ANALYSIS PAPER

# How Methodological Choices Affect California's 30-Day Hospital Readmission Rates

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# EXECUTIVE SUMMARY

The 30-day Hospital Wide Readmission (HWR) rate is a complex quality reporting measure that varies in specification across states and hospitals. The Yale New Haven Health Services Corporation's Center for Outcomes Research and Evaluation maintains this measure for the Centers for Medicare and Medicaid Services (CMS). Even though CMS gives methodological guidelines for computing the HWR measure, some subjective interpretation is required to apply them. For example, not all inclusion and exclusion criteria have clear definitions (e.g., "discharged alive from a non-federal short-term acute care hospital").

Different health care organizations use different operational definitions of the terms and code sets to calculate HWR estimates based on how they interpret the CMS guidelines. Because they make different methodological choices and use varying data sources (e.g., encounter vs. claims data), estimates of HWR rates at statewide and hospital levels are inconsistent across health care organizations. This report explores the differences in the HWR rate definitions of CMS, California Department of Health Care Access and Information (HCAI), and the Hospital Quality Institute (HQI). It compares the HWR estimates that result from the methodological choices made by these health care organizations.

Note that CMS combines encounter data and claims data to estimate HWR rates, while HCAI and HQI use only patient-level encounter data. In particular, the numbers in this report are based on the California 2019 to 2021 HCAI Limited Data Sets that both HCAI and HQI use to calculate HWR rates.

# KEY POINTS

- The calculation of 30-day HWR rates varies significantly across organizations due to differences in inclusion/exclusion criteria, data sources, and operational definitions. For example, CMS uses both encounter and claims data, while HCAI and HQI rely on patient-level encounter data only.
- HQI's adherence to CMS methodologies results in higher alignment with national benchmarks, whereas HCAI's broader criteria — such as counting all readmissions within 30 days and crediting readmitting facilities — lead to inflated statewide rates and potential inconsistencies for benchmarking.
- HQI's methodology, closely mirroring CMS standards, supports standardized benchmarking and state-level policy decisions, whereas HCAI's approach, while operationally useful, lacks consistency for broader comparative analyses.

# METHODOLOGY

## CMS Readmission Methodology

To better understand HWR rates and how HCAI calculates them, we first need to look at the changes in the method used by CMS to generate this measure. The alterations over time in the CMS HWR measure methodology are explained on QualityNet.cms.gov, with the latest update in 2023 (see Appendix A for flow chart).

### CMS Index Admissions Identification

The process begins by establishing "index" admissions for which readmissions would be eligible to be included in the HWR rate. An index admission is an acute hospital stay for which subsequent admissions will be deemed as readmissions. Based on the CMS methodology, index admissions must satisfy **all** the following *inclusion* criteria:

- Patients enrolled in Medicare fee-for service (FFS) Part A for the 12 months prior to and during the index admission,[1] including Veterans Affairs (VA) beneficiaries in VA hospitals (no Medicare FFS enrollment required),[2]

[1] HQI does not have access to claims data, so payer category and payer type are used as a proxy to identify *likely* Medicare FFS enrollees.
[2] HCAI does not include inpatient discharges for VA hospitals in its limited statewide data sets, so it is not possible to track VA patients.

and those in non-VA hospitals if enrolled in Medicare FFS Part A at admission (without a 12-month prior enrollment requirement)[3]

- Aged 65 or over
- Discharged alive from a non-federal short-term acute care hospital or VA hospital
- NOT transferred to another acute care facility (within zero to 1 day of discharge); such transfer patients are considered a single admission, so the index case is assigned to the hospital that eventually discharges the patient to a non-acute care setting (e.g., home)[4]

However, index admissions that otherwise qualify are *excluded* according to the CMS methodology if they meet **any** of the following criteria:

- Admitted to a prospective payment system (PPS)-exempt cancer hospital
- Do NOT have at least 30 days of post-discharge enrollment in Medicare FFS (in the case of patients who are not VA beneficiaries)
- Discharged against medical advice
- Admitted for a principal diagnosis indicating psychiatric care (Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP) Clinical Classifications Software (CCS) diagnosis categories 650-670)
- Admitted for a principal diagnosis indicating rehabilitation care (CCS diagnosis category 254)
- Admitted for a principal diagnosis indicating medical treatment of cancer (CCS diagnosis categories 11-45)
- Admitted with a principal diagnosis code of COVID-19 (International Classification of Diseases, Tenth Revision, Clinical Modification [ICD-10-CM] code U07.1) or with a secondary diagnosis code of COVID-19 coded as present on admission (POA) on the index admission claim[5]

### CMS Readmissions Identification

Readmissions are defined by CMS as *unplanned* inpatient visits for any cause from two to 30 days after discharge of index admission. Records are *ineligible* to be readmission visits if they are:

- Planned visits
- Acute-to-acute transfers, defined as readmissions at the same hospital for the same diagnosis on the day of discharge for an index admission, which are considered to be part of the index episode of care

CMS hospital and statewide readmission rates calculated using their methodology are provided here: Hospitals archived data snapshots (in the Unplanned Hospital Visits files as MEASURE_ID "READM_30_HOSP_WIDE").

## HQI Readmission Methodology

HQI interprets the above CMS methodology to create California statewide and hospital-specific HWR rates based on the information available in HCAI inpatient encounter patient-level discharge data. To develop this process, HQI contacted CMS through QualityNet.cms.gov to obtain the crosswalk they provide for readmission measures. HQI was advised to follow the flow chart at the end of the 2023 Readmission Measures Methodology, as shown in Appendix A. The steps HQI follows to recreate the CMS HWR rate are detailed below.

### HQI Initial Data Processing

HQI follows the steps below to initialize the inpatient discharge data prior to creating California statewide and hospital-specific HWR rates:

1. Load the proper date ranges to compare CMS's numbers to HQI numbers.

[3] HCAI does not include inpatient discharges for VA hospitals in its limited statewide data sets, so it is not possible to track VA patients.
[4] A patient is considered transferred between hospitals when both are true: (a) discharge from one hospital and admission to another hospital on the same or following calendar day, and (b) both hospitals are acute care facilities. Patients "transferred" from outpatient or emergency department settings are not transfer patients. Patients do not need the same discharge/admission diagnosis or procedures to be considered a transfer.
[5] The COVID exclusion was temporary and only applies to 2020Q1 to 2021Q2 data.

   a. 2019: 7/1/2019 – 12/31/2019 (See Appendix B for flow chart)
   b. 2020: 7/1/2020 – 6/30/2021 (See Appendix C for flow chart)

2. Run the CCS software to assign a CCS category to each diagnosis and procedure in the discharge data.

### HQI Initial Data Cleanup

Next, HQI conducts initial data cleanup to remove records that meet **any** of the following criteria:

- Records for which the record linkage number (RLN) is missing or are otherwise missing a unique patient identifier (cases missing RLN or a unique identifier cannot be used to track readmissions; RLN = missing)
- Records with length of stay (LOS) greater than a year (LOS > 365)
- Records from pediatric hospitals
- Records not from short-term acute care facilities (i.e., skilled nursing, psychiatric, chemical dependency, physical rehabilitation, and long-term care facilities)
  - Note that records are also excluded from the two California PPS-exempt cancer hospitals (i.e., City of Hope National Medical Center and USC Kenneth Norris Jr. Cancer Hospital)
- Records for patients not receiving acute care (i.e., skilled nursing, psychiatric, chemical dependency, physical rehabilitation, and missing/invalid; TYPCARE ≠ 1)
- For 2020/2021 data, records with:
  - A principal diagnosis of COVID-19 (DIAG_P = 'U071')
  - Any secondary diagnosis of COVID-19 that was present on admission (ODIAG# = 'U071' and ODIAG#_POA = 'Y')

### HQI Index Admissions Identification

HQI defines index admissions as those records remaining after initial data processing and cleanup that satisfy **all** the following criteria:

- Age 65 or older at admission (AGYRADM ≥ 65)
- Medicare payer category for expected source of payment (PAY_CAT = 1)
- Fee-for-service type of coverage for expected source of payment (PAY_TYPE = 3)
- Discharged alive from a non-federal short-term acute care hospital (DISP ≠ 2, 20, 66, 82, 94)
- Not an acute-to-acute transfer. If the discharge date from a previous visit and the admission date of the next visit is within one calendar day for the same RLN, HQI treats the records as a single episode of care involving a transfer. In the case of transfers, HQI retains the earlier visit's admission date and uses it in place of the subsequent visit's admission date. There can be multiple admissions and discharges chained in this manner. Through this process, the records are combined into a single continuous visit. Table 1 shows an example of the HQI transfer methodology applied to a chain of four encounter records for the same RLN that are combined into a single episode of care.

**Table 1.** *Illustration of HQI Transfer Methodology Applied to Multiple Acute-to-Acute Transfer Records Combined into a Single Episode of Care*

| RLN | Admit Date | Disch Date | Days Difference | Transfer | | RLN | Admit Date | Disch Date |
|---|---|---|---|---|---|---|---|---|
| A | 1/12/21 | 1/15/21 | . | | | A | 1/12/21 | 2/4/21 |
| A | 1/15/21 | 1/21/21 | 0 | Y | | | | |
| A | 1/22/21 | 1/23/21 | 1 | Y | | | | |
| A | 1/23/21 | 2/4/21 | 0 | Y | | | | |

After completing the steps above, HQI *excludes* index admissions that otherwise qualify if they meet **any** of the following criteria:

- Admitted for a principal diagnosis indicating medical treatment of cancer (CCS = 11-45)
- Admitted for a principal diagnosis indicating rehabilitation care (CCS = 264)
- Admitted for a principal diagnosis indicating psychiatric care (CCS = 650-652, 654-659, 662, 670)
- Discharged against medical advice (DISP = 7)

The remaining records are flagged as index admissions and the index flag variable (INDEX = Y) is merged back to the data set that existed after initial data processing and cleanup, but for which chains of encounters for RLNs have been combined into single episodes of care. Note that when merging the index flag variable to this data set, some flags may not match and hence will be excluded due to them being part of a transfer chain in which only the last record was kept.

### HQI Readmissions Identification

HQI defines readmissions as *unplanned* inpatient visits for any cause from two to 30 days after discharge of index admission. Records in the merged data set above are flagged as being *planned* visits and therefore *ineligible* to be readmissions if they meet **any** of the following criteria (UNPLANNED = N):

- Records with any "always planned" procedure category indicating a bone marrow transplant, kidney transplant, other organ transplant (CCS = 64, 105, 176)
- Records with an "always planned" principal diagnosis category indicating chemotherapy/radiotherapy or rehabilitation care/fitting of prostheses/adjustment of devices (CCS = 45, 254)
- Records with a "potentially planned" procedure defined as a combination of any potentially planned procedure category (Table PR.3. Potentially Planned Procedures in the CMS HWR crosswalk) without an accompanying principal diagnosis category (Table PR.4. Acute Diagnoses in the CMS HWR crosswalk).

Records in the merged data set above are flagged by HQI as being *unplanned* visits and therefore *eligible* to be readmissions if they do not meet **any** of the above criteria (UNPLANNED = Y). The data set is then sorted in ascending order by both RLN and admission date. For each index admission, HQI then calculates the number of days difference between the *discharge* date and *admission* date for each subsequent visit among records with the same RLN (DAYS_DIFF). Finally, records are flagged as readmissions if they meet **all** of the following criteria (READMISSION = Y):

- RLN matches the RLN for the prior record (RLN = prior RLN)
- Admission date is within two to 30 days of the discharge date for the prior record ($2 \leq$ DAYS_DIFF $\leq 30$)
- Visit is unplanned (UNPLANNED = Y)

Note that for HWR, but not condition- or procedure-specific readmissions, index admissions **can** also be flagged as readmissions. If there are multiple unplanned visits within 30 days of an index admission, only the *first* subsequent visit qualifies to be flagged as a readmission. That is, HQI only codes readmission flags for the visit *immediately* after each index admission. If the first subsequent visit is a *planned* visit (UNPLANNED = N), even if it is within two to 30 days of the index admission ($2 \leq$ DAYS_DIFF $\leq 30$), it is explicitly coded as not a readmission (READMISSION = N). The facility identifier of the index admission is recorded for each record flagged as a readmission (CREDIT_FAC). Table 2 illustrates an example of the HQI readmissions methodology applied to a chain of five encounter records for the same RLN that result in two readmissions being flagged for two of three index admissions.

**Table 2** *Illustration of HQI Readmission Methodology Applied to Multiple Records Resulting in Two Readmissions for Three Indexes*

| Visit | RLN | Facility ID | Admit Date | Disch Date | DAYS_DIFF | Index | Unplanned | Readmission | CREDIT_FAC |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A | A | 7/24/20 | 7/28/20 | . | Y | Y | | |
| 2 | A | A | 8/10/20 | 8/13/20 | 13 | | N | N | |
| 3 | A | B | 9/5/20 | 9/9/20 | 23 | Y | Y | | |
| 4 | A | B | 10/8/20 | 10/21/20 | 29 | Y | Y | Y | B |
| 5 | A | C | 10/24/20 | 11/23/20 | 3 | | Y | Y | B |

Below is a visit-by-visit explanation of the example presented in Table 2:

- Visit 1 was an *unplanned* **index admission**. Because there was no visit prior to Visit 1, DAYS_DIFF is missing.
- Visit 2 was a *planned* **non-index** admission 13 days after the Visit 1 index discharge. However, because Visit 2 was a *planned* visit, it was **not** flagged as a readmission for Visit 1.
- Visit 3 was an *unplanned* **index admission** 23 days after the Visit 2 non-index discharge. Because Visit 2 was *not* an index admission, it was not flagged as a readmission for Visit 2.
- Visit 4 was an *unplanned* **index admission** 29 days after the Visit 3 index discharge. Because Visit 4 was an unplanned visit AND within 29 days of the Visit 3 index discharge, Visit 4 was flagged as a **readmission** with the Visit 3 facility (Facility B) receiving credit.
- Visit 5 was an *unplanned* **non-index** admission three days after the Visit 4 index discharge. Because Visit 5 was an unplanned visit AND within three days of the Visit 4 index discharge, Visit 5 was flagged as a **readmission** with the Visit 4 facility (Facility B) receiving credit.

### HQI Readmission Rate Calculation

1. Numerator = Total number of readmission records (READMISSION = Y)
2. Denominator = Total number of index admission records (INDEX = Y)
3. Readmission Rate = Numerator / Denominator x 100

For example, the data in Table 2 can be used to calculate the readmission rate for *Facility B*. The first readmission (Visit 4) occurred at Facility B and was credited to Facility B because the discharging facility for the index admission (Visit 3) was also Facility B. The second readmission (Visit 5) occurred at Facility C, but again, Facility B was credited because the discharging facility for the index admission (Visit 4) was Facility B. Therefore, the total number of readmission records for Facility B is two (Visit 4 and Visit 5). The total number of index admission records for Facility B is 2 (Visit 3 and Visit 4). Therefore, the readmission rate for Facility B is 100% (2 readmissions / 2 index admissions = 100%). Following the same logic, the readmission rate for Facility A is 0% (0 readmissions / 1 index admissions = 0%) and that for Facility C is not calculable (0 readmissions / 0 index admissions = undefined).

Note that to correctly calculate 30-day readmission rates, only records that have at least 30 days of follow up during which they were at risk for readmission should be included. Therefore, only records discharged 30 days before the end of the calculation time period should be counted as index admissions in the denominator. For example, to calculate the readmission rate for calendar year 2019 based on *only* 2019 data, the numerator and denominator would be calculated as follows:

- Numerator = Total number of readmission records between 1/1/2019 to 12/31/2019
- Denominator = Total number of index admission records between 1/1/2019 to 12/1/2019

The time period to count the denominator above is truncated by 30 days to ensure that each index admission has a 30-day follow-up period to count readmissions. If index admissions are counted during the whole calendar year, the numerator would be biased downward due to not having 30 days of follow-up for all index admissions, resulting in underestimation of the true readmission rate.

### HCAI Readmission Methodology

The methodology used by HCAI to calculate readmission estimates following the CMS guidelines, along with tables of the resulting rates are provided here: [All-Cause Unplanned 30-Day Hospital Readmission Rate, California].

## FINDINGS

The 30-Day Hospital-Wide All-Cause Readmission Rates for California and a sample of hospitals, based on the CMS, HQI, and HCAI methodologies, are displayed on the following two pages for the periods from 7/1/19 to 12/31/19 (Table 3) and from 7/1/20 to 6/30/21 (Table 4).

**Table 3.** *Comparison of CMS, HQI, and HCAI 30-Day Hospital-Wide All-Cause Readmission Rates, CA 7/1/19 – 12/31/19*

| California Statewide | Rate | Denominator | Numerator |
|---|---|---|---|
| CMS (estimated) | 15.5 | 214,848 | 33,301 |
| HQI | 17.7 | 210,009 | 37,183 |
| HCAI (estimated) | 13.4 | 250,101 | 33,452 |

| Hospital Name | CMS (estimated) | | | HQI | | | HCAI (estimated) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Rate | Den | Num | Rate | Den | Num | Rate | Den | Num |
| Cedars-Sinai Medical Center | 15.9 | 6,270 | 996 | 21.6 | 5,962 | 1,291 | 17.5 | 6,888 | 1,202 |
| Desert Regional Medical Center | 15.7 | 772 | 121 | 14.8 | 817 | 121 | 12.9 | 1,026 | 132 |
| Eisenhower Medical Center | 15.4 | 2,806 | 432 | 15.1 | 2,822 | 427 | 10.8 | 3,201 | 346 |
| Enloe Medical Center | 15.4 | 3,131 | 482 | 17.5 | 2,962 | 518 | 14.0 | 3,557 | 498 |
| Hemet Global Medical Center | 16.7 | 459 | 76 | 22.3 | 467 | 103 | 19.0 | 596 | 113 |
| NorthBay Medical Center | 16.5 | 1,168 | 192 | 19.6 | 1,285 | 252 | 14.9 | 1,513 | 225 |
| Palo Verde Hospital | 15.9 | N/A* | N/A* | 18.4 | N/A* | N/A* | 14.0 | N/A* | N/A* |
| Pomona Valley Hospital Medical Center | 14.6 | 781 | 114 | 17.0 | 848 | 144 | 11.6 | 819 | 95 |
| San Antonio Regional Hospital | 14.9 | 997 | 148 | 18.6 | 1015 | 189 | 13.5 | 1,247 | 168 |
| St Elizabeth Community Hospital | 15.6 | 381 | 59 | 15.8 | 386 | 61 | 11.9 | 454 | 54 |

**Table 4.** *Comparison of CMS, HQI, and HCAI 30-Day Hospital-Wide All-Cause Readmission Rates, CA 7/1/20 – 6/30/21*

| California Statewide | Rate | Denominator | Numerator |
|---|---|---|---|
| CMS (estimated) | 14.6 | 399,687 | 58,354 |
| HQI | 15.3 | 381,385 | 58,650 |
| HCAI (estimated) | 14.7 | 444,193 | 65,190 |

| Hospital Name | CMS (estimated) | | | HQI | | | HCAI (estimated) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Rate | Den | Num | Rate | Den | Num | Rate | Den | Num |
| Cedars-Sinai Medical Center | 15.6 | 11,419 | 1,718 | 18.6 | 9,694 | 1,804 | 18.6 | 11,597 | 2,160 |
| Desert Regional Medical Center | 15.5 | 1,495 | 231 | 15.7 | 1,603 | 253 | 15.0 | 1,903 | 286 |
| Eisenhower Medical Center | 14.8 | 5,890 | 871 | 13.7 | 5,759 | 793 | 13.0 | 6,129 | 799 |
| Enloe Medical Center | 15.9 | 6,399 | 1,017 | 16.5 | 6,166 | 1,017 | 15.2 | 6,934 | 1,054 |
| Hemet Global Medical Center | 15.3 | 686 | 104 | 17.7 | 742 | 132 | 14.2 | 930 | 132 |
| NorthBay Medical Center | 14.3 | 2,263 | 323 | 15.0 | 2,573 | 386 | 13.5 | 2,773 | 373 |
| Palo Verde Hospital | 14.7 | N/A* | N/A* | 7.0 | N/A* | N/A* | 10.9 | N/A* | N/A* |
| Pomona Valley Hospital Medical Center | 14.9 | 1,376 | 205 | 14.8 | 1,520 | 226 | 12.9 | 1,809 | 234 |
| San Antonio Regional Hospital | 15.8 | 1,844 | 291 | 16.5 | 1,930 | 320 | 12.9 | 2,556 | 329 |
| St Elizabeth Community Hospital | 15.8 | 848 | 133 | 15.7 | 909 | 143 | 12.2 | 996 | 122 |

*Hospitals with low patient volumes will have their numerator and denominator data reported as "Not Available" or "N/A" in accordance with the Department of Health and Human Services' CMS Cell Suppression Policy, which protects patient confidentiality by suppressing values between 1 and 10.

## Methodological Differences Among CMS, HQI, and HCAI Readmission Rates

Before comparing the rates across methodologies, several additional methodological differences and idiosyncrasies identified in the process of calculating the rates shown in the tables should be discussed. They are noted below.

- CMS combines encounter data and claims data to estimate readmission rates, while HCAI and HQI use only inpatient patient-level discharge data.
- HCAI publishes readmission estimates by the calendar year. It provided HQI with the SAS code, which HQI modified to include only Medicare FFS records for individuals aged 65 and older, to calculate estimates for the presented time periods.
- CMS does not publish numerators for its readmission rates. HQI estimated them based on the denominator and the rate (rate / 100 x denominator).
- CMS includes VA hospitals in its readmission rates. The data that HCAI and HQI use (HCAI Limited Data Sets) do not include VA hospitals, so VA hospital readmissions are not captured.

- HCAI counts every readmission visit within 30 days of an index admission, whereas CMS and HQI count only the first subsequent readmission visit, potentially resulting in higher HCAI rates.
- HCAI removes all records for an RLN if it occurs more than 10 times in a calendar year during initial data processing, while CMS and HQI retain these records.
- HCAI credits the facilities where readmissions occur instead of the index facilities. For instance, an index admission discharged by Facility A and readmitted to Facility B within 30 days is credited to Facility B by HCAI, while CMS and HQI credit Facility A.

### Statistical Differences Among CMS, HQI, and HCAI Readmission Rates

The comparison of CMS, HQI, and HCAI 30-Day Hospital-Wide All-Cause Readmission Rates in Table 3 and Table 4 reveals several important findings:

- The HQI statewide readmission rates are the highest (17.7% in 2019, 15.3% in 2020–2021), followed by CMS (15.5% in 2019, 14.6% in 2020–2021), while HCAI reports the lowest rates (13.4% in 2019, 14.7% in 2020–2021).
- At the hospital level, HQI readmission rates also tend to be higher, but HCAI rates sometimes exceed both HQI and CMS, particularly for smaller hospitals. Differences between CMS and HQI hospital-specific rates range from 0.2% to 5.7%, while differences between CMS and HCAI vary more, ranging from 0.1% higher to 4.6% lower. Larger hospitals, such as Cedars-Sinai, show closer alignment between HQI and CMS rates, whereas smaller hospitals exhibit more variability due to HCAI's broader criteria.
- HCAI's methodology results in larger numerators and denominators because it counts all readmissions within 30 days (not just the first) and attributes them to the readmitting facility. While this inflates statewide rates, it can result in slightly lower rates for certain hospitals due to the larger denominator.
- HQI rates generally reflect trends in CMS rates, likely because both methodologies count only the first unplanned readmission within 30 days. Discrepancies in rates arise from dataset variations, as HQI relies solely on patient-level encounter data and excludes VA hospitals.

## CONCLUSION

When comparing the methodologies and resulting readmission rates of HQI and HCAI to those from CMS, HQI's approach aligns more closely with national standards set by CMS. By closely replicating CMS's methodology, HQI aims for consistency and comparability in evaluating hospital-wide all-cause readmissions, an essential quality measure for benchmarking performance and guiding health care policy. Although HQI's rates differ slightly from CMS due to dataset limitations (such as reliance on California-specific patient-level encounter data and exclusion of VA hospitals), its adherence to CMS principles makes it a reliable methodology for standardized assessments.

HCAI's methodology, with its broader inclusion criteria, introduces limitations that can affect the accuracy and comparability of readmission rates. These include removing patient records with 10+ visits per RLN, attributing readmissions to the admitting rather than discharging hospital, and using keyword-based exclusions, which can lead to errors like misclassifying Martin Luther King Jr. Hospital as a pediatric facility. Additionally, counting multiple readmissions within 30 days inflates rates, making them inconsistent with CMS and HQI standards that count only the first unplanned readmission. While HCAI's methodology may be useful for operational purposes, such as tracking all hospital visits, it is less suited for standardized benchmarking or policy alignment due to its variability and inconsistencies.

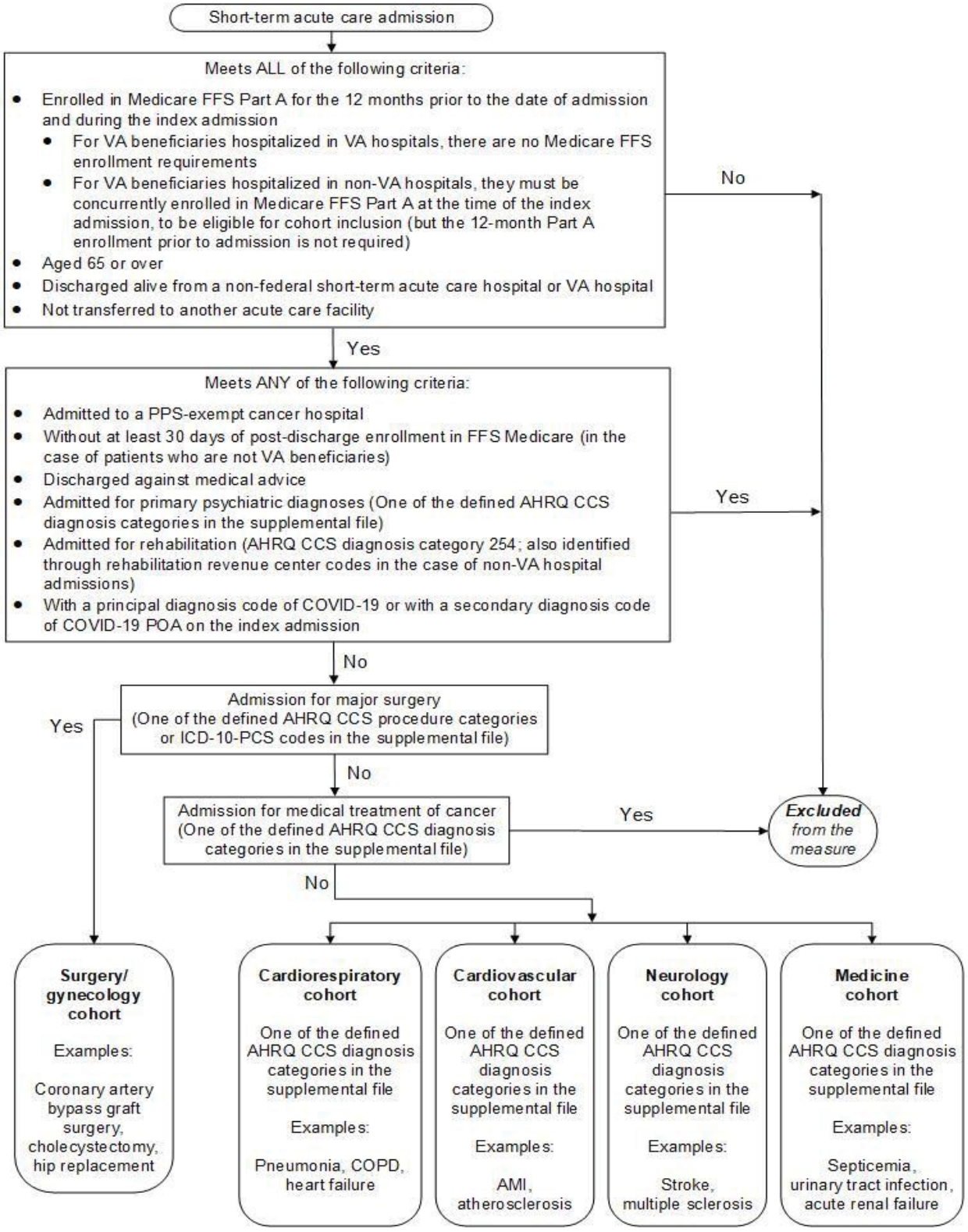
By adhering to CMS's methodology, the HQI methodology maintains advantages that align with national standards and enable flexibility for deeper stratification and analysis. For example, HQI's methodology allows additional stratified analyses — such as examining rates by age groups (including patients aged 18+), insurance types, or payer categories — without compromising the integrity of the readmission metric. Furthermore, the consistency with CMS makes HQI's approach well-suited for informing state-level policy decisions and benchmarking hospital performance against national trends.

In conclusion, comparing methodologies highlights the significant impact methodological choices have on reported readmission rates and their interpretation. HQI's approach, based on CMS's framework, provides a standardized, reliable, and policy-relevant measure for assessing hospital readmissions in California. In contrast, HCAI's broader methodology, while valuable for specific operational analyses, introduces variability that may limit its utility for benchmarking or aligning with national standards. These findings underscore the importance of transparency and consistency in methodology when comparing readmission rates, ensuring meaningful evaluations that support quality improvement and health care policy decisions.

*Contact Candice Cam, senior data analyst, at ccam@hqinstitute.org with questions.*

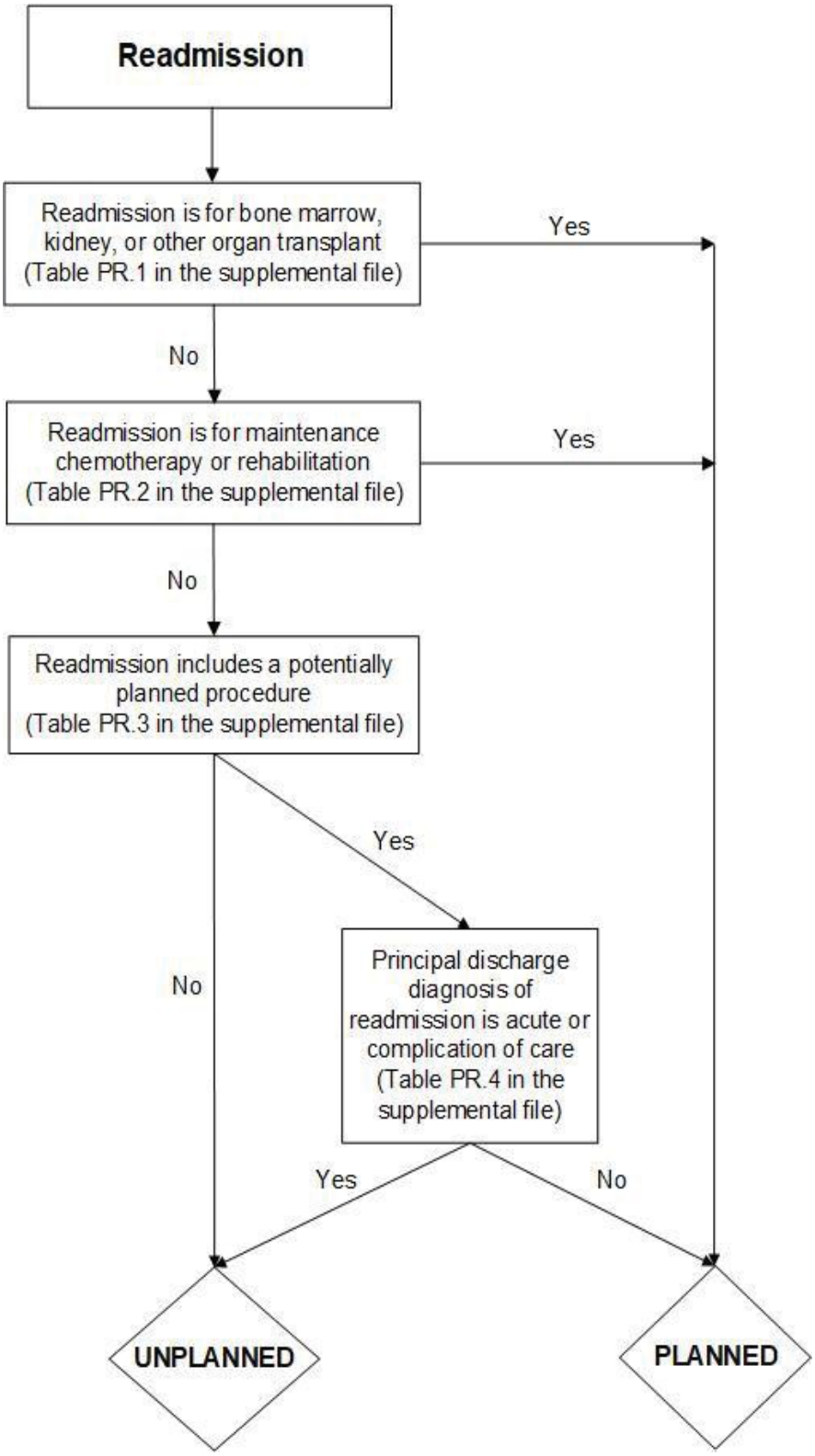
# APPENDIX A

*CMS Construction of Analytic Cohort for Index Admissions*



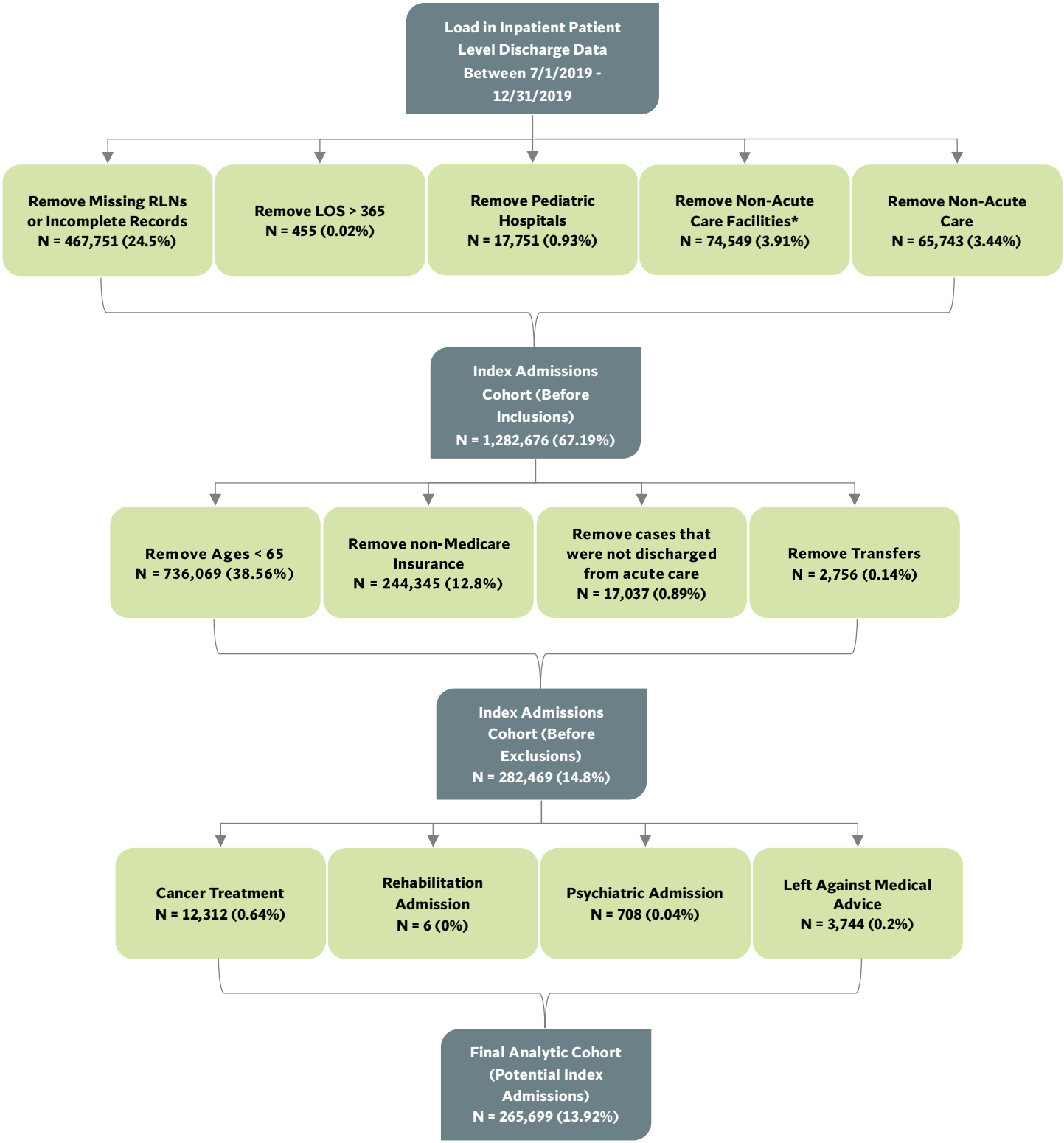
## Appendix A (cont.)

*CMS Construction of 30-day All-Cause Hospital-Wide Readmissions*



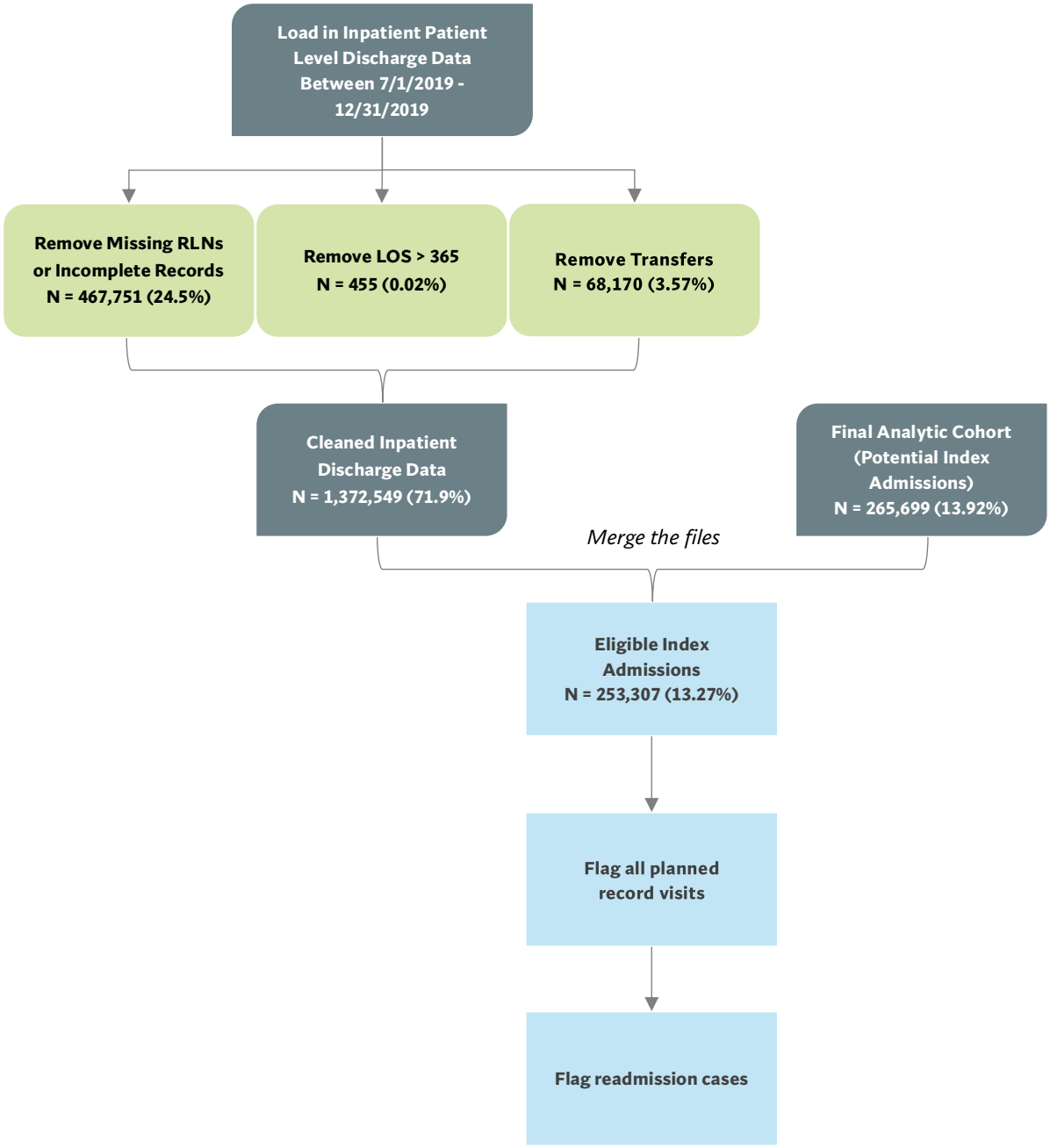
# APPENDIX B

*HQI Construction of Analytic Cohort for Index Admissions in 2019*



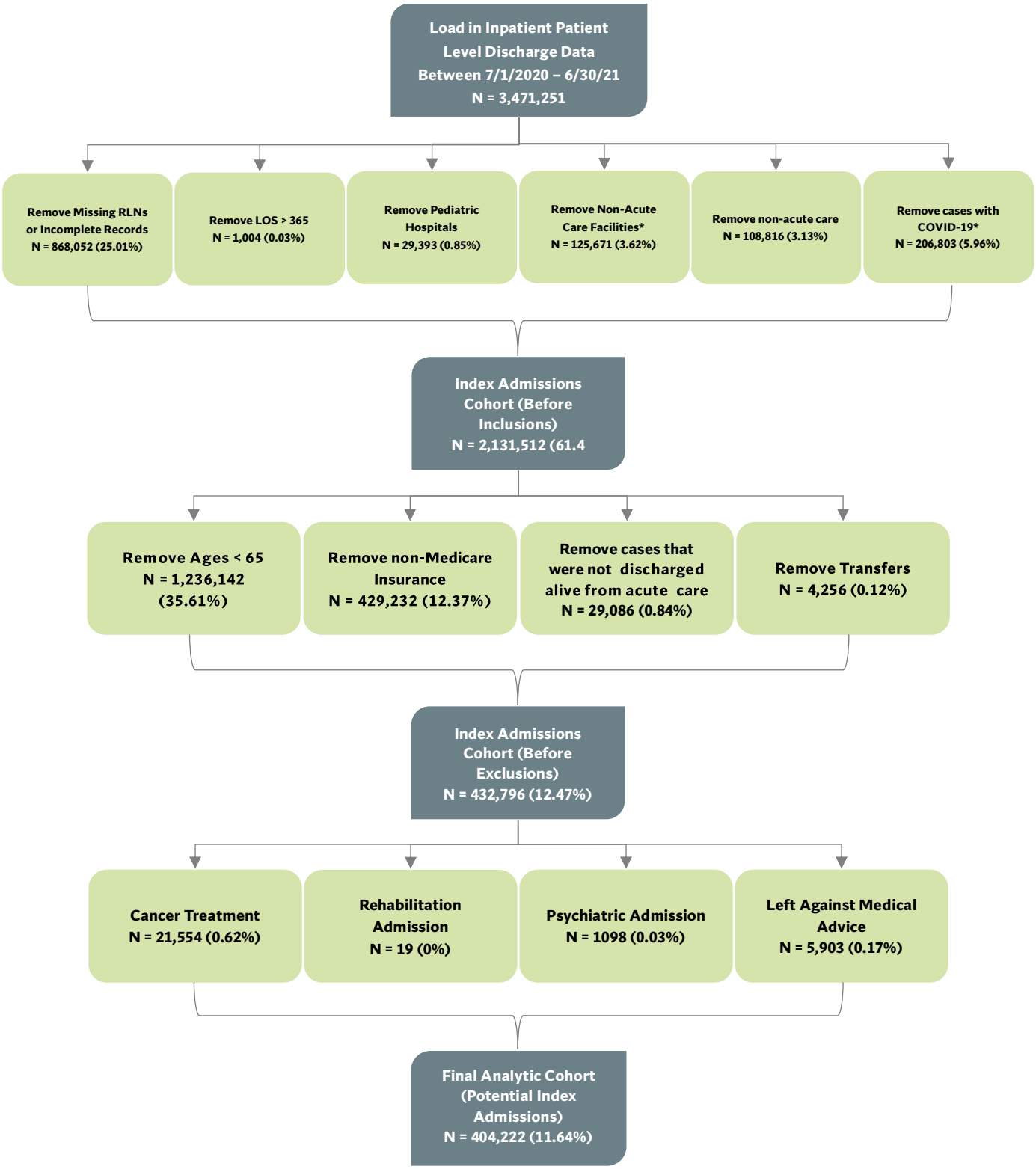
## Appendix B (cont.)

*HQI Construction of 30-day All-Cause Hospital-Wide Readmissions in 2019*



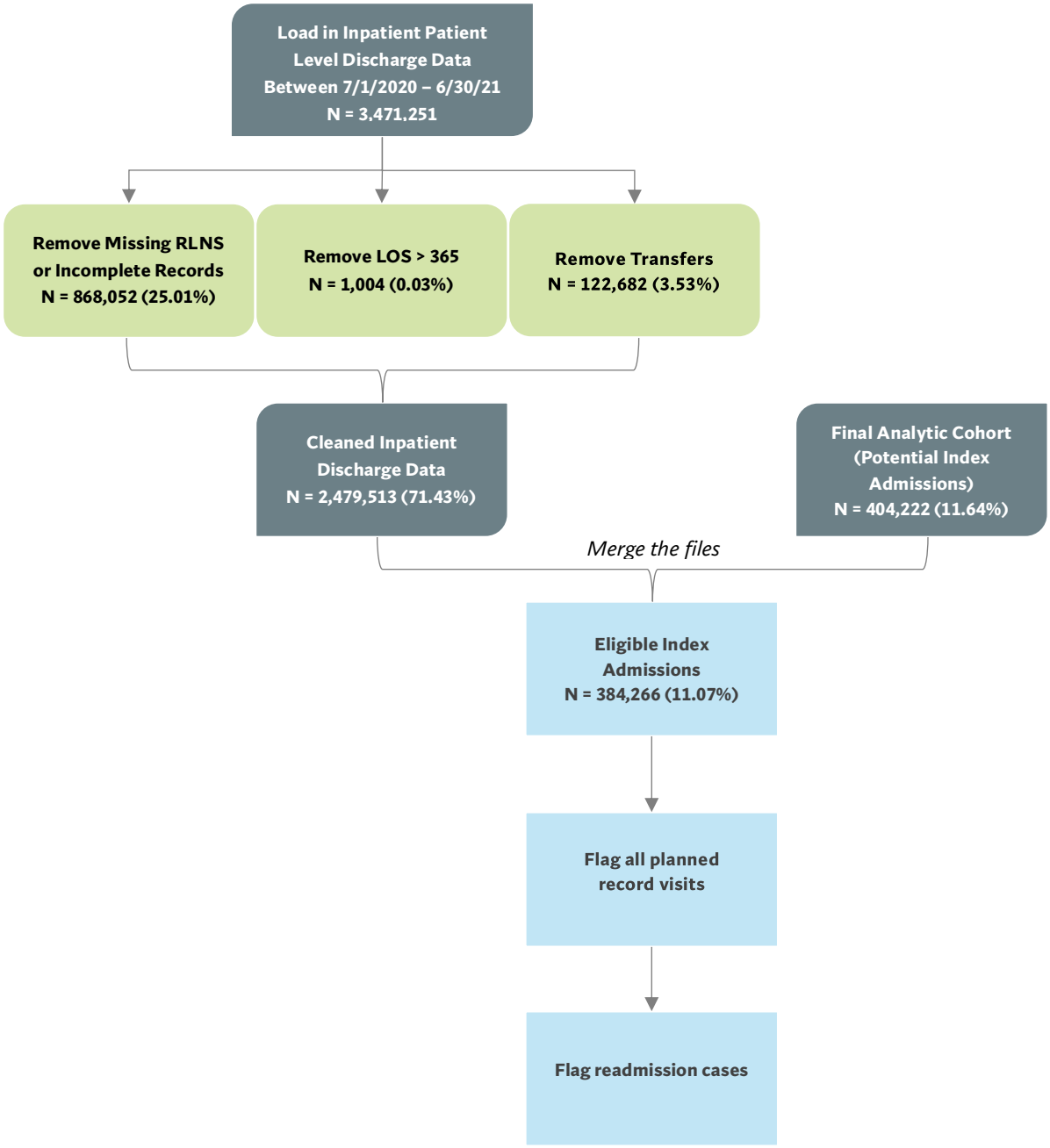
# APPENDIX C

*HQI Construction of Analytic Cohort for Index Admissions in 2020–2021*



## Appendix C (cont.)

*HQI Construction of 30-day All-Cause Hospital-Wide Readmissions in 2020-2021*



## ABOUT US

The Hospital Quality Institute (HQI) is dedicated to advancing patient safety and quality of care for all Californians. Through strategic partnerships and innovative programs, HQI supports hospitals in achieving excellence by providing data analytics, educational resources, and statewide initiatives focused on performance improvement. HQI oversees and coordinates the Collaborative Health Care Patient Safety Organization (CHPSO).