



Data Sources & Methodology Guide: Supporting the 2025 Metabolic Disease Reversal Annual Report

November 2025

Executive Summary

This guide summarizes the evidence base, analytical methods, and data sources underlying the outcomes and claims presented in Virta Health's Metabolic Disease Reversal Report (2025).

All analyses are based on aggregated, de-identified data from Virta's real-world member population, supplemented by peer-reviewed clinical publications, published manuscripts, and modeled economic estimates using national benchmarks.

Each data point reflects aggregated, de-identified information derived from over **200,000 members** enrolled across Virta's programs between 2015 and 2025.

Note: For privacy and proprietary reasons, raw datasets and internal pipelines are not disclosed. Metrics represent population-level observations and modeled estimates, not individual financial or clinical guarantees.

01 | Data Foundations

Virta Real-World Data

- Derived from Virta's internal analytics environment, encompassing biometric, medication, and engagement data from active and historical members.
- De-identified and aggregated across programs in type 2 diabetes reversal, sustainable weight loss, and responsible prescribing.
- Reflects outcomes from enterprise, health plan, and government partnerships nationwide.

Clinical Research and Peer-Reviewed Evidence

- Informed by more than a decade of published studies validating Virta's model.
- Key journals include *Nutrients*, *BMJ Open*, *Cardiovascular Diabetology*, *Sleep Medicine*, *BMC Musculoskeletal Disorders*, *Journal of Behavioral Medicine*, and *Diabetes Therapy*.
- Multiple manuscripts from Virta's research team are currently under peer review and available as preprints.

Modeled Economic Estimates

- Cost and savings estimates incorporate national data from FAIR Health, RAND Corporation, Health Care Cost Institute, and GoodRx.
- Models apply industry-standard assumptions to reflect real-world cost avoidance and de-prescription outcomes.

02 | Analytical Methodology

Weight & Glycemic Outcomes

Metric	Source & Method
Average 13% weight loss at 12 months	<i>Nutrients</i> (2021).
Nutrition-only vs. Nutrition + Rx weight loss	Aggregated, real-world outcomes from Virta Health for members with BMI ≥ 30 .
3-point A1c reduction in high-risk members (A1c $\geq 9.0\%$)	Aggregated, de-identified Virta real-world outcomes data for members aged 65+ and those living in high-disparity areas (ADI 4–5).
85% weight loss maintenance after GLP-1 discontinuation	<i>Diabetes Therapy</i> (2024).
96% stop type 2 diabetes from progressing	Aggregated, real-world outcomes from Virta Health.
After one year, members with severe-risk obesity dropped by 50%; those in normal weight range increased >8x	Aggregated, real-world outcomes from Virta Health.
Average weight loss 65+: >10% Across ADI groups: 10%	Research and aggregated, real-world outcomes from Virta Health for members with BMI ≥ 30 .

Medication & Cost Outcomes

Metric	Source & Method
75M units of insulin eliminated	Modeled estimate of cumulative insulin reductions across Virta’s type 2 diabetes population, based on aggregated medication data and average daily dosage decreases observed during care.
\$20M insulin cost savings	Modeled using a blended \$0.25 per-unit price based on RAND, HCCI, GoodRx, and American Action Forum datasets.
\$118M in avoided GLP-1 costs	Modeled estimate based on national GLP-1 utilization rates (FAIR Health, 2024) and average retail cost (\$1,500/month; Annals of Internal Medicine, 2024) to Virta’s weight loss population using average program tenure.
\$1B saved	Based on aggregated outcomes across Virta’s diabetes reversal and weight loss programs.
GLP-1 utilization cut by 50%	Aggregated data from a Fortune 100 employer population comparing pre- and post-Virta GLP-1 utilization among existing users and new seekers.
Type 2 diabetes deprescriptions Average: 44% 65+: 49% ADI 4-5: 42%	Aggregated real-world outcomes from Virta Health.

Clinical Risk Reductions

Metric	Source & Method
56% reduced risk of heart attack, stroke, or death 30% reduction of CVD risk 53-64% reduction in all-cause mortality	<i>medRxiv preprint (2025)</i> — “Real-World Cardiovascular Outcomes with a Carbohydrate-Reduced Telemedicine Intervention.”
33–45% reduction in new or advanced CKD diagnoses	<i>medRxiv preprint (2025)</i> — “Effectiveness of Telehealth Nutritional Therapy in Preventing CKD Among Adults with Type 2 Diabetes and Obesity.”
39% decrease in inflammation (C-reactive protein)	<i>Cardiovascular Diabetology</i> (2018).
60% decrease in liver fat score	<i>BMJ Open</i> (2019).
11% reduction in hypertension medication use	<i>Cardiovascular Diabetology</i> (2018).
46% reported meaningful improvement in knee pain	<i>BMC Musculoskeletal Disorders</i> (2022).
29% fewer people showed signs of clinical depression after 2 years	<i>Journal of Behavioral Medicine</i> (2022).
17% decrease in poor sleep	<i>Sleep Medicine</i> (2019).

03 | Populations & Study Cohorts

- **Total population analyzed:** >200,000 cumulative members (2015–2025).
 - **Primary cohorts:** Adults aged 18–80 with type 2 diabetes, prediabetes, obesity, or overweight.
 - **Diversity measures:** Outcomes stratified by age and socioeconomic status (ADI 1–5).
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04 | Statistical and Modeling Notes

- All analyses use **de-identified, aggregated data** in compliance with HIPAA.
- Estimates for avoided drug costs or utilization are **directional**, not audited financial statements.
- Modeled results were validated against multiple national datasets for consistency.
- Propensity-score matching, regression adjustment, and confidence interval reporting are detailed within each corresponding published study.
- Unless otherwise noted, reported values are rounded to the nearest whole number or percent.

05 | Evidence Sources

Peer-Reviewed Publications

1. *Nutrients* (2021): "Type 2 Diabetes Prevention Focused on Normalization of Glycemia: A Two-Year Pilot Study."
2. *Diabetes Therapy* (2024): "Weight Loss Maintenance After Discontinuation of GLP-1s."
3. *Cardiovascular Diabetology* (2018): "Clinical Outcomes Including CRP Reduction in Type 2 Diabetes Treated by Nutritional Ketosis."
4. *BMJ Open* (2019): "One-Year Improvements in Non-Invasive Markers of Non-Alcoholic Fatty Liver Disease and Fibrosis in Type 2 Diabetes After a Continuous Care Intervention."
5. *BMC Musculoskeletal Disorders* (2022): "Continuous Care Intervention with Carbohydrate Restriction Improves Physical Function of the Knees Among Patients with Type 2 Diabetes: a non-randomized study."
6. *Journal of Behavioral Medicine* (2022): "Depressive Symptoms Improve Over 2 Years of Type 2 Diabetes Treatment Via a Digital Continuous Remote Care Intervention Focused on Carbohydrate Restriction."
7. *Sleep Medicine* (2019): "Effect of a Continuous Care Intervention on Sleep Quality in Adults with Type 2 Diabetes."

Preprints (Under Review)

- "Real-World Cardiovascular Outcomes with a Carbohydrate-Reduced Telemedicine Intervention."
- "Effectiveness of Telehealth Nutritional Therapy in Preventing Chronic Kidney Disease."

Public Benchmark Data

- FAIR Health (2024)
- RAND Corporation (2017–2022)
- Health Care Cost Institute (2012–2021)
- American Action Forum (2002–2016)
- GoodRx (2019–2024)
- Tufts Friedman School of Nutrition Science and Policy
- Joint Economic Committee (U.S. Congress)

06 | Citation & Attribution

When citing this appendix or referencing outcomes data, please use:

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