

Trends in Medicaid Managed Care Market Consolidation in the United States: A Cleaning Algorithm

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Abstract

Background

This study aims to develop a cleaning algorithm for the Centers for Medicare & Medicaid Services' (CMS) Medicaid Managed Care Enrollment Report (MMCER) to improve longitudinal tracking of Medicaid managed care plans and parent firms.

Methods

This is a methodological study assessing approaches for matching plan names and managed care organization (MCO) parent firm names across states and over time under varying assumptions. We used annual state-level plan-specific enrollment data from the MMCER from 2016 to 2021. Analyses included Medicaid managed care markets in 11 states.

Results

MMCER data quality limitations complicated consistent identification of health plans and MCO parent firms over time. We developed a flexible cleaning algorithm that accounted for different levels of uncertainty when matching plan and parent firm names. Trends in plan and parent firm consolidation were generally stable across alternative matching assumptions.

Conclusions

This study provides a structured and reproducible approach for cleaning and standardizing MMCER data, supporting more accurate and policy-relevant analyses of Medicaid managed care market consolidation.

Introduction

Medicaid is a key source of health insurance for low-income populations and the single largest payer in the U.S. in terms of total number of enrollees.^{1,2} As of July 2021, about 74% of Medicaid beneficiaries received care through comprehensive Medicaid Managed Care Organizations (MMCOs).³ The evidence of MMCO's impacts on health care is mixed,^{4,5} which raises important questions about how market dynamics—such as consolidation—may influence outcomes. Health care consolidation is the process through which health entities reduce the number of independent competitors and increase the concentration of market power within a given market through mergers, acquisitions, or affiliations.^{6,7} Measuring the actual trend of the consolidation of the MMCO market can help identify their impacts on access to care, quality of care, and cost containment.

Medicaid Managed Care Enrollment Report (MMCER) is the only national source for plan-specific enrollment statistics for MMCO programs over time.⁸ Data quality historically made the MMCER unreliable to study trends in the MMCO market. The quality of recent data has improved but has yet to be validated for research purposes. By focusing on data quality and offering a structured approach to cleaning and standardization, we demonstrated trends in multiple measures of MMCO consolidation using MMCERs: (1) the total number of unique parent firms (Fig. 2, Figure S1), (2) the total number of unique plans (Figure S2), (3) the average number of plans per parent firm (plan-parent firm ratio) (Figure S3), and (4) the share of plans held by the top five firms (Centene, Elevance [formerly Anthem], UnitedHealth Group, Molina, and CVS Health, identified by the total number of Medicaid enrollees) (Figure S4).

Methods

We included data for the District of Columbia (DC), Florida (FL), Indiana (IN), Kentucky (KY), Maryland (MD), New Mexico (NM), Ohio (OH), Pennsylvania (PA), Texas (TX), Washington (WA), and Wisconsin (WI). These states were selected to ensure a diverse representation of U.S. geographical areas. No other consideration was given to the state specific data or outcomes in the MMCER.

We used the program and plan tables from MMCER, in which each row of observation could be uniquely identified for each state, year, plan name, program name, and the geographic location.⁹ We focused on comprehensive MMCOs and excluded other program types such as Behavioral Health Organizations only, Prepaid Inpatient Health Plans, and/or Prepaid Ambulatory Health Plans, dental only, Managed Long-Term Services and Supports only, Non-Emergency Medical Transportation, Primary Care Case Management, Program of All-inclusive Care for the Elderly, and Other Prepaid Health Plans (limited benefits).

A three-level cleaning strategy was adopted for both plan names and parent firm names, where most record errors and naming variations occurred. The cleaning was aimed to standardize plan names, map parent firms, and identify plan matches that would likely be perceived as similar products by consumers within each state, regardless of potential changes in the underlying benefits or parent firms over time.

For plan name cleaning, level 1 consisted of basic changes where plans could be matched without any assumptions, including correcting and standardizing capitalizations, spacing, spelling, punctuations, and abbreviations. Level 2 cleaning matched plans with only trivial differences that required minimal assumptions. These changes involved adding, dropping, or converting general terms (e.g., “health,” “care,” “plan”) rather than modifying or altering brand-specific keywords (e.g., “Kaiser,” “HealthChoice,” “MyCare”). The cleaning process included standardizing general terms, removing redundant or repeated words, separating or combining words, and deleting prefixes or suffixes. We preserved the geographic suffixes to acknowledge the potential differences in MMCO plans that were provided in different locations by regional subsidiaries of the same parent firm. Level 3 cleaning matched plans by making moderate assumptions. These involved less recognizable changes to plan names, usually affecting

brand-specific keywords (e.g., “Anthem BCBS” to “Anthem”, “Humana Caresource” to “Humana”). To determine whether plans could be considered the same product, we also reviewed the corresponding parent firm and program names over time. If two plans with similar names appeared in the same year, we saw them as two separate products. Otherwise, we saw them as the same product with different names in different years. In this case, the most frequently appearing plan name in the dataset was used as the final plan name.

Parent firm name cleaning had a similar structure. Levels 1 and 2 applied the same cleaning procedures as those used for plan names. In level 3 cleaning, using the Standard & Poor's NetAdvantage (S&P) database,¹⁰ we traced each MMCO's ultimate parent firm as of 2024—we defined the ultimate parent firm to be the firm that owned all related subsidiaries (e.g., “Aetna” to “Cvs Health” and “Anthem” to “Elevance Health”). The ultimate parent firms were mostly public companies such as Aetna/CVS, Anthem/Elevance, Molina, United Healthcare, and Centene.

We kept the shortest common part in level 2 cleanings for both plan names and parent firm names. For example, for “Aetna health Inc.,” “Aetna health insurance,” and “Aetna health plan,” we kept “Aetna health.” For “DBA” (“doing business as”) and splitting or combining words in level 2 cleanings, the most frequently appearing names in the dataset were used as the final name for plans or parent firms. The cleaning process diagrams were shown in the Fig. 1.

The cleaning was conducted by two research assistants. KY, DC, and IN were duo-cleaned independently and then compared with each other to ensure consistency in application of the algorithm rules. All descriptive statistics were conducted on all three versions of the cleaning outcomes to account for the impact(s) of varying data quality. The Stata code and datasets will be made available through the [institution platform omitted].

Results

Total number of unique parent firms over time

In most states, the total number of unique parent firms remained relatively stable over time or exhibited mild fluctuations such as in DC and OH. Modest increases of one to two parent firms were observed in FL, IN, KY, MD, and PA. In contrast, NM, WA, and WI experienced a modest decline of one to two parent firms, while TX showed a drop of three parent firms during the study period. Level 3 cleaning decreased the total number of unique parent firms in FL, OH, PA, TX, WA, and WI. It also reduced the degree of fluctuation in OH, TX, WA, and WI. In OH, no temporal variation remained after Level 3 cleaning. Figure 2 showed WA and WI as an example. Other states are included in the Appendix (Figure S1).

Total number of unique plans over time

Overall, the number of plans remained relatively stable over time, with minor differences across cleaning levels (Figure S2). IN, KY, and MD each experienced an increase of one plan over the study period, whereas PA exhibited a larger increase of four plans (from seven to 11). NM and WA showed a decrease of one plan from 2017 to 2021, while WI experienced a more substantial decline of five plans (from 21 to 16). In contrast, DC, FL, and TX displayed mild fluctuations across years. No changes were observed in OH. Differences across cleaning levels were generally small, suggesting that the observed trends are robust to data cleaning approaches, though slight discrepancies were noted in some states such as TX and WA.

Average number of plans per parent firm (plan-parent firm ratio)

Overall, states had a relatively stable plan-parent firm ratio (Figure S3). Little to no change in the average number of plans per parent firm was observed within the timeframe for DC, IN, KY, MD, and NM, where numbers remained constant over time. Other states had a mild fluctuation over the five years, with PA having an increase from 1.0 to 1.4 plans per parent firm, and FL and WI having a slight decrease in the plan-parent firm ratio (1.6 to 1.3 and 1.4 to 1.2, respectively). Different cleaning levels led to different plan-parent firm ratios in some states, including FL, OH, PA, TX, WA, and WI. Level 3 cleaning reduced the level of fluctuation for FL, OH, TX, and WI, but increased the level of fluctuation for WA.

The share of plans held by the top firms

The share of plans held by the five largest publicly traded companies operating MMCO plans ('the Big Five') varied across different states (Figure S4). Few changes were observed in OH and TX. A mild increase was observed in IN, MD, and WA. A large jump appeared in KY between 2020 and 2021, bringing up the share from 60% to over 80%—a 25% increase. A mild decrease was captured in PA, while NM had a larger drop from 50% to just over 30%. DC had an increase from 2017 to 2018 but had a gradual decrease after that until dropping to zero in 2021. FL and WI both experienced fluctuations over time and resulted in a slight decrease in the total share in 2021 compared with 2017. Level 3 cleaning generally increased the market share of the Big Five, especially in FL, KY, WA, and WI.

Discussion

This study offers trends in MMCO plans and parent firms over time and introduces a transparent, shareable data-cleaning algorithm for MMCER data, designed to support policy-relevant analysis. Our three-tiered approach demonstrated consistency in longitudinal tracking of plans using MMCER data, suggesting promise of the data to be used to more precisely characterize of MMCO market dynamics.

Very few prior studies have directly measured consolidation trends of the MMCO market. A KFF report described the market share of the five publicly traded firms.¹ Another study focusing on the Big Five also demonstrated their potential impacts on the MMCO market.¹¹ But these two reports only looked at the

market share cross-sectionally at a single point in time instead of a longitudinal measure to capture consolidation trends over time. Li and Layton provided a more direct and detailed description of the shifts in the MMCO market landscape from 2006 to 2020, using MMCER and a novel dataset on acquisitions. They described the national-level trends of the number of plans and parent firms, the amount of acquisitions, and the composition of national payers and local payers.¹² More insights are still needed on the within-state market characteristics to help better understand the policy landscape, as each state sets its own procurement rules, plan requirements, and geographic carve-outs, leading to wide heterogeneity. By standardizing the cleaning process of the MMCER dataset, we were able to provide a more granular description of MMCO market consolidation at the state level.

Building upon our cleaning algorithm, we were able to generate four measures: (1) The total number of unique parent firms over time captures firm-level competition in the market, where a decline implies consolidation of ownership, even if the number of plans remains stable.¹³ (2) The total number of unique plans over time reflects product-level (plan-level) diversity, where a decline suggests fewer options for enrollees.¹⁴ (3) Average number of plans per parent firm indicates concentration of product offerings within firms, where an increase with simultaneous decreases in the number of firms suggests market dominance by fewer firms after acquisitions or mergers.¹⁵ (4) The proportion of plans provided by the top five firms with the most enrollees in MMCOs directly reflects concentration of power and oligopolistic market structure,¹¹ where an increasing share signals dominance of a few national players who are expanding their contract portfolios. These measures captured different dimensions of consolidation in the MMCO market—from changes in the breadth of plan offerings to shifts in ownership structures and the dominance of top firms. Each measure represents a complementary piece of the consolidation story.

When evaluating all four measures jointly, four states demonstrated evidence of consolidation: NM, WI, WA, and TX. These states showed consistent consolidation trends such as declining numbers of plans and firms, increasing dominance by the top five firms, or both. A second group of states, including KY, OH, DC, FL, and PA, exhibited stable or mixed evidence, with some measures suggesting mild consolidation or even increased plan participation while others remained flat. In contrast, MD and IN showed signs of MMCO market entry, characterized by an increasing number of plans and parent firms and relatively stable or only slightly increasing top firms' market dominance, suggesting more competition and reduced consolidation in those states. Even though the cleaning algorithm did not change the direction of consolidation for all states, the improvement in the accuracy of the magnitude was meaningful for future research.

There were some limitations related to our data and our approach. First, we could not directly calculate the market share or the Herfindahl-Hirschman Index based on the number of enrollees to evaluate consolidation because of the limitations of MMCERs—one person can be enrolled in different plans. Even though we observe the total number of enrollment for each plan, we cannot simply add them up to get the total market size. Second, some beneficiaries may be enrolled in more than one plan during the

year (due to churn), while others may opt out or switch plans, complicating enrollment counts. We do not observe these changes within each year in the MMCER data as it did not contain individual-level information. Validation with claims data may be needed to generate more precise market share measures. Lastly, we only examined 11 states, and there are inconsistencies in how states entered data on plans/parent firms within and across states. Future studies can validate our methods and expand the application to more states.

Conclusion

In conclusion, this study contributes to ongoing efforts to improve the transparency and reproducibility of research using MMCER, an underused administrative data source. By focusing on data quality and offering a structured approach to cleaning and standardization, this study supports more accurate and policy-relevant analyses of the MMCO market. Future applications of this algorithm may help researchers better track market changes over time and facilitate cross-study comparisons.

Abbreviations

CMS
Centers for Medicare & Medicaid Services
MMCER
Medicaid Managed Care Enrollment Report
MCO
managed care organization
MMCOs
Medicaid managed care organizations
DC
District of Columbia
FL
Florida
IN
Indiana
KY
Kentucky
MD
Maryland
NM
New Mexico
OH
Ohio
PA
Pennsylvania

TX
Texas
WA
Washington
WI
Wisconsin
DBA
doing business as

Declarations

Ethics approval and consent to participate: not applicable

Consent for publication: not applicable

Availability of data and materials: The datasets used during the study are available from MMCER.⁹ The Stata code and datasets will be made available through the [institution platform omitted].

Competing interests: The authors report no conflicts of interest.

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Authors' contributions:

HT analyzed and interpreted the data and wrote the manuscript. PC supervised and funded this study, and was a major contributor of the study design, data analysis, and drafting the manuscript. MA and LJ provided comments and feedback for the manuscript. All authors read and approved the final manuscript.

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Figures

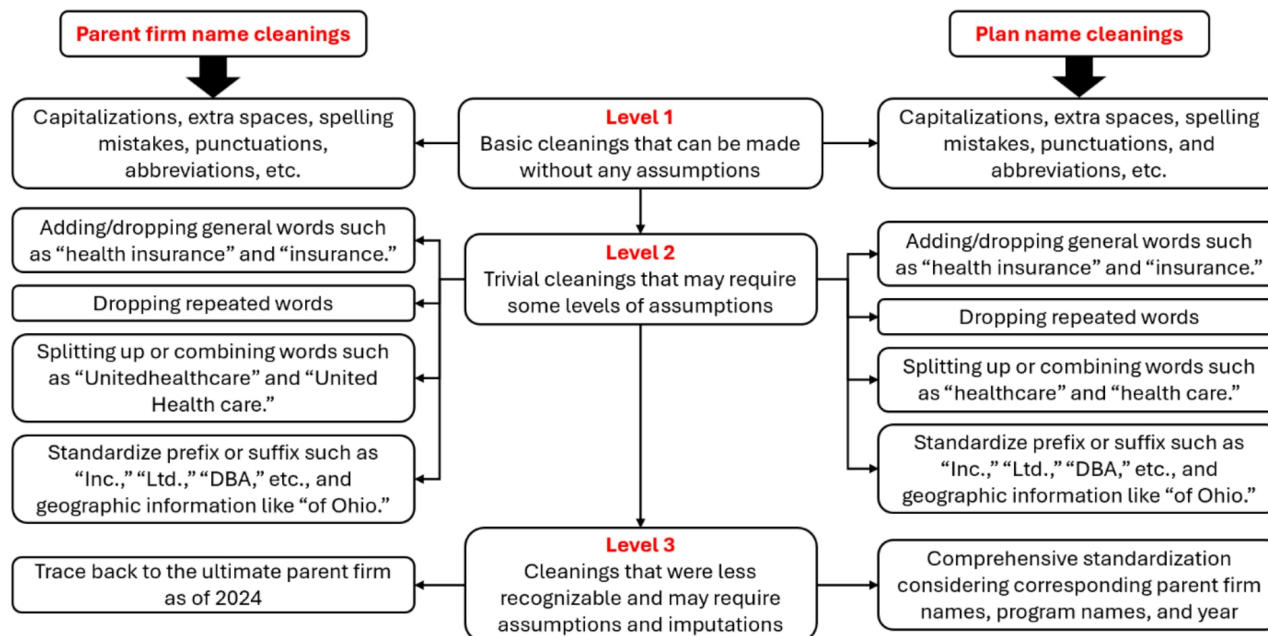


Figure 1

Cleaning process diagram for parent firm names and plan names



Figure 2

Total number of unique parent firms over time for WA and WI

SOURCE Author’s analysis of data from Medicaid Managed Care Enrollment Report (MMCER), 2017-2021.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [MMCERHSRSupplementary.docx](#)