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THE ROLE OF RISK ADJUSTMENT FACTOR MODELING IN MODERN HEALTH PLAN FINANCIAL MANAGEMENT

Gitanshu Yadav

Financial Analyst II, Finance Department, Imperial Management Administrators Services Los Angeles, USA

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ABSTRACT

Risk Adjustment Factor modeling now shapes financial management in Medicare Advantage health plans because revenue adequacy, provider accountability, benefit planning, and audit exposure depend on defensible risk interpretation. This article examines RAF modeling as a managerial instrument connected with payment accuracy, contract-level liability, forecasting, and regulatory control. The purpose is to explain how RAF-based information supports health plan decisions without reducing the problem to actuarial score production. The study follows a review-practical design based on recent peer-reviewed publications, CMS materials, policy reports, industry analysis, and public payer disclosures. Comparative source analysis, conceptual synthesis, typology, and applied generalization guide the argument. The Results section identifies three functions of RAF modeling: translation of clinical risk into revenue expectations, allocation of liability across provider arrangements, and scenario planning under CMS model revisions and audit pressure. The practical contribution lies in a governance-oriented implementation logic for health plan finance teams.

KEYWORDS: Risk Adjustment Factor, Medicare Advantage, health plan finance, CMS-HCC, RAF modeling

1. INTRODUCTION

Medicare Advantage finance now depends on the way health plans interpret risk-adjusted revenue. RAF scores influence revenue projections, bid preparation, medical cost planning, provider contract settlements, quality-linked incentives, and audit exposure. For plans working with capitated or partially capitated arrangements, the financial meaning of RAF extends beyond reimbursement calculation. The score becomes a planning signal that connects enrollee morbidity, documentation integrity, coding governance, care management, and contract risk.

The research aim is to determine how RAF modeling operates as a financial management instrument in modern health plans. Three research objectives guide the article. The first objective is to explain how RAF modeling converts clinical and administrative information into revenue and cost

expectations. The second objective is to identify how RAF-based logic supports IPA-level or provider-level liability assessment in risk-sharing arrangements without disclosing internal contract data. The third objective is to define how RAF modeling informs forecasting, management reporting, and regulatory readiness under CMS payment updates, Star Ratings, and RADV audit pressure.

The article shifts RAF discussion from score construction to financial decision architecture. Prior literature has examined risk adjustment methodology, coding incentives, payment accuracy, and administrative burden. Less attention has been given to the way health plan finance teams convert RAF signals into management reporting, early warning thresholds, and provider accountability routines. The hypothesis states that RAF modeling creates stronger managerial value when finance teams integrate it with claims data, provider contract logic, quality indicators, and audit controls. Isolated RAF estimates cannot capture the financial effects of documentation gaps, coding volatility, utilization drift, and regulatory recalibration.

2. MATERIALS AND METHODS

2.1 Materials

The material base was formed through a targeted search of PubMed, Health Affairs, JAMA Network, Health Services Research, CMS publications, MedPAC reports, Duke-Margolis policy materials, Milliman industry analysis, and SEC or annual-report disclosures of selected national payers. Search terms combined “Medicare Advantage risk adjustment,” “CMS-HCC V28,” “RAF score financial management,” “coding intensity,” “RADV audit,” “Star Ratings,” “medical loss ratio,” “PMPM revenue,” “provider risk sharing,” and “health plan forecasting.” The initial search produced 42 potentially relevant publications and reports. Screening removed vendor marketing texts, duplicated explainers, older publications outside the five-year window, legal commentary with no financial-management relevance, and sources limited to clinical documentation workflows. Ten sources remained in the final corpus. They cover CMS payment methodology and V28 transition [1], coding incentives and coding intensity variation [2], [3], benefit and revenue response to model changes [4], RADV audit mechanics [5], Star Ratings as a quality-linked payment environment [6], modernization of risk adjustment and clinician burden [7], [8], financial performance indicators for Medicare Advantage organizations [9], and public payer disclosure of funding, audit, and benefit-management exposure [10].

3.2 Methods

Comparative analysis was used to align regulatory, academic, and industry materials with health plan finance decisions. Source analysis separated empirically documented evidence from policy statements and public disclosures. Conceptual synthesis connected RAF modeling with revenue planning, IPA-level liability exposure, MLR, AER, PMPM, and management reporting. Typologization supported

the distinction between score estimation, contract exposure assessment, forecasting, and audit readiness. Analytical generalization was applied where several sources supported the same managerial inference.

3. RESULTS

The first result concerns the financial meaning of CMS model recalibration. CMS finalized the updated CMS-HCC model for CY 2024 with ICD-10 alignment, newer calibration data, and clinical adjustments intended to improve payment accuracy and reduce susceptibility to discretionary coding [1]. A health plan finance team encounters this change as a planning problem. RAF values stop functioning as a stable revenue signal when model weights, diagnosis mappings, and normalization assumptions move across payment years. A static use of RAF can distort revenue capacity, especially during bid preparation or multi-year margin planning. The managerial task therefore shifts toward sensitivity planning: the same enrolled population can generate different financial expectations after a model-version change, after narrowing of accepted diagnosis mappings, or after revised assumptions about risk score trend.

Coding incentives form the second layer. Recent research on Medicare risk adjustment reports that payment formulas create incentives to document diagnoses with greater intensity, especially where coded morbidity affects payment and where incremental documentation changes alter expected revenue [2]. This finding does not make risk adjustment a coding problem alone. Its financial meaning is narrower and more practical. A health plan needs to separate legitimate clinical completeness from unsupported coding intensity because both affect RAF, but they carry different risk profiles. Complete documentation improves payment accuracy and supports care planning. Unsupported codes expose the plan to audit findings, repayment demands, and distorted provider performance measurement.

The variation in coding intensity across Medicare Advantage insurers adds a competitive dimension. A 2025 study reports substantial differences in coding inflation across large MA insurers, meaning that risk-adjusted revenue reflects more than enrollee morbidity [3]. Finance teams face a comparability issue here. Peer comparison based on PMPM revenue, MLR, or margin can mislead decision-makers unless coding practice and documentation infrastructure enter the interpretation. A plan with stronger diagnosis capture may report a different revenue base than a plan with similar clinical risk but weaker documentation processes. In strategic planning, RAF modeling therefore needs documentation defensibility and audit probability beside expected payment.

Early evidence on CMS-HCC V28 shows why timing matters. Health Affairs reports that the new risk-adjustment model had a limited pass-through effect on Medicare Advantage benefits in 2024 and 2025, with plans absorbing much of the expected revenue effect during the early phase [4]. The

management implication is direct. RAF model changes may reach the organization before members notice benefit reductions, premium changes, or county-level plan exits. Financial pressure may first appear through narrower margins, stricter bid discipline, tighter network management, utilization controls, or provider contract renegotiation. RAF modeling in this setting works as a scenario tool for delayed financial response.

Figure 1 summarizes the managerial pathway through which RAF information moves from clinical and claims records into health plan financial decisions. The figure adapts CMS methodology and recent risk adjustment research, while its logic is organized around management use [1], [2], [4].

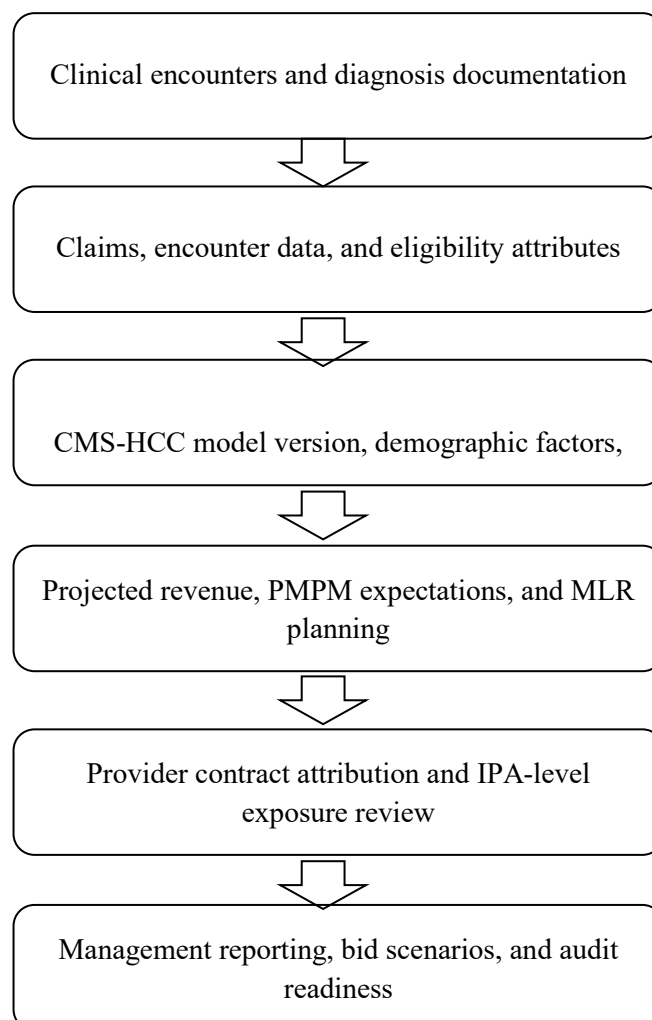


Figure 1. RAF modeling pathway in health plan financial management (adapted by the author

based on [1], [2], [4])

The pathway explains why health plans cannot leave RAF inside actuarial production. The score enters revenue planning after eligibility, diagnosis capture, and model-version assumptions have shaped the financial signal. Provider contracts add another transformation. RAF no longer explains expected member cost alone. It helps finance and network teams identify attributed populations, provider groups, or IPA arrangements that may move toward risk corridors, loss-sharing thresholds, or settlement pressure. The article keeps this point at the level of general methodology because public academic text should not disclose private contract terms, partner names, or internal threshold values.

RADV audits add a liability dimension. CMS states that the Medicare Advantage RADV program verifies whether diagnoses submitted for risk adjustment have medical-record support, and unsupported diagnoses may lead to overpayment recovery [5]. The financial consequence is concrete. RAF-driven revenue carries a documentation liability. A favorable RAF trend can still weaken financial quality if the record trail cannot support submitted diagnoses. Management reporting therefore needs a dual view of RAF. One-part estimates expected revenue. Another part evaluates defensibility, record availability, provider response completeness, and potential recoupment exposure. Star Ratings create a parallel connection between RAF modeling and performance management. CMS rates MA-PD contracts on up to 40 quality and performance measures, while MA-only contracts and PDP contracts use smaller measure sets [6]. RAF modeling does not replace quality measurement. It influences how finance teams interpret quality results because population risk affects utilization, readmissions, care gaps, and performance improvement targets. Star Ratings matter in finance because quality performance affects payment, benefit strategy, and competitive positioning. RAF-informed segmentation can help management determine whether poor financial performance reflects morbidity, coding gaps, avoidable utilization, or quality-linked revenue pressure.

The modernization literature adds a caution about administrative burden. Recent JAMA Health Forum commentary argues that risk adjustment reform should improve payment accuracy without expanding clinician workload [7]. The financial lesson is clear. A revenue strategy based on constant documentation escalation can increase administrative cost, create provider resistance, and raise compliance exposure. RAF modeling works better as an information filter that isolates decision-relevant variation. Finance teams need threshold logic: which documentation gaps change payment accuracy, which gaps point to care-management opportunities, and which gaps create audit risk without adding meaningful managerial value.

The Duke-Margolis report extends this concern by treating risk-adjusted payments as foundational for Medicare Advantage and advanced accountable care arrangements, while stressing administrative

costs and burden tied to diagnosis capture [8]. This source is relevant to provider contracting because payment accuracy, documentation burden, and care accountability meet at the contract level. An IPA-level RAF view can support early warning when attributed populations approach loss-sharing thresholds, but the article does not develop IPA risk-pool design as an independent methodological object. The narrower point is sufficient for this paper: finance teams can integrate RAF, claims, eligibility, and contract terms to estimate exposure as part of health plan financial governance.

Financial performance reporting turns the argument into an operational issue. Milliman's 2025 review of Medicare Advantage organizations' CY 2024 financial results reports continued MA enrollment growth and a negative composite underwriting margin for examined MA organizations in 2024, amid higher costs, slower revenue growth, and Part D volatility related partly to Star Rating declines [9]. This matters because RAF modeling cannot be judged by score accuracy alone. Its managerial value depends on whether the plan can use it to anticipate PMPM revenue, claims cost, administrative expense ratio, benefit pressure, and provider settlement exposure. MLR and AER do not replace RAF. They show where RAF assumptions enter financial performance.

Public payer disclosures support the same finance-oriented reading. UnitedHealth Group's 2025 Form 10-K states that CMS changes to Medicare Advantage benchmarks and risk adjustment payment calculations can require selective adjustments in benefits and premiums, county exits, and intensified medical and operating cost management [10]. Comparable disclosures from large national payers tend to frame Medicare Advantage funding, Star Ratings, utilization, audit activity, and risk-adjustment changes as material financial variables. The relevant inference is that RAF modeling now belongs to enterprise risk management and operating finance, not only reimbursement operations.

Regulatory sources, peer-reviewed research, and payer disclosures converge on one financial logic. CMS materials define the model and audit rules [1], [5]. Peer-reviewed studies document coding incentives and variation [2], [3]. Benefit-impact research shows that health plans may absorb model changes before members see visible benefit changes [4]. Industry financial reporting shows where revenue pressure appears in MLR, margin, and operating decisions [9], [10]. For the first objective, RAF modeling translates clinical risk into a revenue signal only after model version, documentation quality, and coding behavior enter the interpretation. For the second objective, provider-level exposure assessment requires RAF, claims, attribution, and contract thresholds in the same reporting frame. For the third objective, forecasting needs regulatory scenarios, not extrapolation of historical RAF trend alone.

Timing creates another constraint. CMS model changes enter the payment cycle through formal announcements and phased implementation [1]. Coding-intensity research captures behavior that

accumulates across years [2], [3]. RADV audits occur after final risk adjustment data submission deadlines and can create later repayment exposure [5]. Financial statements reveal the effect after utilization, benefit, and cost-control decisions have already moved through operations [9], [10]. RAF modeling therefore carries a timing mismatch. It uses past diagnoses to estimate future revenue, informs current contract decisions, and remains exposed to later audit validation. Health plan reporting needs to show those time horizons separately. A single RAF number cannot carry all of them.

Governance completes the Results logic. Risk adjustment modernization proposals call for better clinical data use and reduced burden [7], [8]. Star Ratings link health plan performance to quality measurement [6]. Public payer disclosures show that MA funding pressure can influence benefits, premiums, counties, and cost management [10]. RAF modeling gains managerial value when finance, compliance, provider operations, and quality teams use the same risk signal. Finance estimates revenue and margin sensitivity. Compliance tests documentation defensibility. Provider operations interpret attribution and contract exposure. Quality teams evaluate whether morbidity patterns correspond to care outcomes. Shared governance turns RAF from a reimbursement input into a decision system.

4. DISCUSSION

RAF modeling should function as a financial control layer that connects revenue estimation, provider accountability, and regulatory readiness. Weak implementation appears when a health plan treats RAF output as a reimbursement total and leaves interpretation to separate actuarial, coding, finance, compliance, and network teams. Fragmentation creates three predictable failures. Revenue forecasts lose contact with documentation quality. Provider settlements depend too heavily on claims-cost variance. Compliance review arrives after finance teams have already used the revenue assumption in budgets, bids, or provider negotiations.

A stronger implementation begins with a governed data model. Claims, eligibility, encounter records, provider attribution, coding history, and contract terms need reconciliation before RAF enters management reporting. The purpose is not a larger dashboard. The purpose is a single controlled financial view. Finance should not forecast one RAF trend while compliance evaluates another risk population and provider operations tracks a third attribution file.

Table 1 compares the decision domains where RAF modeling supports health plan financial management. The table does not reproduce a source classification. It converts the reviewed materials into a practical finance-oriented structure suitable for a review-practical article.

Table 1. RAF-linked decision domains in health plan financial management (compiled by the author based on [1-10])

<i>Decision domain</i>	<i>RAF-related input</i>	<i>Financial question</i>	<i>Management output</i>
Revenue forecasting	Member RAF, model version, eligibility, normalization assumptions	What PMPM revenue range fits current CMS rules?	Revenue scenarios by county, product, and member segment
Medical cost planning	Claims trend, morbidity profile, utilization history	Does expected risk correspond to observed claims pressure?	MLR sensitivity and care-management prioritization
Provider contract exposure	Attributed lives, RAF, claims, risk-sharing terms	Which provider groups approach loss-sharing or settlement thresholds?	Early warning list for contract review
Audit readiness	Diagnosis support, medical record availability, coding source	Which RAF components carry repayment exposure?	Documentation defensibility score
Benefit and bid strategy	RAF trend, benchmark movement, margin pressure	Which benefits remain financially sustainable?	Bid assumptions and benefit adjustment options
Quality-finance alignment	Risk profile, Star-related measures, utilization indicators	Are quality results interpreted against population risk?	Joint quality and finance reporting pack

The table shows that RAF modeling has value when it answers a defined decision question. A revenue forecast requires model-version assumptions. A provider-risk view requires attribution and contract thresholds. An audit view requires record support. A quality-finance view requires performance measures. An undifferentiated RAF report would create noise. A shared data foundation with separate decision outputs gives finance leaders a clearer basis for action.

Implementation should move through data reconciliation, model governance, contract mapping, financial simulation, and audit validation. First, the plan defines the official RAF data source for finance reporting. Second, finance and actuarial teams document which CMS-HCC model version, eligibility file, and normalization assumptions support each forecast. Third, provider attribution is matched with claims and contract terms, while the public presentation remains limited to method-level description. Fourth, finance teams run PMPM, MLR, AER, and margin scenarios under stable, adverse, and regulatory-change assumptions. Fifth, compliance assigns a documentation confidence level to RAF-sensitive revenue categories.

Table 2 presents an applied monitoring matrix for this sequence. It is designed for management

reporting, not for clinical coding operations.

Table 2. Monitoring metrics for RAF-based financial governance (compiled by the author based on [1-10])

Monitoring area	Suggested metric	Interpretation for finance	Escalation trigger
RAF trend stability	Month-to-month and year-to-year RAF movement by segment	Detects revenue volatility before bid or budget lock	Movement inconsistent with enrollment or morbidity profile
Documentation defensibility	Share of RAF-sensitive diagnoses with complete record support	Separates revenue quality from raw RAF growth	High RAF contribution from weakly supported diagnoses
Contract exposure	Attributed provider group distance to loss-sharing threshold	Identifies liability concentration	Rapid approach to threshold with rising utilization
MLR pressure	Projected MLR under base and adverse RAF scenarios	Links RAF uncertainty with margin planning	MLR breach under moderate revenue reduction
AER sensitivity	Administrative cost per RAF documentation and reporting cycle	Prevents overbuilt capture programs	Rising cost without improved defensibility
PMPM revenue variance	Actual versus projected PMPM by product and county	Tests forecasting discipline	Persistent variance beyond accepted planning range
Audit exposure	RAF-weighted unsupported diagnosis concentration	Estimates repayment vulnerability	Concentration in high-weight HCC categories
Quality-finance alignment	Star-sensitive measures by morbidity segment	Connects care outcomes with payment strategy	Quality decline in high-risk segments

The matrix places upside and downside indicators in the same reporting frame. Many health plan reports focus on RAF lift, yet finance teams need a broader standard. Revenue growth without record support can weaken financial quality. Low RAF growth can point to missed documentation, favorable selection, or a healthier population. High MLR can reflect underpriced morbidity, utilization acceleration, or weak care coordination. Each explanation calls for a different management response.

RAF modeling needs joint ownership. Finance should own forecast interpretation. Compliance should own documentation defensibility. Provider operations should own attribution and contract communication. Quality teams should own the link between risk profile and outcomes. Actuarial specialists remain central, but RAF-based decisions cannot stay inside actuarial production because the consequences appear across revenue, benefits, contracts, and audits.

For IPA-level or provider-level exposure, the safest public formulation is methodological. A health plan can estimate attributed population risk by combining claims data, RAF scores, eligibility files, and contract terms. It can flag provider groups approaching loss-sharing thresholds and create early-warning reporting for management review. The article should not present internal thresholds, partner names, provider contracts, or company-specific performance results. This restraint protects confidentiality and strengthens academic credibility because the contribution rests on management logic, not private operational data.

Forecasting should follow layered decision logic. The base forecast uses current RAF, enrollment, claims trend, and contract terms. The regulatory scenario adjusts model assumptions, diagnosis mappings, audit intensity, and Star-related payment effects. The stress scenario tests lower RAF revenue, higher utilization, delayed documentation, and provider settlement pressure. The management report should then separate four outputs: expected revenue, margin sensitivity, contract exposure, and audit vulnerability. A single forecast number would hide the decision problem.

The adoption sequence is practical. The first step creates a reconciled RAF-finance dataset. The second step defines official assumptions for model version, timing, and attribution. The third step maps RAF-sensitive revenue to provider arrangements. The fourth step adds defensibility review before finance treats revenue as stable. The fifth step connects RAF reporting with MLR, AER, PMPM, Star-sensitive quality measures, and RADV exposure. The final step places bid, budget, and provider-settlement decisions under governance review.

RAF modeling cannot remove uncertainty created by policy recalibration, coding behavior, utilization shocks, and audit timing. It can make uncertainty visible early enough for finance teams to respond. This limitation fits a review-practical article because the purpose is not to claim a numerical implementation effect. The purpose is to develop an analytical management framework grounded in recent literature, CMS rules, and public industry evidence.

5. CONCLUSION

RAF modeling has moved beyond technical score estimation and now functions as a financial management instrument for Medicare Advantage health plans. Its first contribution lies in converting

clinical and administrative information into revenue expectations that remain sensitive to CMS-HCC model version, coding behavior, documentation quality, and eligibility structure. Its second contribution lies in provider-level financial governance, where RAF, claims, attribution, and contract terms can support early warning around loss-sharing exposure without disclosing confidential contract data. Its third contribution lies in forecasting and reporting, since RAF assumptions shape PMPM revenue, MLR pressure, AER interpretation, bid planning, Star-related financial expectations, and RADV readiness.

The hypothesis is supported. RAF modeling creates stronger managerial value when finance teams integrate it with claims, provider contracts, quality indicators, and audit controls. An isolated RAF score gives an incomplete financial signal. A governed RAF-finance model helps health plans distinguish revenue opportunity from documentation liability, morbidity from utilization drift, and provider performance from coding variation. The resulting framework fits a review-practical article because it offers practical financial logic without claiming experimental results or proprietary empirical effects.

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