbook 133 (National Institute of Standards and Technology [NIST], 2026) was developed primarily for use by state, local, and some federal officials in compliance testing of net content statements on packaged goods. It tests packages against their labeled quantity and defines a Maximum Allowable Variation governing how far an individual package may fall short. It sets no corresponding limit on overfill. Comparable frameworks exist in other jurisdictions.

In Adonis's experience, manufacturers respond to this asymmetry in a rational, though costly, way: production is calibrated to run heavy as a precautionary margin, rather than tightly controlled around the labeled target. Giveaway then affects the manufacturer's margin almost exclusively. Regulatory inspection is directed at shortage, and overfill rarely draws a customer complaint, so it tends to be identified only by an organization that undertakes deliberate measurement.

This is the category of problem for which Six Sigma methodology was developed. Giveaway typically arises from variation around a target value that is not actively monitored or controlled, whether the sources of that variation are operator practice, equipment setup, or

the measurement method itself. When fill weight is treated as a variable subject to measurement and control, rather than as a risk to be offset through a fixed safety margin, giveaway becomes addressable through established methods: statistical process control charting, defined corrective response protocols for observed drift, and standard operating procedures grounded in empirical data rather than convention (Pyzdek & Keller, 2024; Wheeler, 2000).

Empirical Findings

Two documented projects at Adonis client engagements, at unrelated food and beverage manufacturers, provide quantitative evidence of the magnitude of the problem and, in one case, of the result of addressing it.

Case One: Overfill Across a Multi-Line Filling Operation

At the first manufacturer, four filling lines at a single facility were measured from January 1 to August 18, 2026. Average over-volume on the four lines, expressed as a percentage above declared fill volume, ranged from 1.13 percent to 2.01 percent, against an internal target level of 1.20 percent. Three of the four lines ran above that level.

Filler Line	Average over-volume (% above declared volume)
Line 1	1.52%
Line 2	1.57%
Line 3	1.13%
Line 4	2.01%
Average as reported (target level: 1.20%)	**1.59%**

Source: client project documentation, January 1 to August 18, 2026. The average is as reported in the project documents.

At the measured average of 1.59 percent, the project charter values this over-volume at approximately $826,973 of raw material annually across the four lines. The project's goal is to reduce the average to the 1.20 percent target level, with a projected annualized saving of $206,743. The target is not zero. The charter retains 1.20 percent over-volume and requires that fill remain above the legal minimum, which is consistent with the asymmetry described above. The project was chartered with a constraint of no capital investment.

As of October 2026 the project remained in progress, with Measure, Analyze, and Improve activities under way. The figures above are therefore a documented baseline and not a

verified outcome. As noted under Source of Data, the measurement behind the baseline was also under review by the project team at the time of writing.

Case Two: Remediation on a Single Packaged Item

At a second, unrelated manufacturer, a Yellow Belt project examined giveaway on one specific packaged item, a single stock-keeping unit. For that item, giveaway over the preceding year was recorded at 11.53 percent, which the project summary values at $23,209 for the year. This figure represents one item and not the manufacturer's product range. No other items were quantified in this project, so the aggregate exposure across the range is not known. A manufacturer with many packaged items may carry similar exposure on others, though that was not measured here.

The documented changes were a weight control chart, with the item weighed at a midpoint check; a plan for responding when fluctuations in weight were observed; and a standard operating procedure for the item. The project summary records a reduction in overweight waste from 11.53 percent to 4.63 percent, a reduction of 59.83 percent, and estimated annualized savings of $13,889. No equipment purchase appears among the documented changes. The project sponsor's comments noted that the sustainability of the new controls remained to be seen.

Considered together, the two cases illustrate complementary aspects of the same problem. The first shows the scale that over-volume can reach across a multi-line operation. The second shows that process controls applied to a single item were associated with a substantial reduction in overweight waste. Neither case establishes an industry average.

Remediation Through Six Sigma Methodology

Giveaway appears to be an improvement target that requires limited organizational investment. The intervention documented in Case Two involved no new equipment, and the Case One project was chartered under a no-capital-investment constraint. The Case Two intervention comprised three elements: regular measurement of fill weight, a control chart to distinguish normal variation from meaningful drift (Wheeler, 2000), and a documented response when drift is observed. This is an application of Six Sigma methodology in its most fundamental form, the reduction of variation around a defined target (Pyzdek & Keller, 2024), directed at a problem that is often not examined through this lens.

In Case Two, the correction was straightforward once the item's weight was measured and managed as a process variable. The remaining question in both cases is whether the gains hold over time, which the project documents identify as the next test.

Application

Because giveaway varies considerably by product category, packaging format, and the degree to which fill weight is already controlled at a given facility, a single industry-wide benchmark is of limited practical use. A companion calculator allows a reader to enter a unit of measure, the cost to produce one unit, an estimated giveaway percentage, and expected annual volume, in order to derive a projected annual financial exposure.

Access the calculator: https://adonispartners.com/tools/giveaway-cost-calculator/

Conclusion

Giveaway occupies an unusual position among sources of manufacturing cost. In Adonis's experience it is common, often unquantified, and addressable once subjected to deliberate examination. The two projects documented here show an estimated $826,973 in annualized raw material associated with over-volume across four lines at one facility, reported as a baseline that remained under review, and a documented 59.83 percent reduction in overweight waste on a single item at another. Both point to the same discipline: measure fill weight, control the variation, and respond to drift. Organizations that apply this discipline are positioned to retain margin that would otherwise continue to be distributed to their customers.

References

National Institute of Standards and Technology. (2026). *Checking the net contents of packaged goods* (NIST Handbook 133, 2026 ed.). U.S. Department of Commerce. https://doi.org/10.6028/NIST.HB.133-2026

Pyzdek, T., & Keller, P. A. (2024). *The Six Sigma handbook: A complete guide for Green Belts, Black Belts, and managers at all levels* (6th ed.). McGraw Hill.

Wheeler, D. J. (2000). *Understanding variation: The key to managing chaos* (2nd ed.). SPC Press.

Both engagements described in this brief are referenceable upon request.