

THE FINANCIAL IMPACT OF CLOSING DIABETES HBA1C CARE GAPS AT BLUE CROSS AND BLUE SHIELD OF LOUISIANA

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Background

- Hemoglobin A1c (HbA1c) measures the average blood glucose levels over the past three months. HbA1c is used to diagnose and manage diabetes. Controlling HbA1c is essential to diabetes care; however, few studies explore the relationship between healthcare cost and HbA1c care gap closure.
- Compliance definition for this study: HbA1c≤9%
- This study seeks to quantify the financial impact of HbA1c care gap closure on healthcare cost.
- Closing HbA1c care gaps showed financial savings. The benefits of closing HbA1c care gaps increase as members continue to remain in compliance for an extended time.

Methodology

Interrupted time series models with fixed effect were conducted to quantify the savings for care gap closure.

$$Y = a + b1 * x + b2 * mon + b3 * x * mon + \sum_i^n ci * fi + e$$

- Y – medical cost
- a – constant
- b, c – parameters
- x – dummy variable indicates the status of compliance (x=1 for compliance)
- mon – relative month sequence (mon=0 for the first month of compliance, -1 for the first month before compliance, 1 for the first month after compliance, etc.)
- f – other factors (risk, participation in Care Management programs)
- Fixed effect: Person-level fixed effect (factors that are consistent within person level, such as gender, index age, comorbidity, marketing region, etc.) will be controlled by defining person identity as fixed effect.

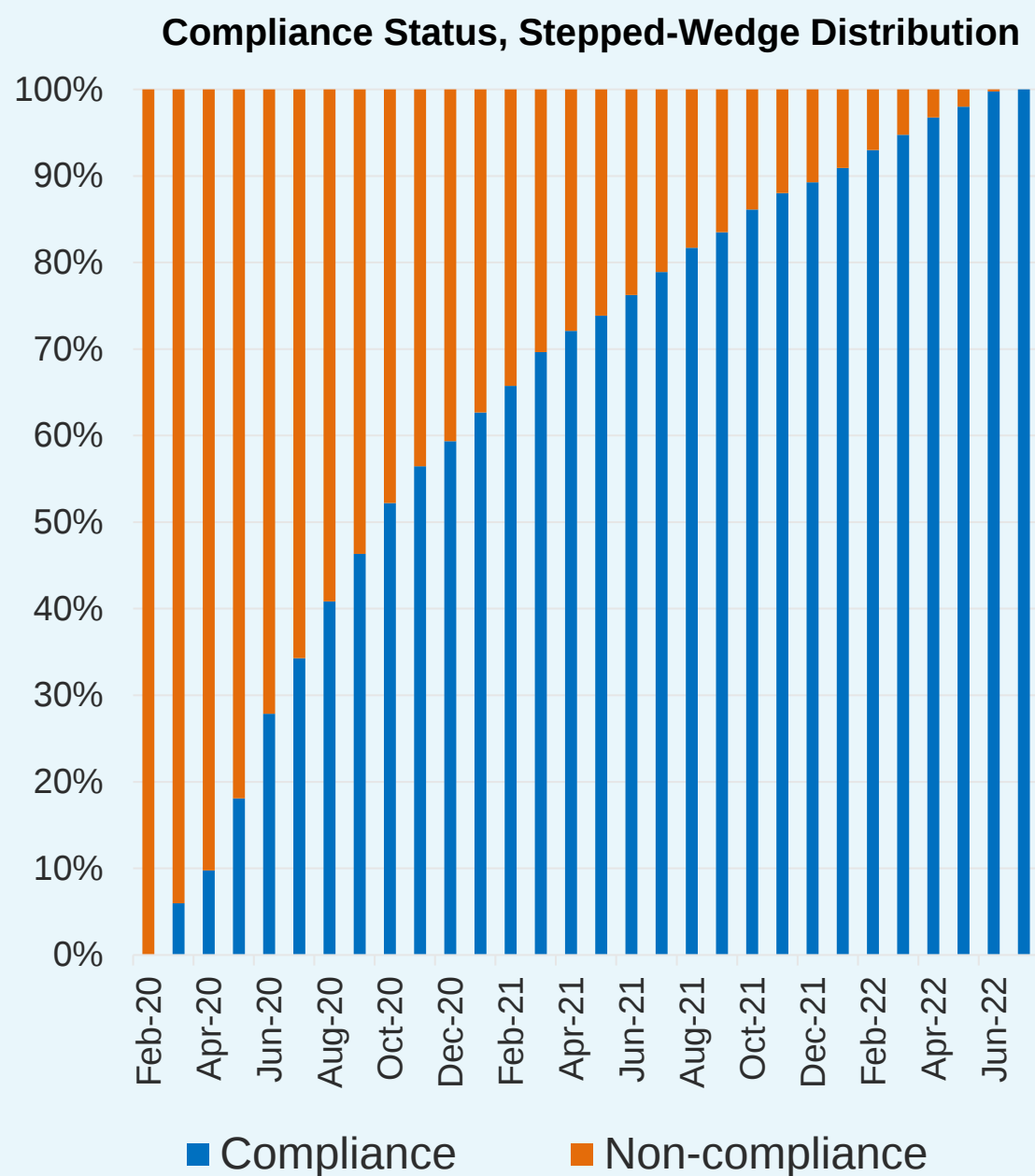
Study Population Design

Included HEDIS-captured eligible members for care gap measures having lab results between February 2020 and August 2022 (31 months), with first measure recorded as “non-compliance” and last measure recorded as “compliance” (≤9%). (n=5,532)

Excluded those who:

- Had less than 24 eligible months during February 2020 to August 2022. (n=3,718)
- After compliance, failed to maintain compliance. (n=212)
- Did not have BCBSLA as the primary medical insurance or were out-of-state members. (n=153)
- Had any of the following claims during the study period: hospice, rare condition, maternity, transplant, nursing home, dialysis, HIV. (n=41)
- Had medical cost greater than \$150,000 in any month within the study period. (n=3)

Study population: 1,405



Conclusion

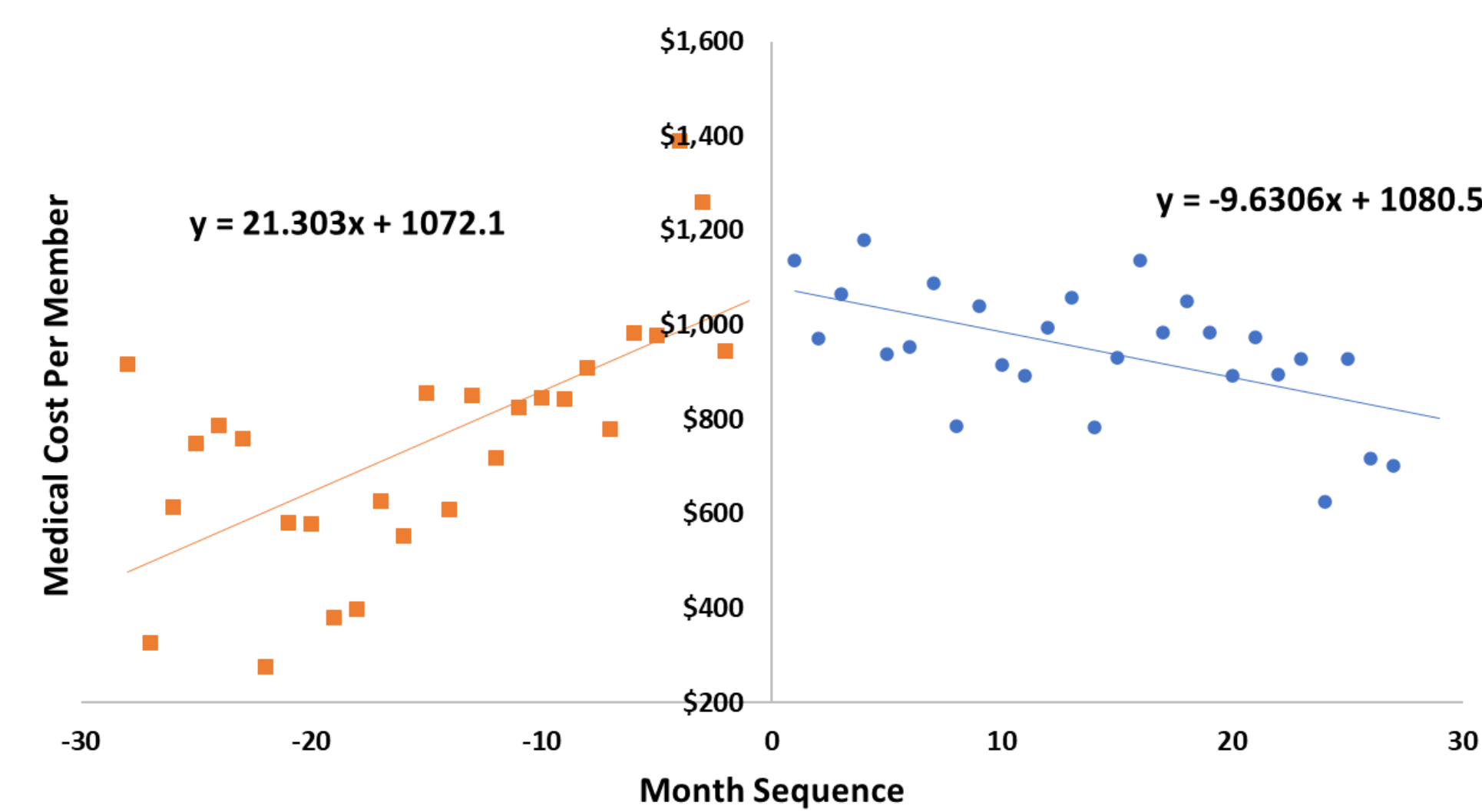
- Members with closed HbA1c care gaps showed medical savings.
- Members who continuously maintained closed HbA1c care gaps for a longer time showed higher medical savings.
- Cumulative savings for the first year of closed HbA1c care gaps were estimated to be \$4,571 per member with an inpatient reduction of 128 per 1,000.

References

Lage, Maureen J., and Kristina S. Boye. "The relationship between HbA1c reduction and healthcare costs among patients with type 2 diabetes: evidence from a US claims database." Current Medical Research and Opinion 36.9 (2020): 1441-1447.

Results

Figure 1. Raw Plot of Medical Cost vs. Month Sequence



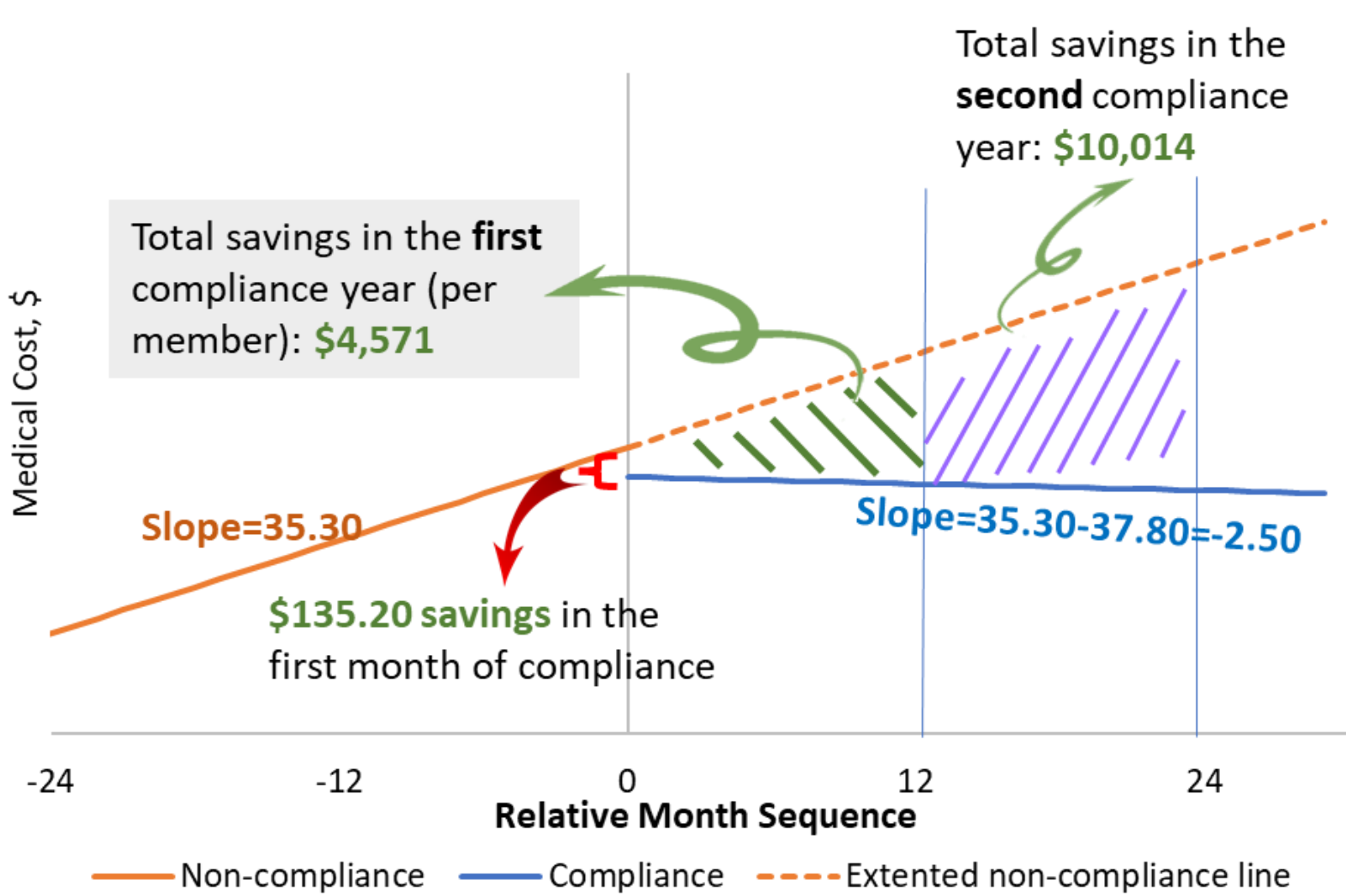
- Medical cost and inpatient visits of members eligible for HbA1c care gap measure were increasing when their care gaps were non-compliant.
- After their HbA1c was controlled at 9% or less, medical costs started to trend down.

Table 1. Coefficient Estimations from Interrupted Time Series Models

Notes	Variables	Medical Cost as Dependent Variable				Admission as Dependent Variable			
		Coefficient est.	P> t	[95% Conf. Interval]		Coefficient est.	P> t	[95% Conf. Interval]	
Impact of compliance on intercept (0 month)	x	-135.2	0.112	-302.02	31.57	-0.0059	0.0030	-0.0097	-0.0020
Medical cost increasing rate (slope) if noncompliance	mon	35.3	0.000	21.03	49.52	0.0006	0.0010	0.0002	0.0009
Impact of compliance on increasing rate (slope) of medical cost	x * mon	-37.8	0.000	-53.70	-21.90	-0.0007	0.0000	-0.0011	-0.0004
Risk stable		-19.2	0.971	-1041.62	1003.23	0.0002	0.9860	-0.0235	0.0240
Risk at risk		22.4	0.966	-994.42	1039.18	0.0006	0.9610	-0.0230	0.0242
Risk struggling		520.4	0.319	-503.05	1543.83	0.0083	0.4940	-0.0155	0.0321
Risk at crisis		2982.0	0.000	1946.70	4017.24	0.0576	0.0000	0.0336	0.0817
Risk healthy		0.0		(omitted)		0		(omitted)	
Value-based program		-51.0	0.637	-263.09	161.09	-0.0030	0.2300	-0.0079	0.0019
Disease Management participation		-44.5	0.629	-225.11	136.18	-0.0022	0.3120	-0.0064	0.0020
Blood pressure compliance		-119.1	0.105	-262.98	24.87	-0.0014	0.4250	-0.0047	0.0020
α (constant)		589.9	0.266	-450.468	1630.225	0.0087	0.4820	-0.0155	0.0328

- Interrupted Time Series models were run on medical cost and admission counts.
- BCBSLA observed \$4,571 savings per member for the first year of gap closure.
- In the first year after HbA1c is controlled at 9% or less, the reduction in in-patient admissions were estimated to be 128.52 per 1,000 members.

Figure 2. Medical Savings Estimation



- Savings were calculated as areas between the extended non-compliance line and the compliance line.
- Per member savings in the first and second compliance year were estimated to be \$4,571 and \$10,014, respectively.