



Australian Mental Health Outcomes and Classification Network

'Sharing Information to Improve Outcomes'

An Australian Government funded initiative

National Outcomes & Casemix Collection: Volume and Percentage Valid Clinical Ratings

Australia

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Version 2.0

March 2011



A joint Australian, State and
Territory Government Initiative

Document Information

Title National Outcomes & Casemix Collection: Volume and Percentage Valid Clinical Ratings
Version 2.0

Suggested citation for this document

Burgess, P & Coombs T (2011). *National Outcomes & Casemix Collection: Volume and Percentage Valid Clinical Ratings*. Brisbane, Queensland.

Document History

| Version | Date | Details |
|---------|---------------|--|
| 1.0 | 25 March 2010 | Australia only version distributed to members of NMHIDEAP |
| 1.1 | 19 April 2010 | Australia only version distributed to members of MHISS |
| 1.1 | 11 May 2010 | Australia only version placed on http://amhocn.org |
| 1.1 | 11 May 2010 | Jurisdictional versions forwarded to jurisdictions |
| 2.0 | 29 March 2011 | Australia only version distributed to members of MHISS & NMHIDEAP |

Notes

This report has been produced by Philip Burgess (Analysis & Reporting) and Tim Coombs (Training & Services Development) of the Australian Mental Health Outcomes and Classification Network (AMHOCN), with the assistance of Rosemary Dickson (AMHOCN Network Co-ordinator) and Lauren Clark (NSW Institute of Psychiatry).

Feedback

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Section 1: User's Guide

The purpose of this report is to inform discussions regarding the overall volume of NOCC data and the completeness of these data to enable meaningful analyses.

This report presents findings from analyses of National Outcomes and Casemix Collection data as submitted by Jurisdictions for the past 4 years. These analyses are based on the most recent submissions by Jurisdictions as at 23 February 2011.

Key assumptions that underpin these analyses are identical to those documented in the publication of AMHOCN Standard Reports <http://amhocn.org>. Relevant extracts from the User's Guide are appended to this document.

This report should also be considered in conjunction with the *Technical specification of State and Territory reporting requirements for the outcomes and casemix components of 'Agreed Data' (Version 1.60)* and the *NOCC Clinician and Self-Report Measures Overview (Version 1.60)*, also available at the above web address.

The NOCC protocol prescribes measures to be collected specific to the age group of consumers, at times specific to the service setting and at other times specific to the reason for collection. These reports are based on that protocol but acknowledge that organisations and jurisdictions may have different requirements.

At each point in the collection protocol, analyses are presented as charts from two perspectives:

1. the overall volume of information reported; and
2. the 'completeness' of that material for the purposes of analysis and reporting.

Findings are reported for each of the past 4 years to enable an assessment of trends in reporting over time.

Figures are numbered with the schema used for the standard reports with modification such that the suffix 'V' refers to volume and the suffix 'C' refers to 'completeness'.

The methods and analyses undertaken in this report generally follow those with the Version 1.1 report published in 2010. There are, however, two important differences.

First, a comprehensive Data Warehouse based on the 1.6 NOCC Technical Specifications was not available at the time of the 2010 report. The 1.6 Specification has a higher threshold for submitted data to be considered acceptable. Application of the 1.6 Specification to data submitted in previous years under the 1.5 Specification can result in fewer observations available for analysis and reporting. Moreover, since the publication of the Version 1.1 Report, several jurisdictions chose to resubmit earlier NOCC extracts. Thus, for example, comparisons of say 2008-2009 findings between the Version 1.1 (previous) and Version 2.0 (current) reports should be done cautiously.

Second, following consultation and discussion with the National Mental Health Performance Subcommittee (NMHPS), it was decided to modify the definition of 'completed' ratings for the consumer self-report measures (i.e., BASIS-32, K10+, MHI-38 & SDQ suite). Previously, the numerator for 'completed' ratings was the overall count of measures that met the minimum number of 'valid complete clinical' ratings (see Attachment 1, Table 2) and the

denominator the overall count of collection occasions where these measures should be offered according to the NOCC protocol.

In this report, observations where the collection status of the consumer self-report measure was recorded as either '2' 'Not - temporary contraindication (SR only)', '3' 'Not - general exclusion (SR only)', or '4' 'Not - refusal by patient or client (SR only)' were excluded in counts of the denominator. The impact of this change leads to higher rates of 'completion' for these measures than previously reported.

The following table provides a key to the figure schema:

| Table 1: Volume and Percentage Complete Figure Schema |
|--|
| <p>n1 = Collection Age Group 1 = Child & Adolescent 2 = Adult 3 = Older Person</p> <p>n2 = Service Setting Setting₁ = Psychiatric Inpatient Setting₂ = Community Residential Setting₃ = Ambulatory</p> <p>n3= Collection Occasion 1 = Admission 2 = Review 3 = Discharge</p> |

Note also that abbreviations are used to identify the NOCC Clinical measures as detailed in the following table. Whereas 3 different Consumer Self-Report measures are used by Jurisdictions, these are not analysed separately here. They are presented collectively in this report.

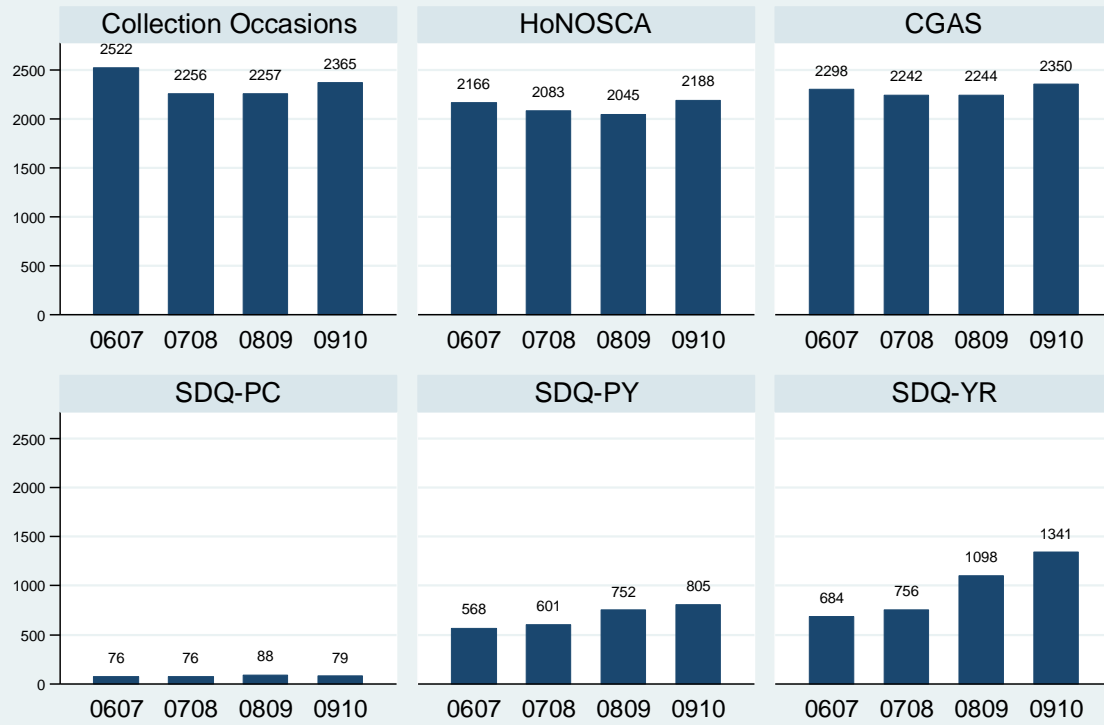
Table 2: Abbreviated titles of the NOCC Clinical Measures

| NOCC Clinical Measure | Abbreviation |
|--|--------------|
| Health of the Nation Outcome Scales | HoNOS |
| Health of the Nation Outcome Scales for Older People | HoNOS65+ |
| Abbreviated Life Skills Profile | LSP-16 |
| The Resource Utilisation Groups – Activities of Daily Living Scale | RUG-ADL |
| The Mental Health Inventory (MHI-38) | CSR |
| The KESSLER–10 Plus (K-10+) | CSR |
| THE Behavioural and Symptom Identification Scale (BASIS-32) | CSR |
| Health Of the Nation Outcome Scales For Children And Adolescents | HoNOSCA |
| Children’s Global Assessment Scale | CGAS |
| Factors Influencing Health Status | FIHS |
| Strengths and Difficulties Questionnaire: Parent Child Version | SDQ-PC |
| Strengths and Difficulties Questionnaire: Parent Youth Version | SDQ-PY |
| Strengths and Difficulties Questionnaire: Youth Self Report | SDQ-YR |

Section 2: NOCC Valid Clinical Ratings Reports

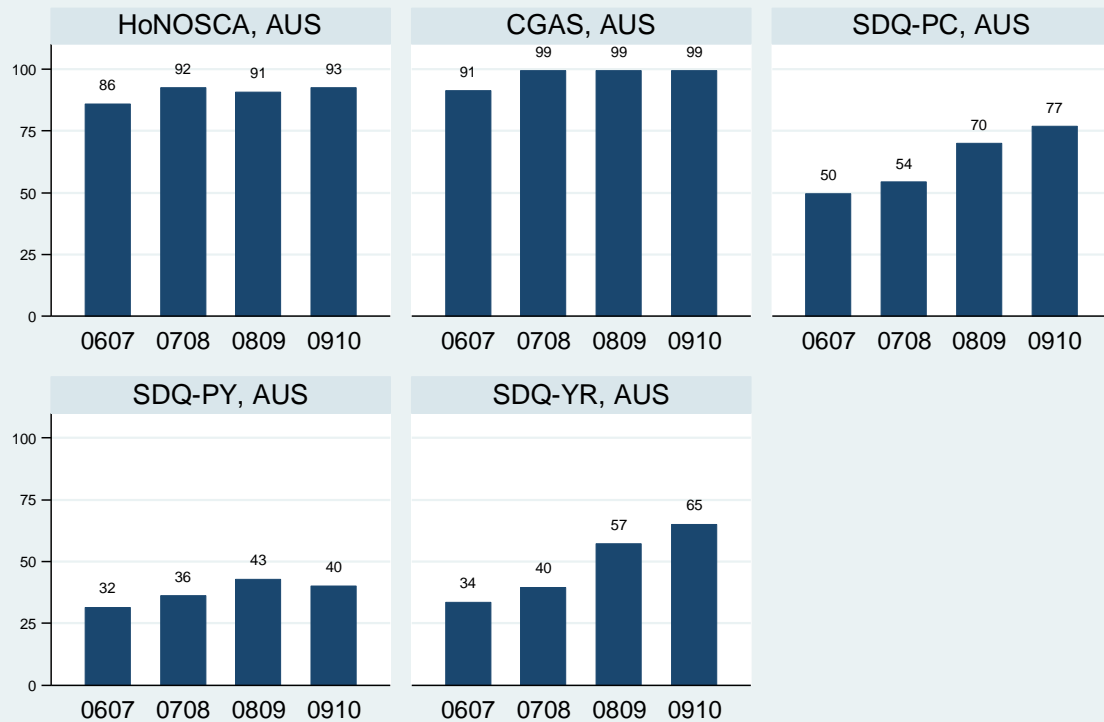
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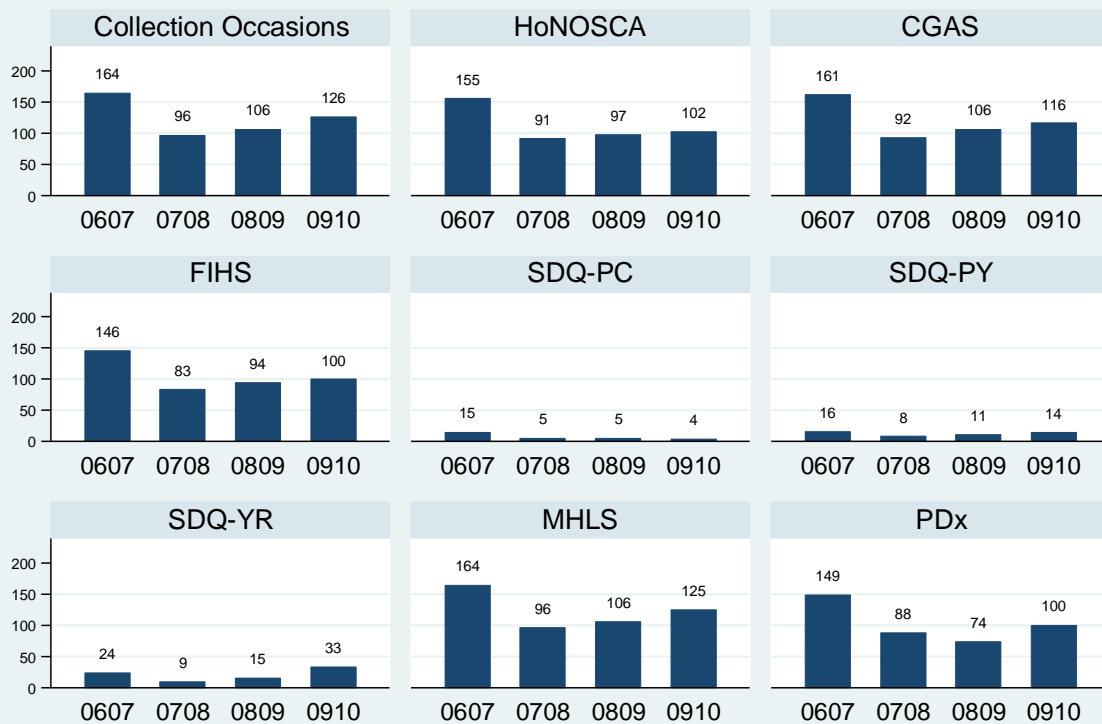
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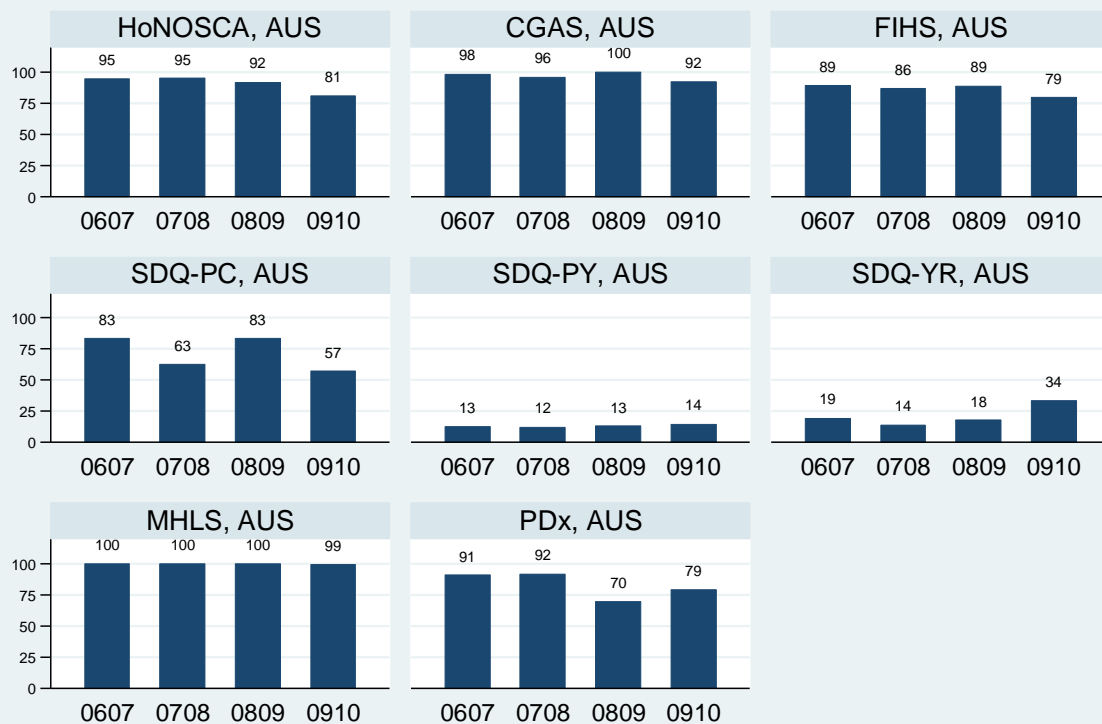
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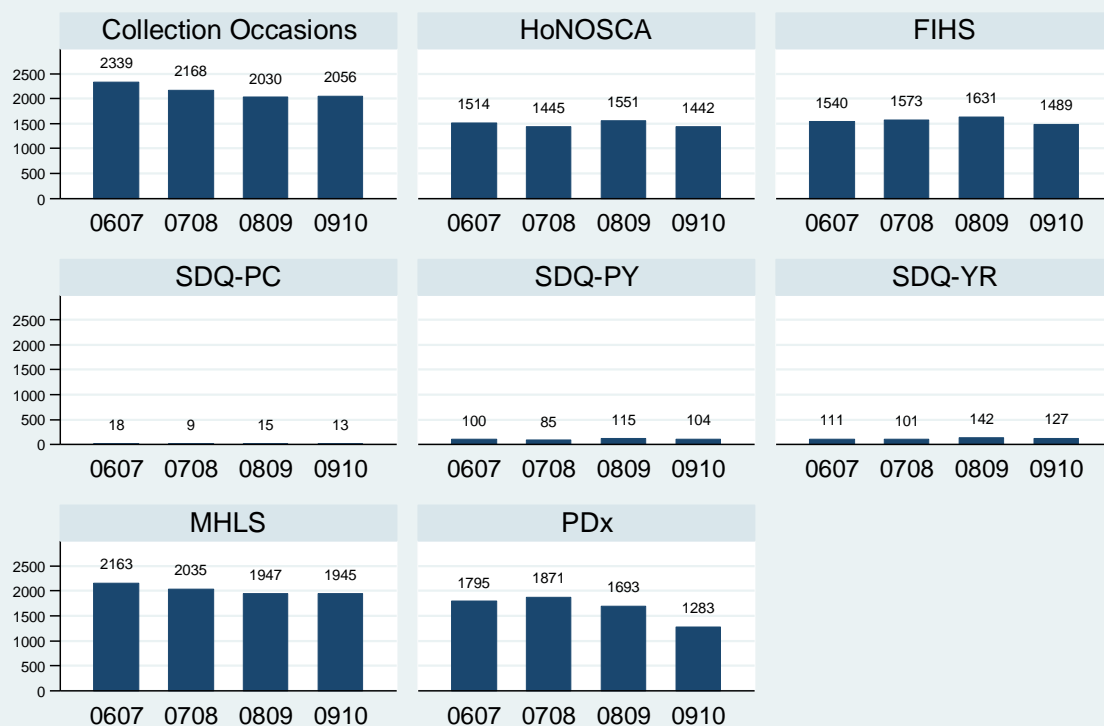
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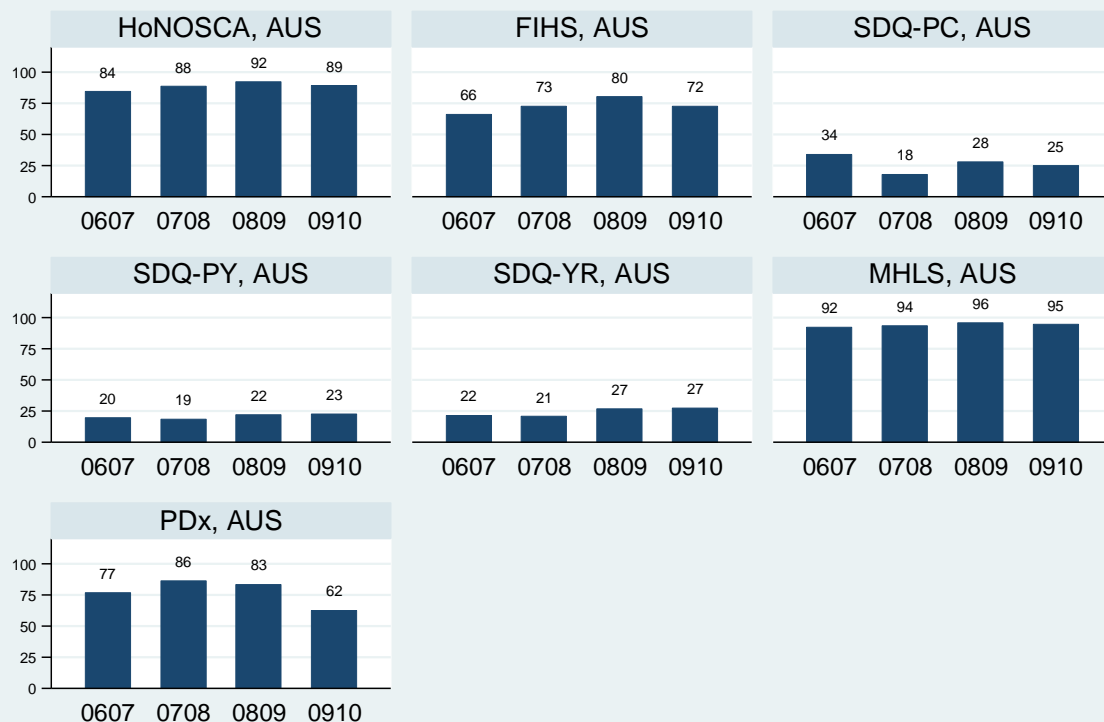
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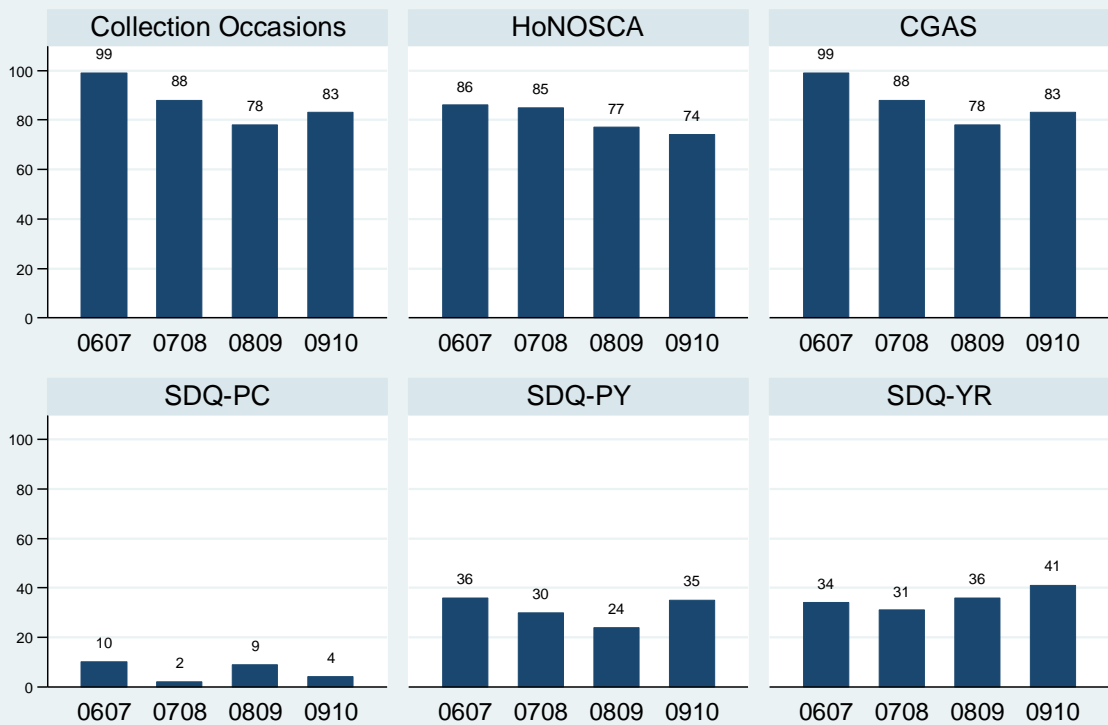
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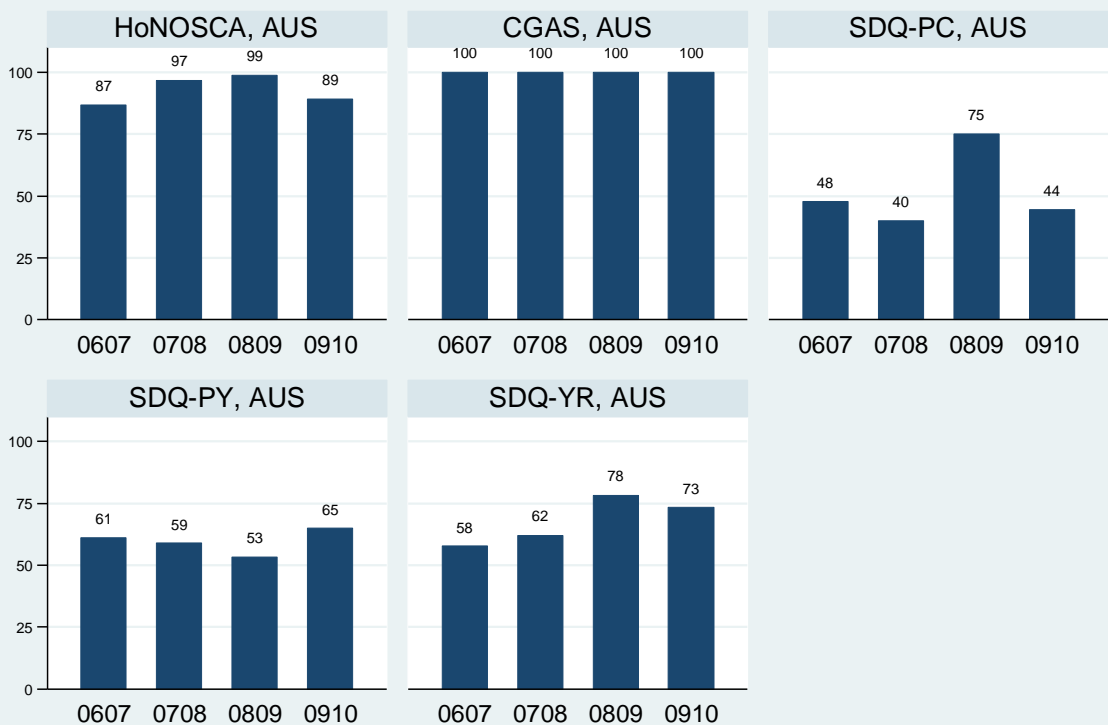
Child & Adolescent - Residential - Admission

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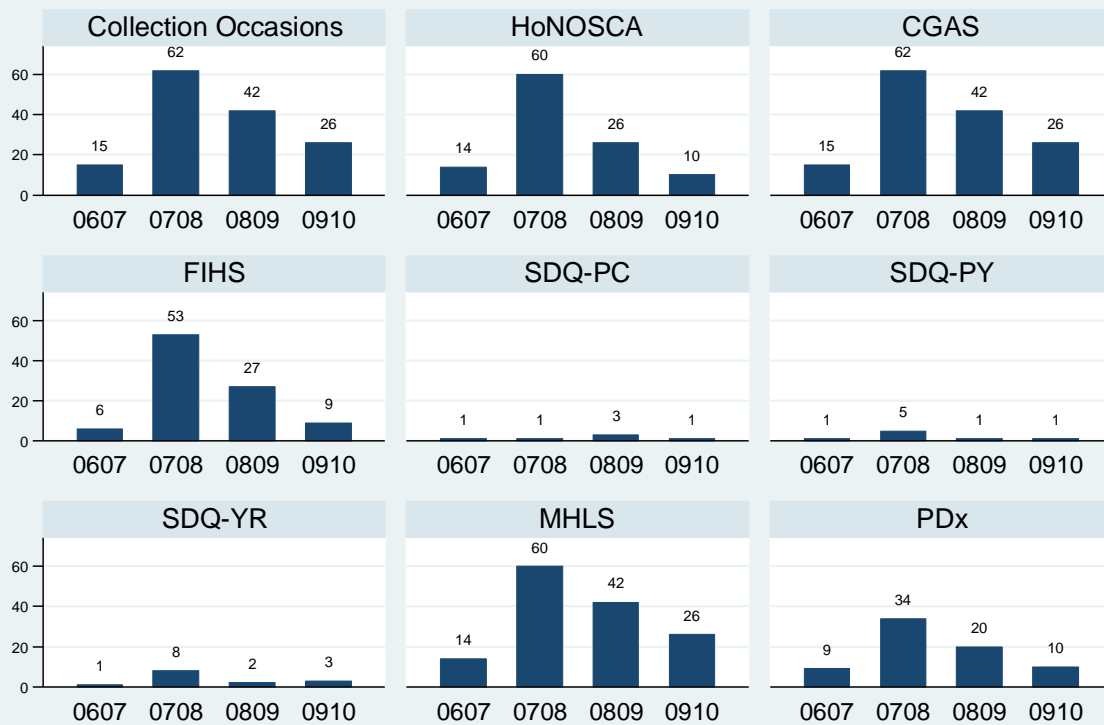
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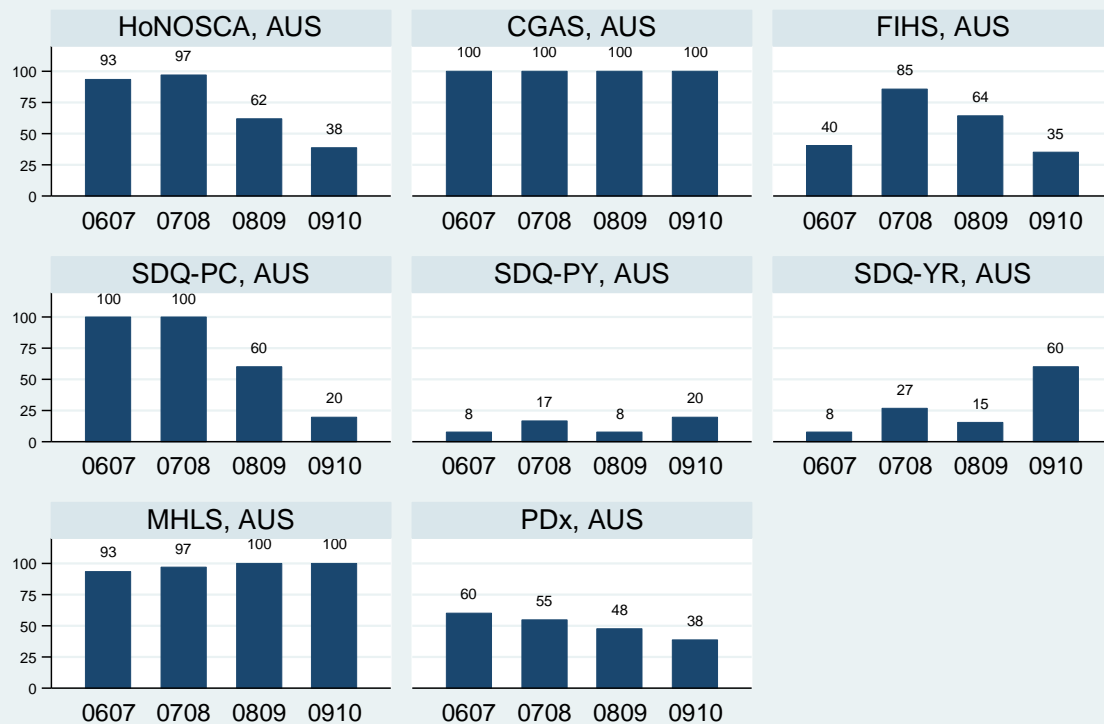
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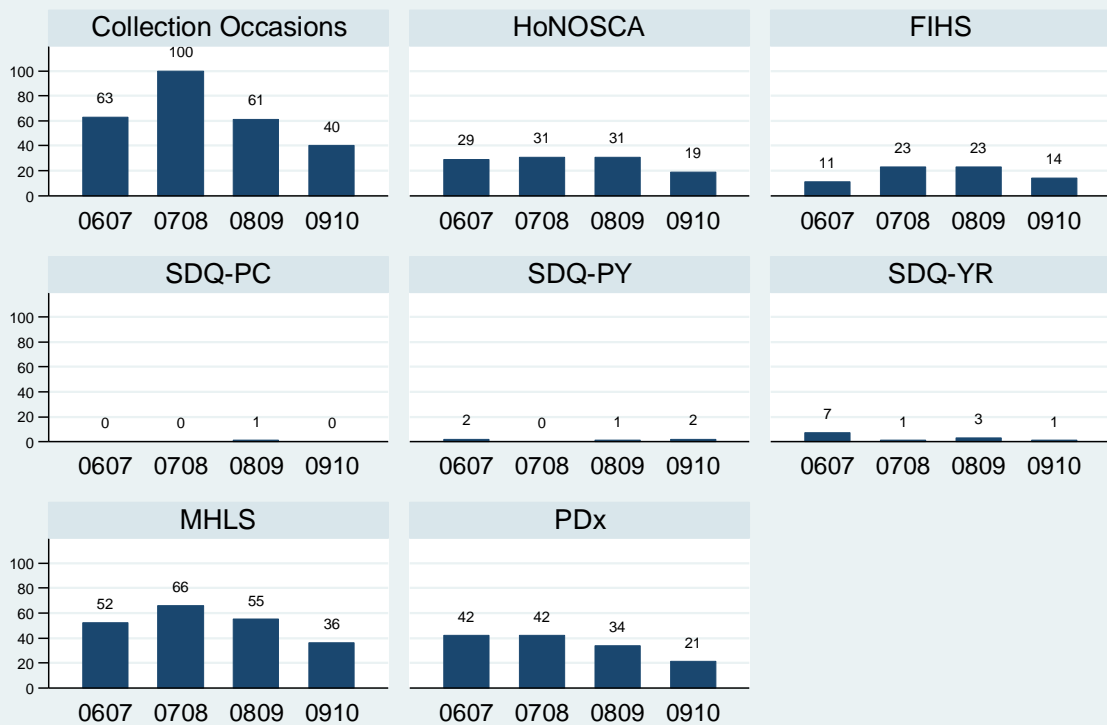
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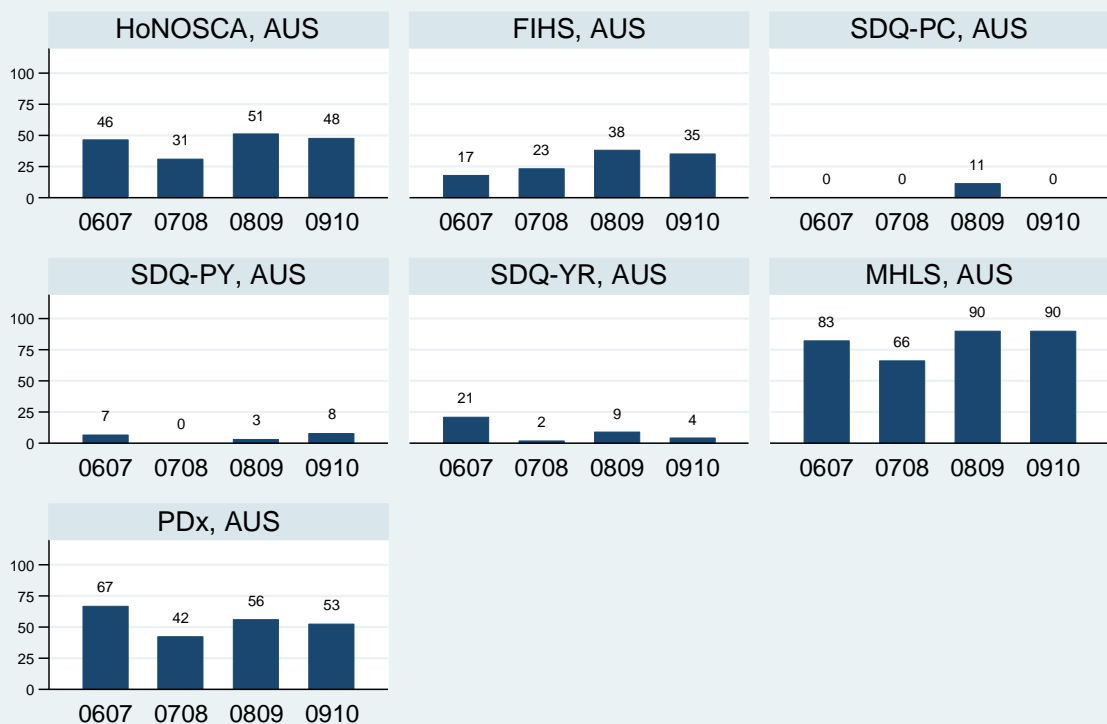
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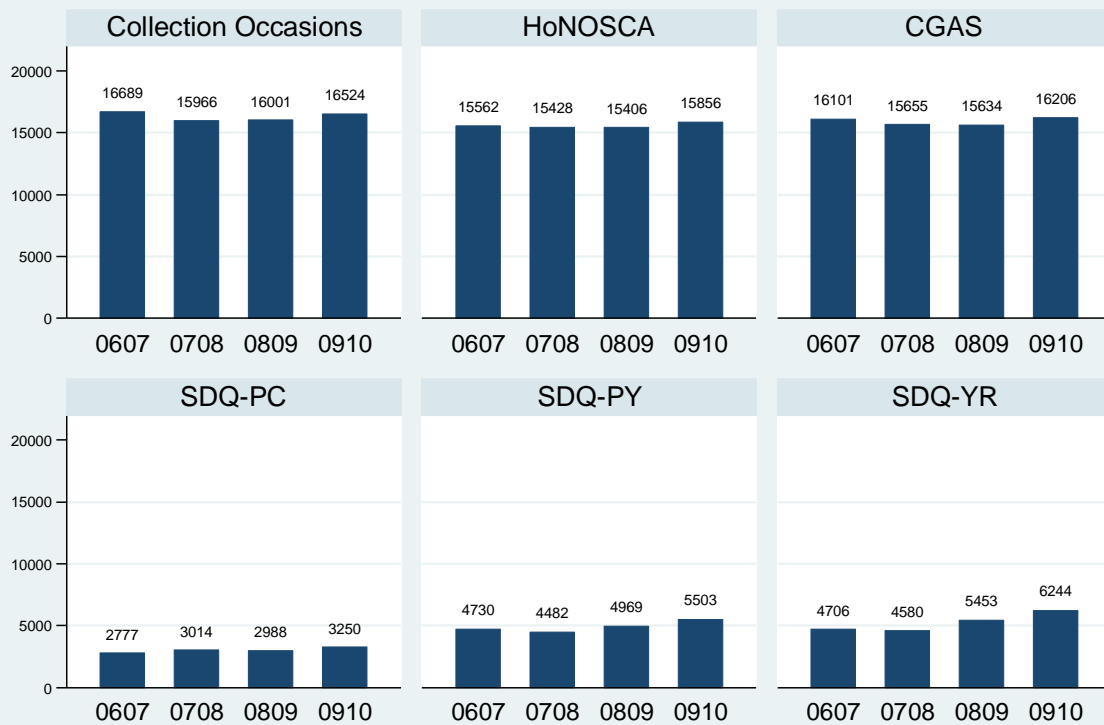
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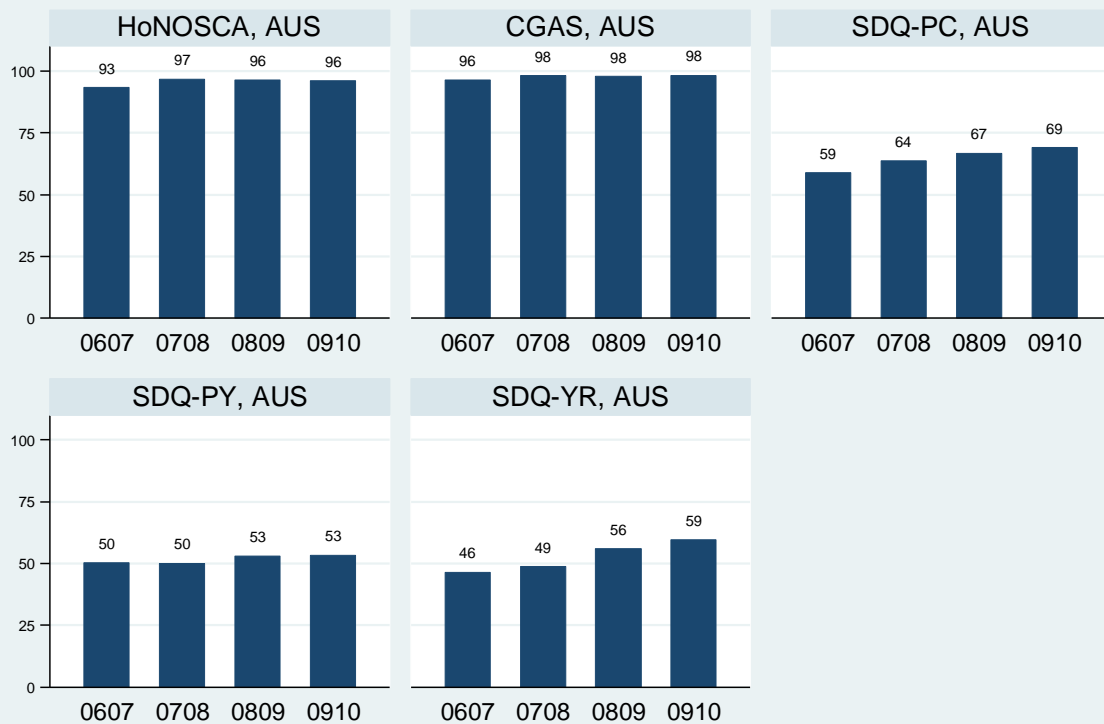
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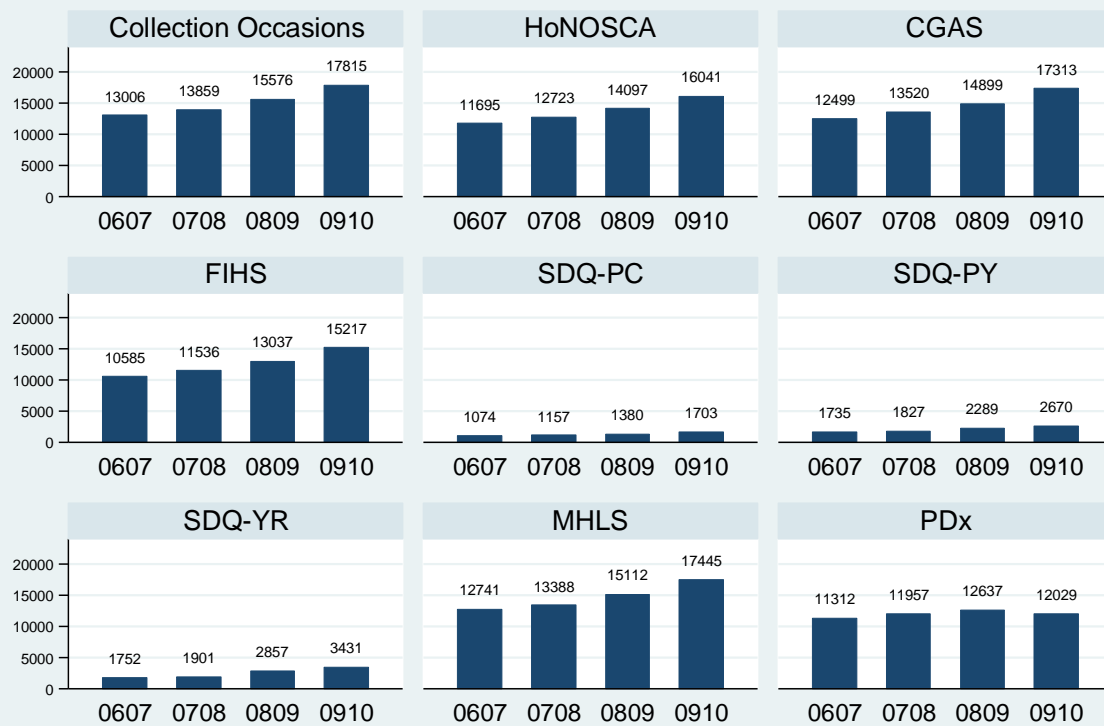
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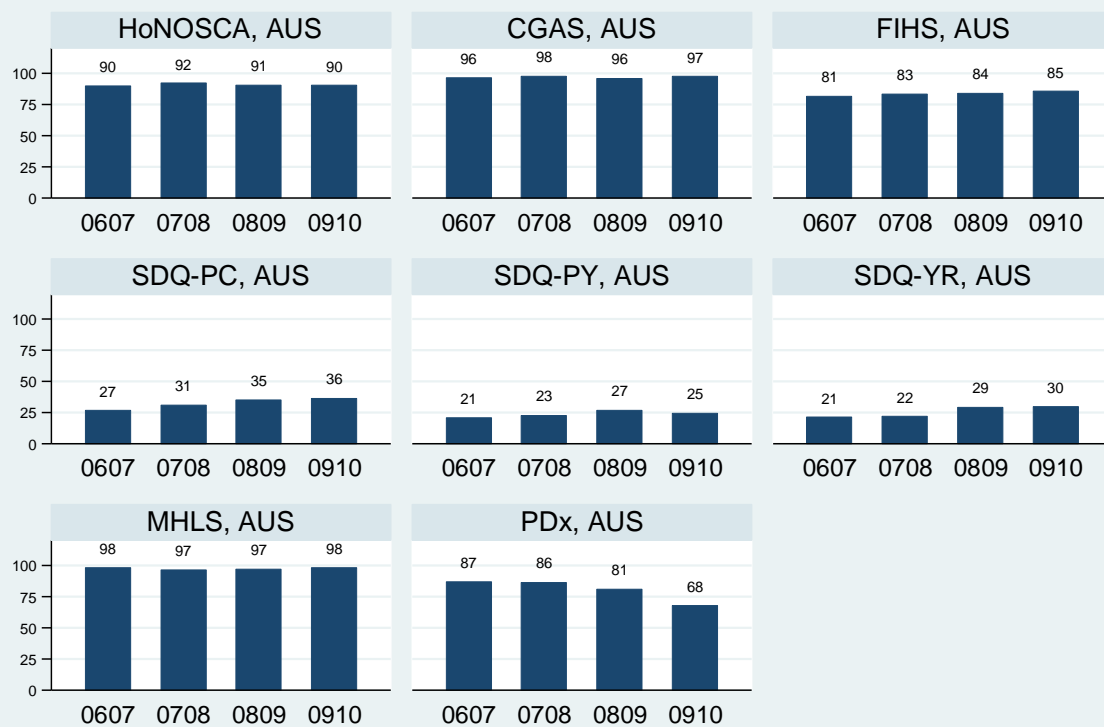
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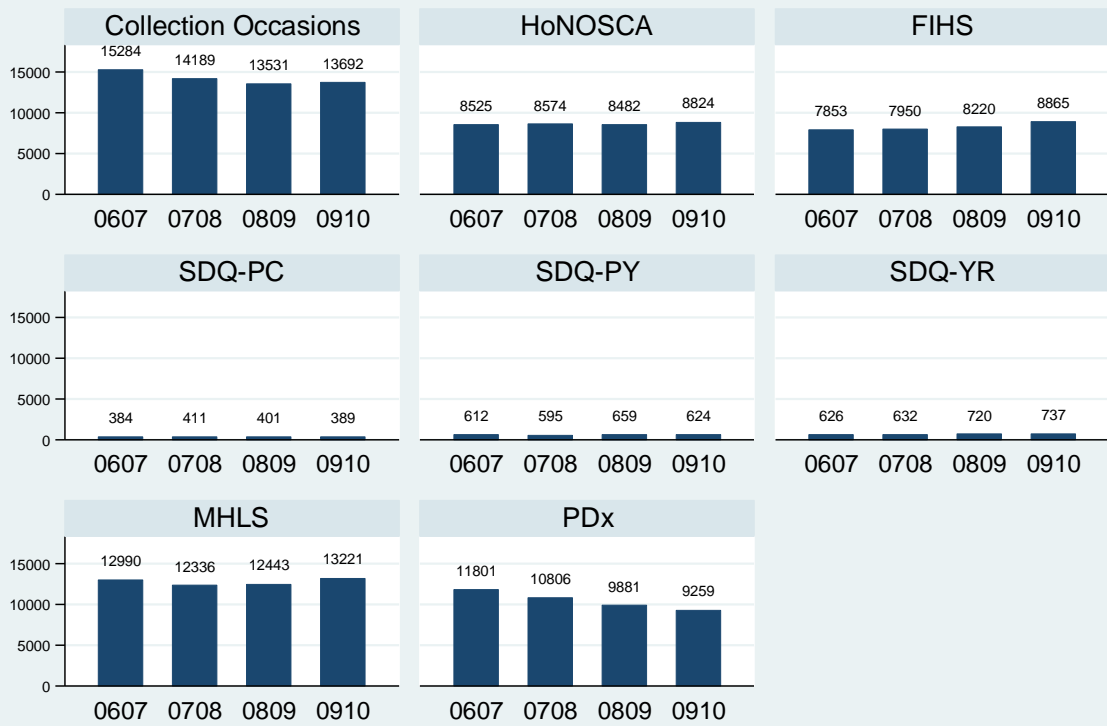
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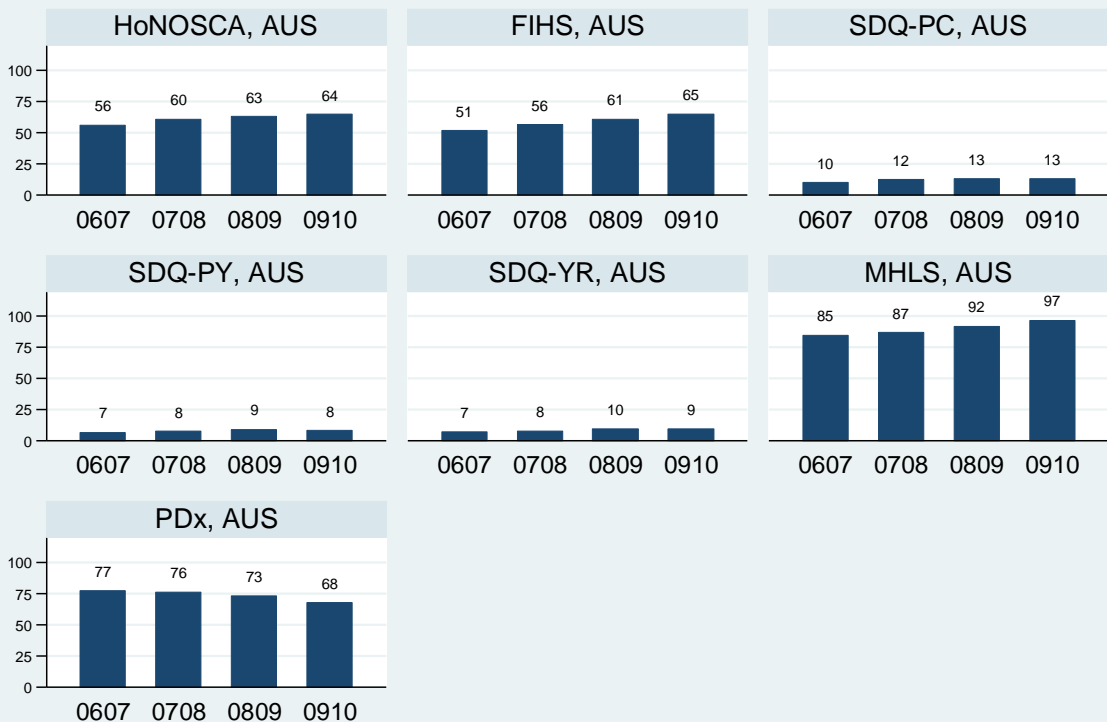
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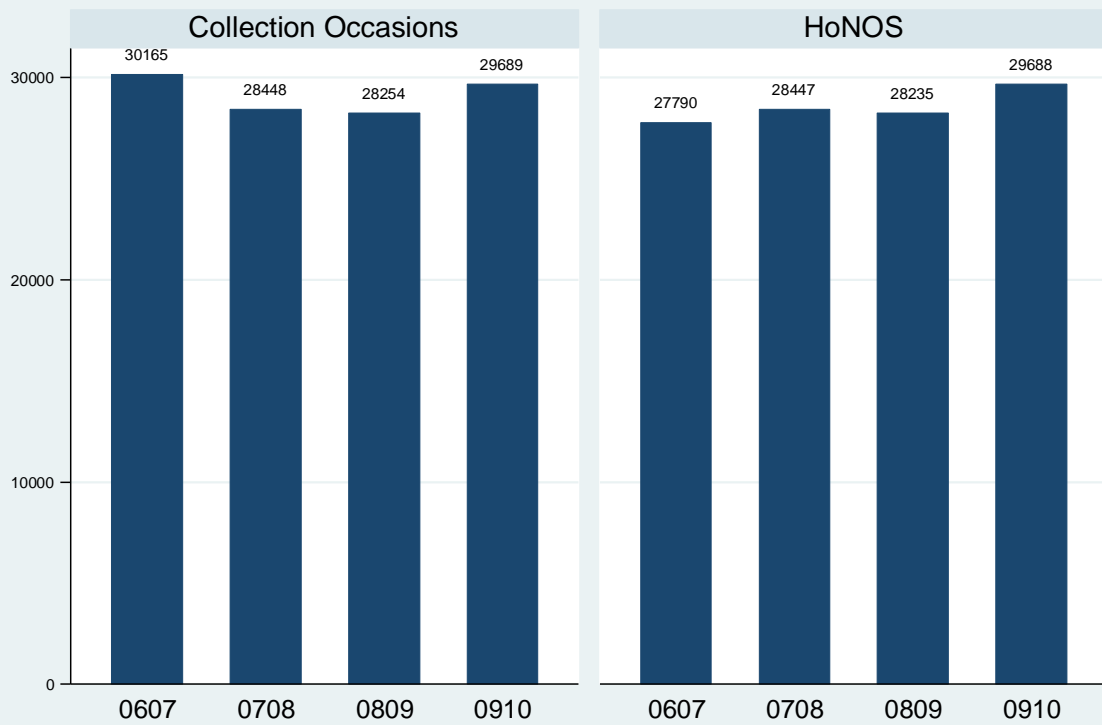
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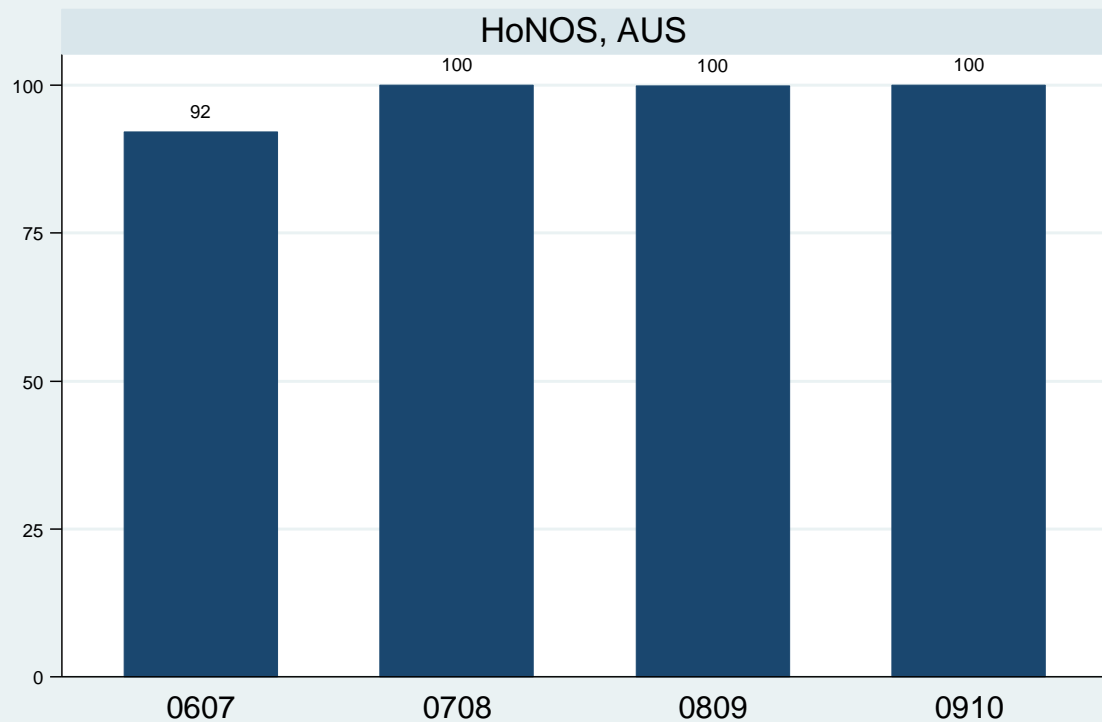
Adult - Inpatient - Admission

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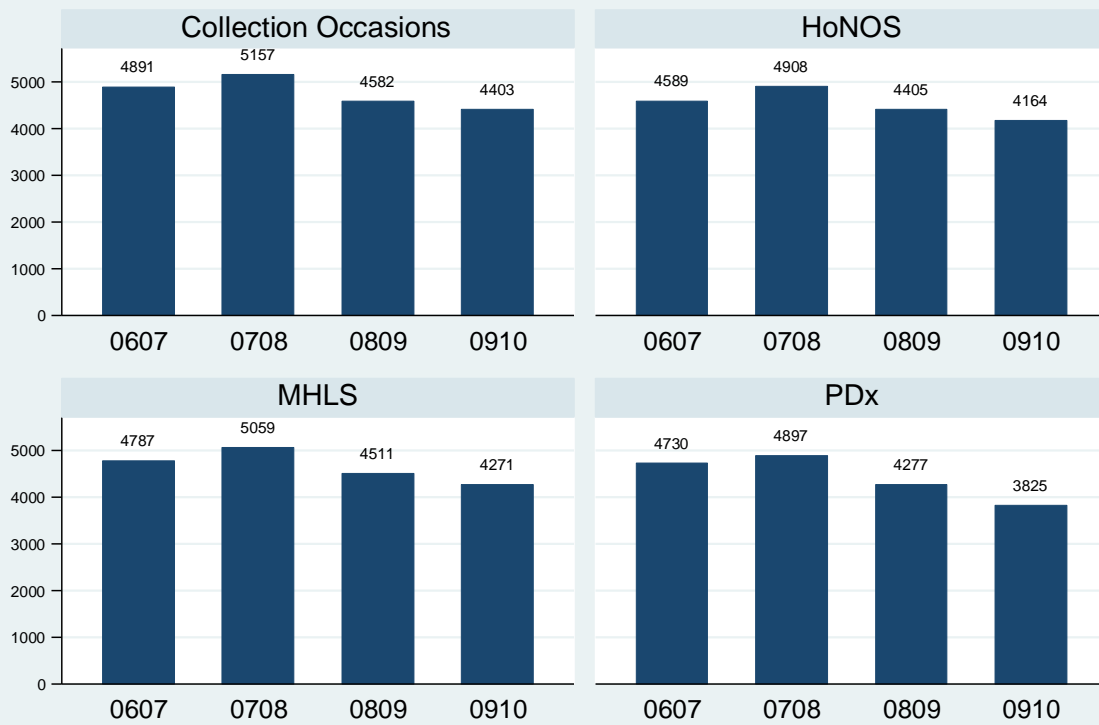
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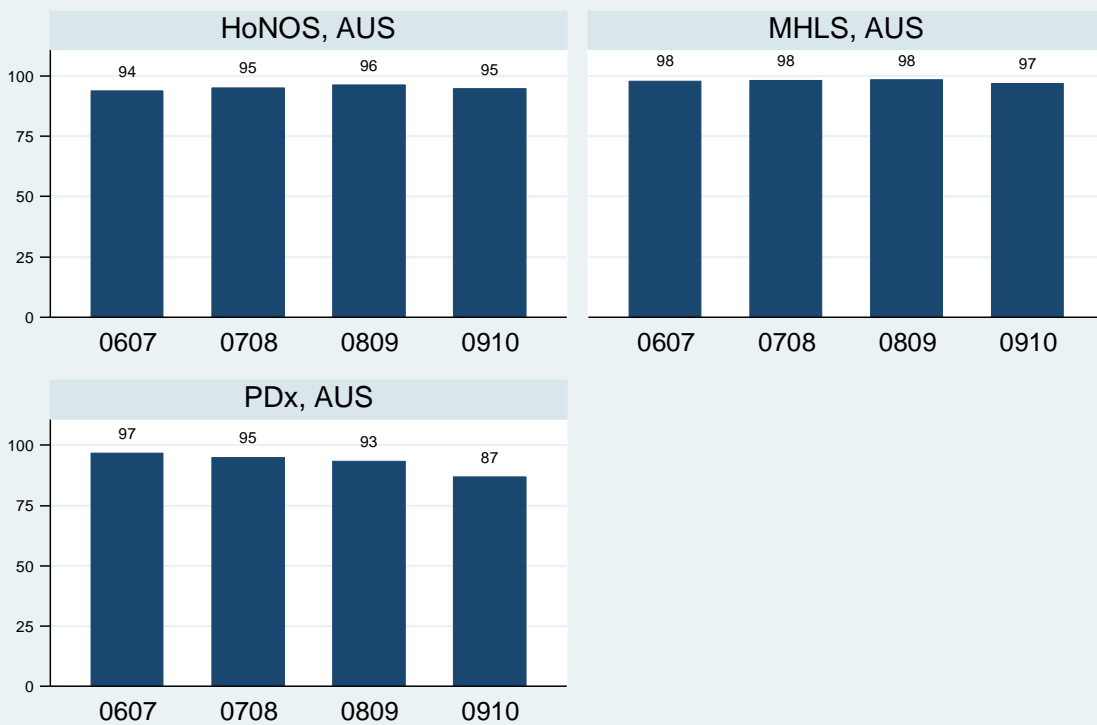
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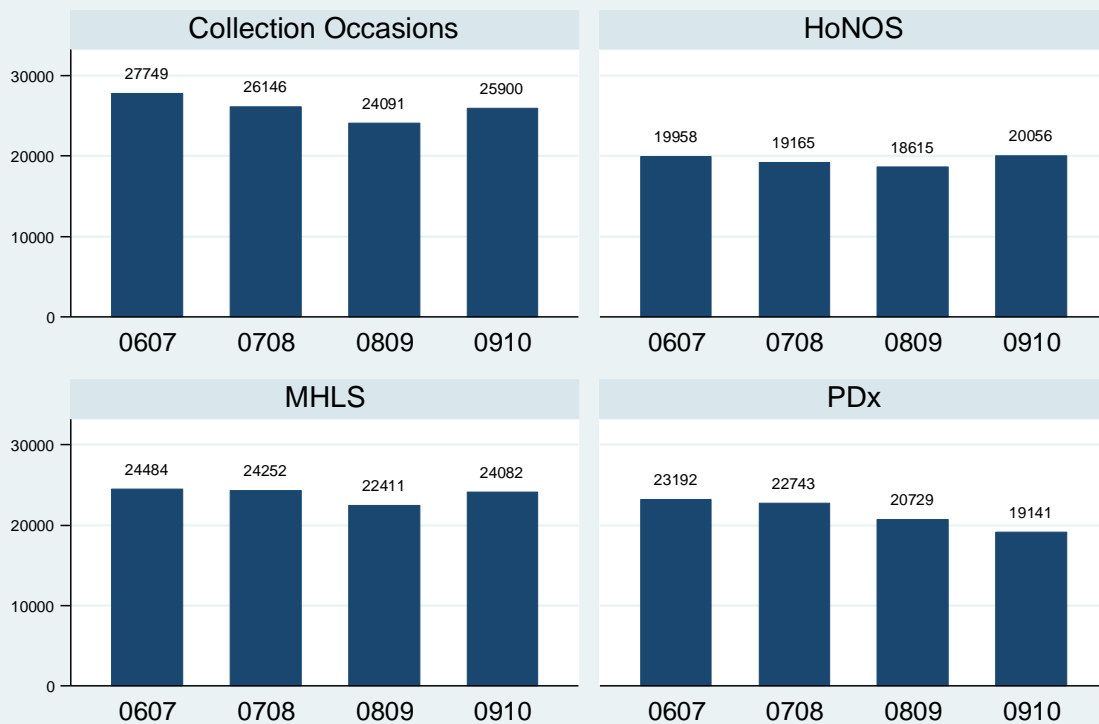
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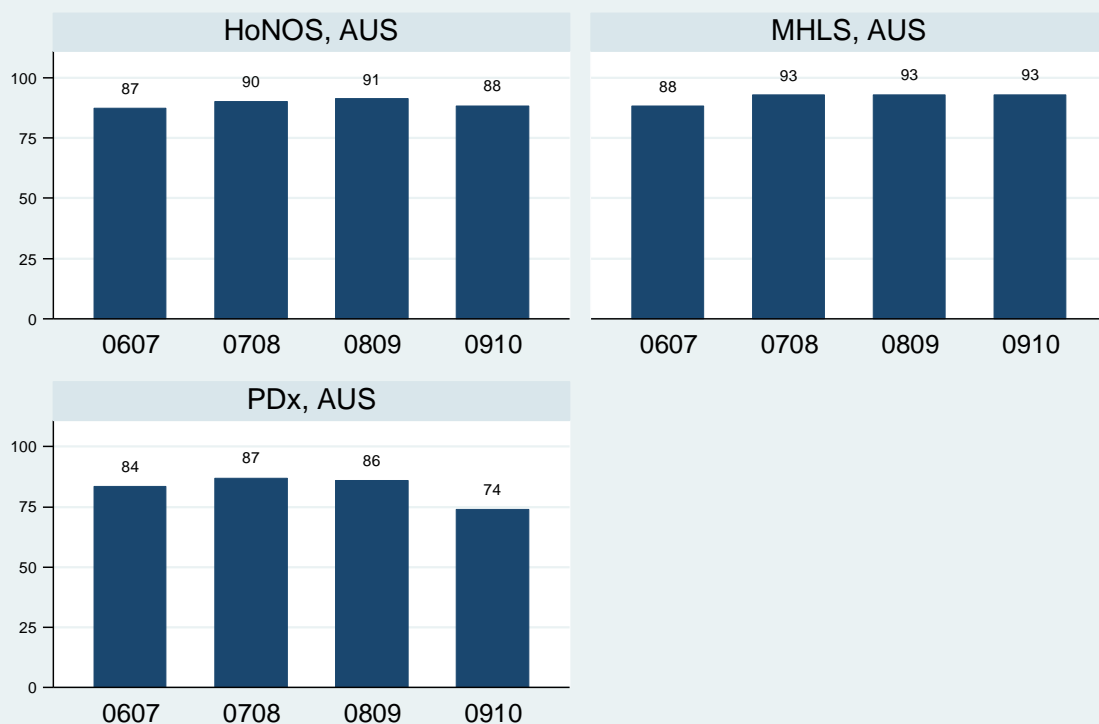
Adult - Inpatient - Discharge

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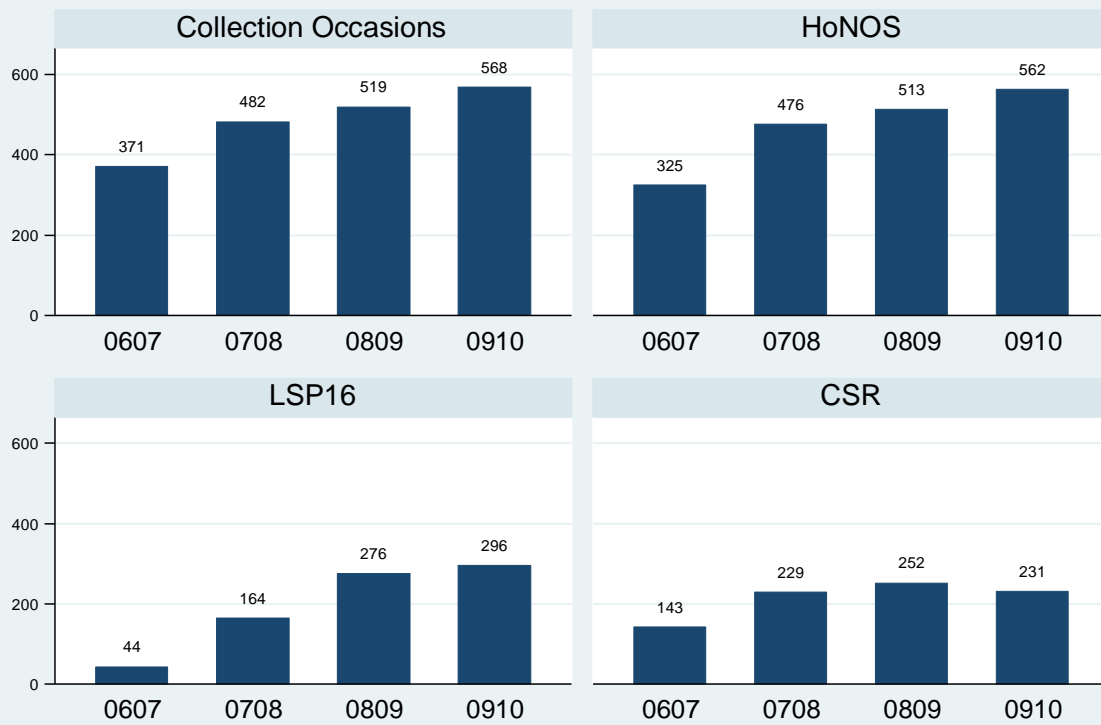
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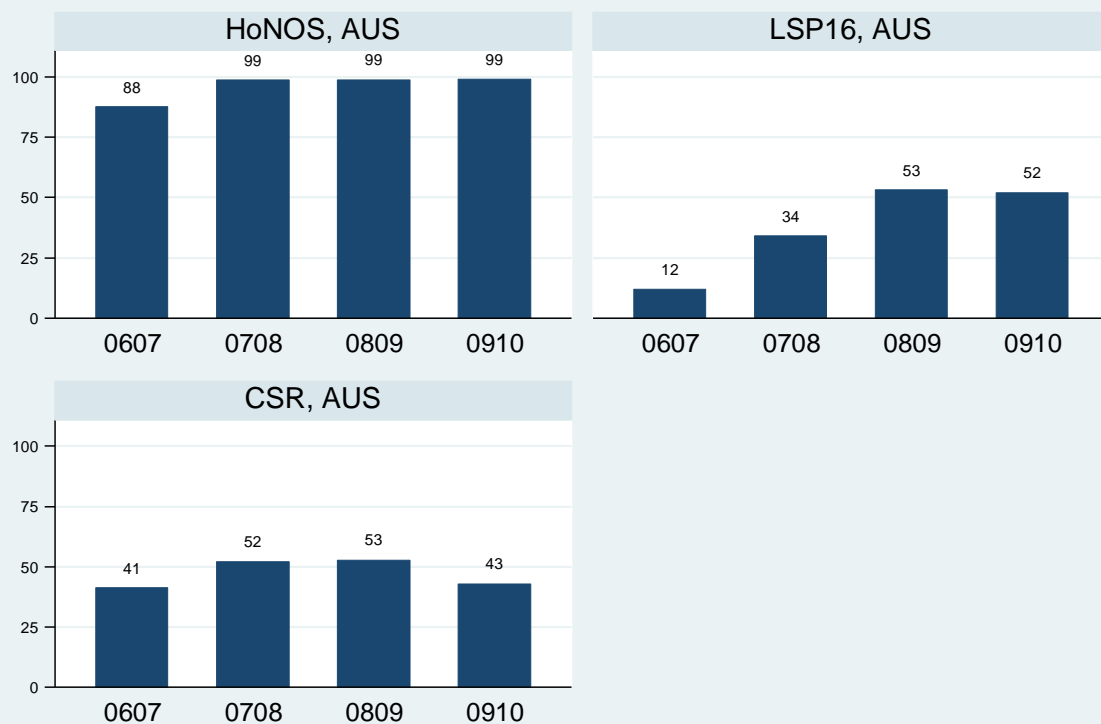
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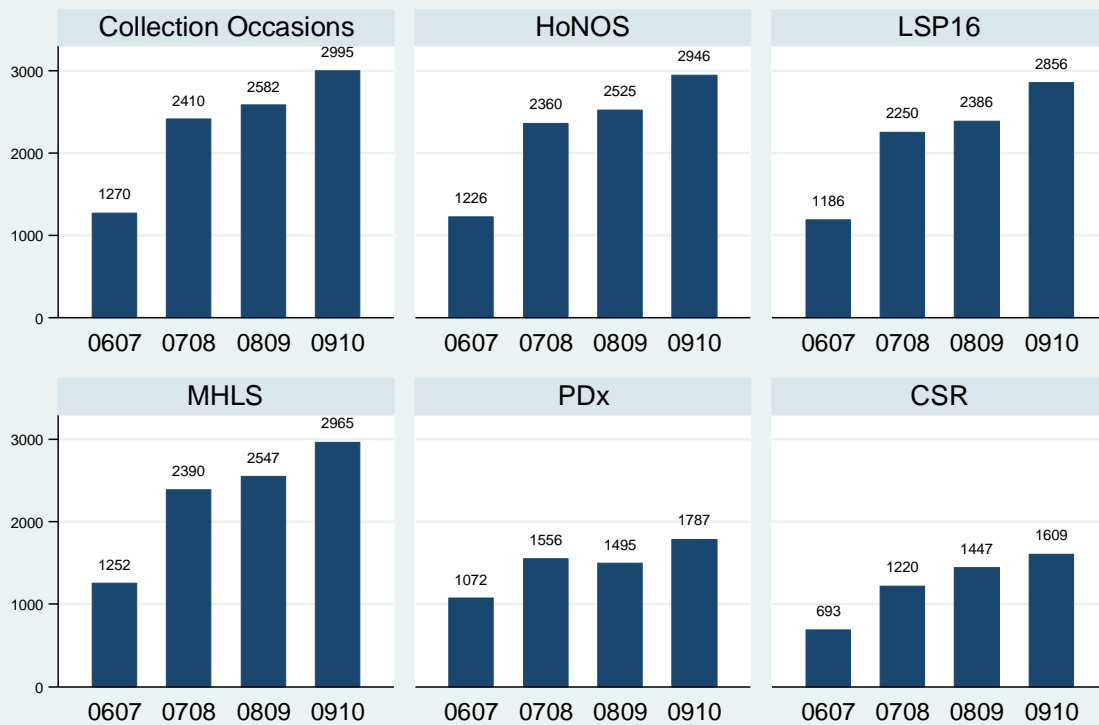
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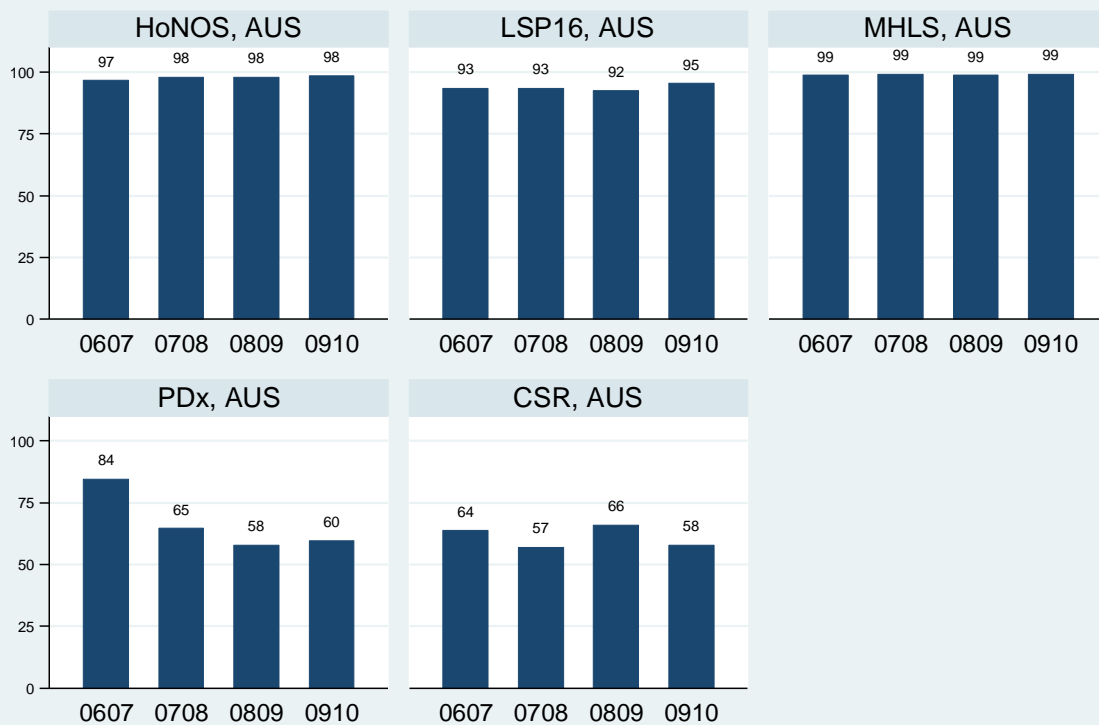
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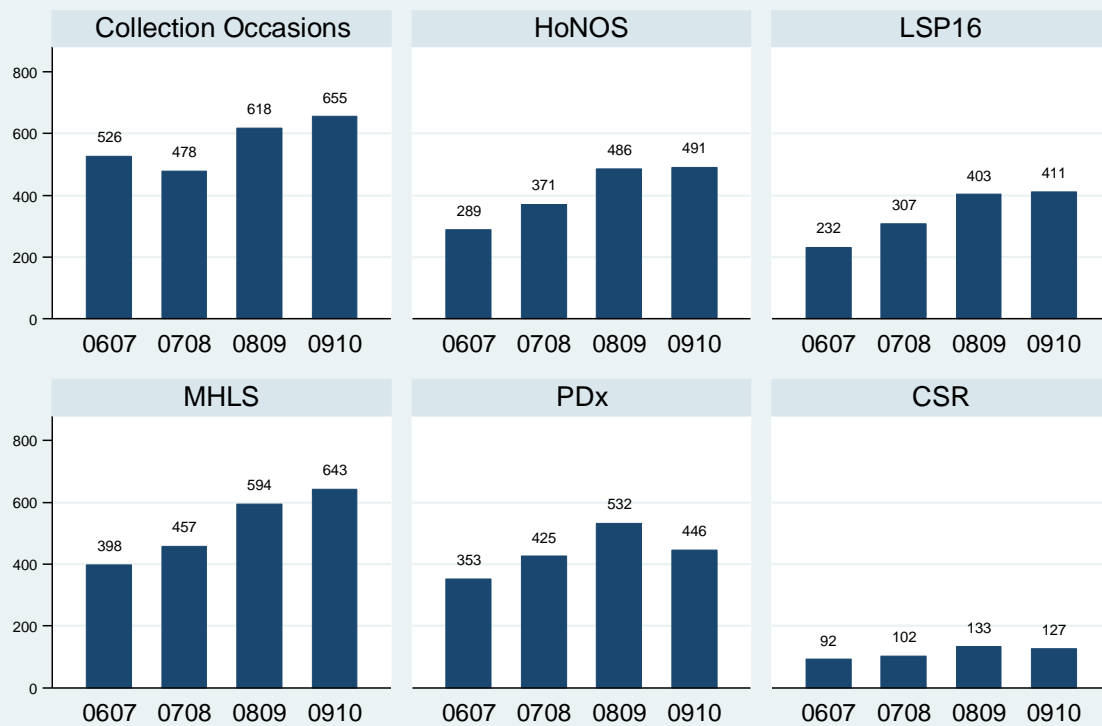
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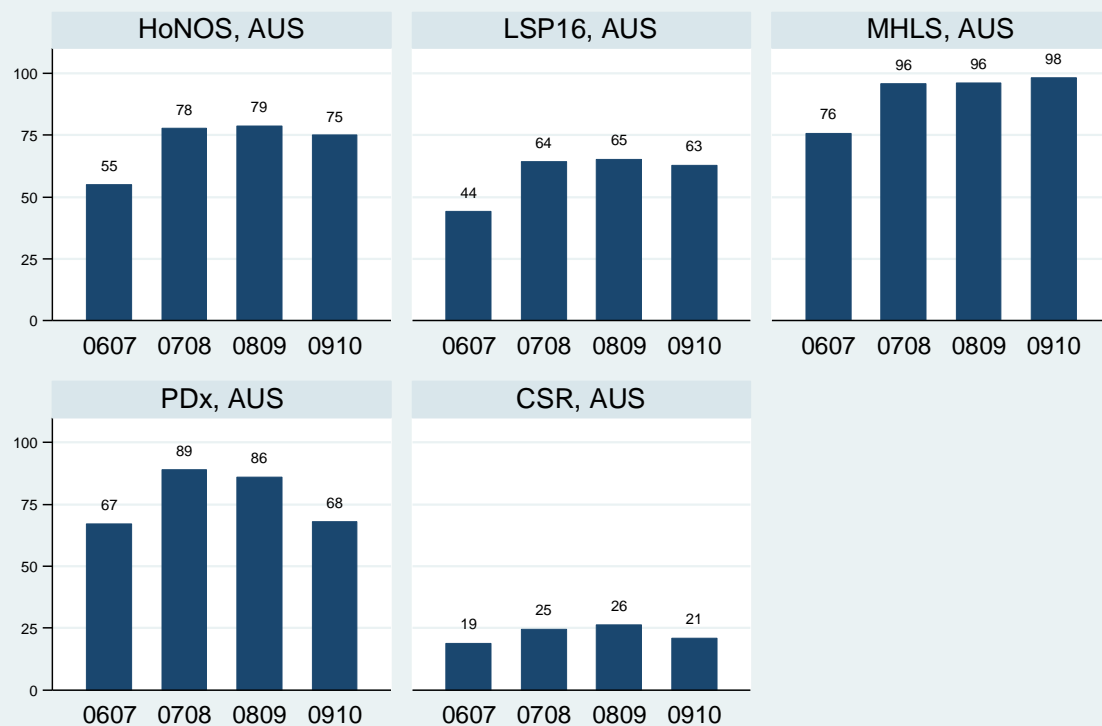
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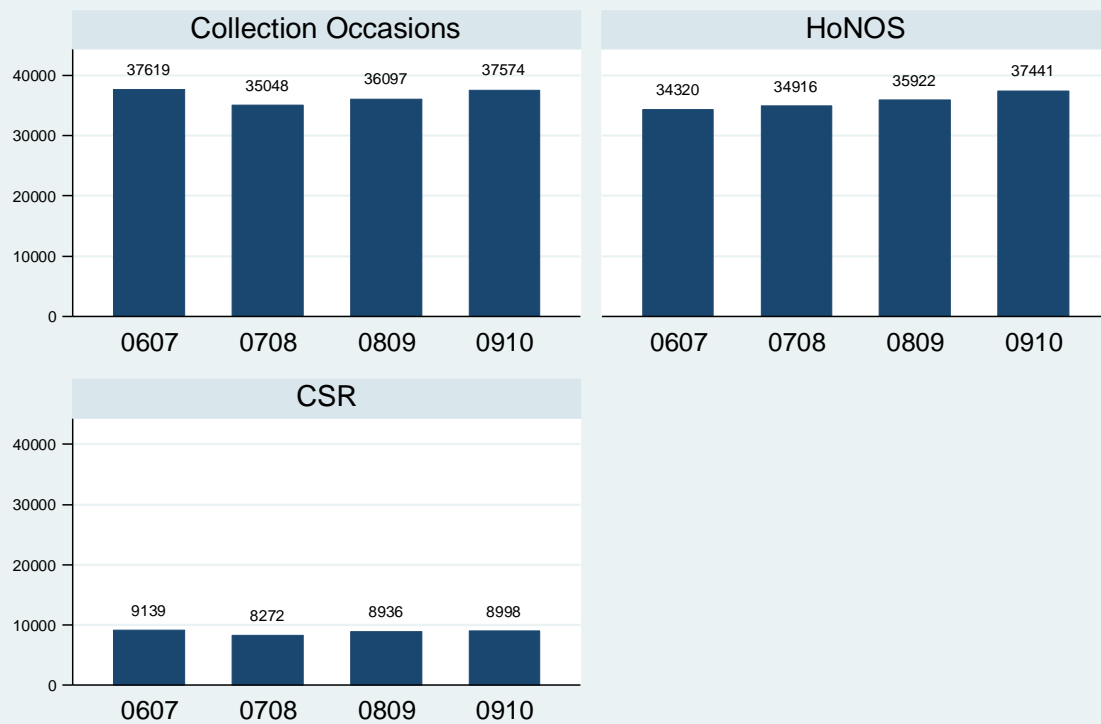
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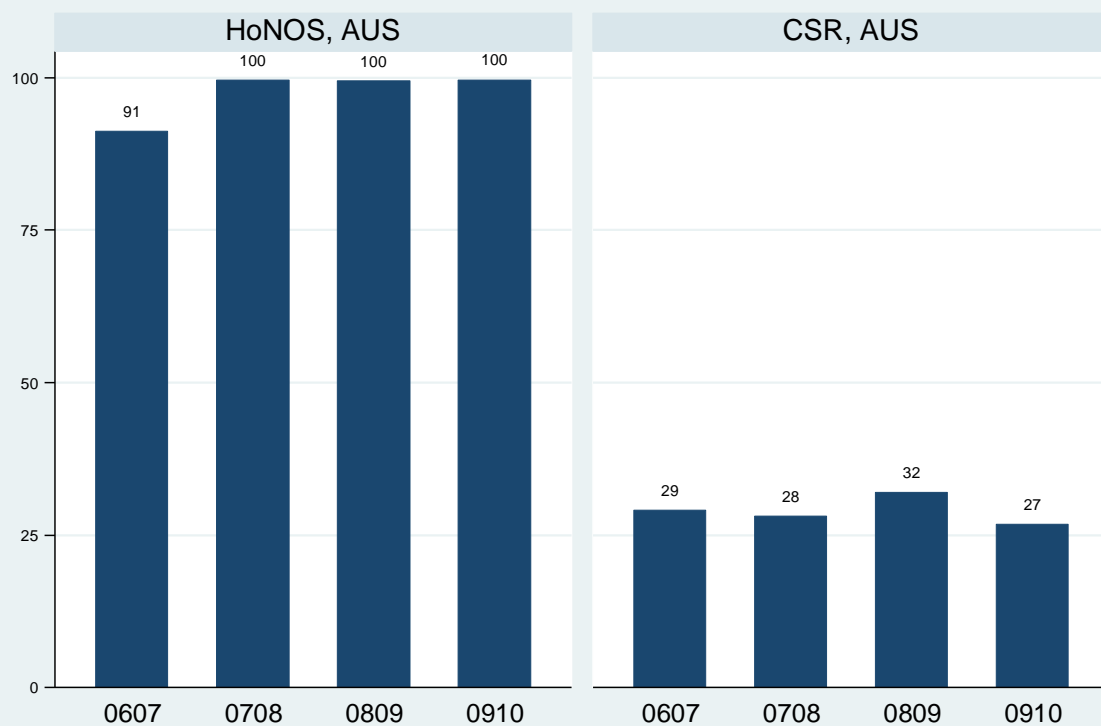
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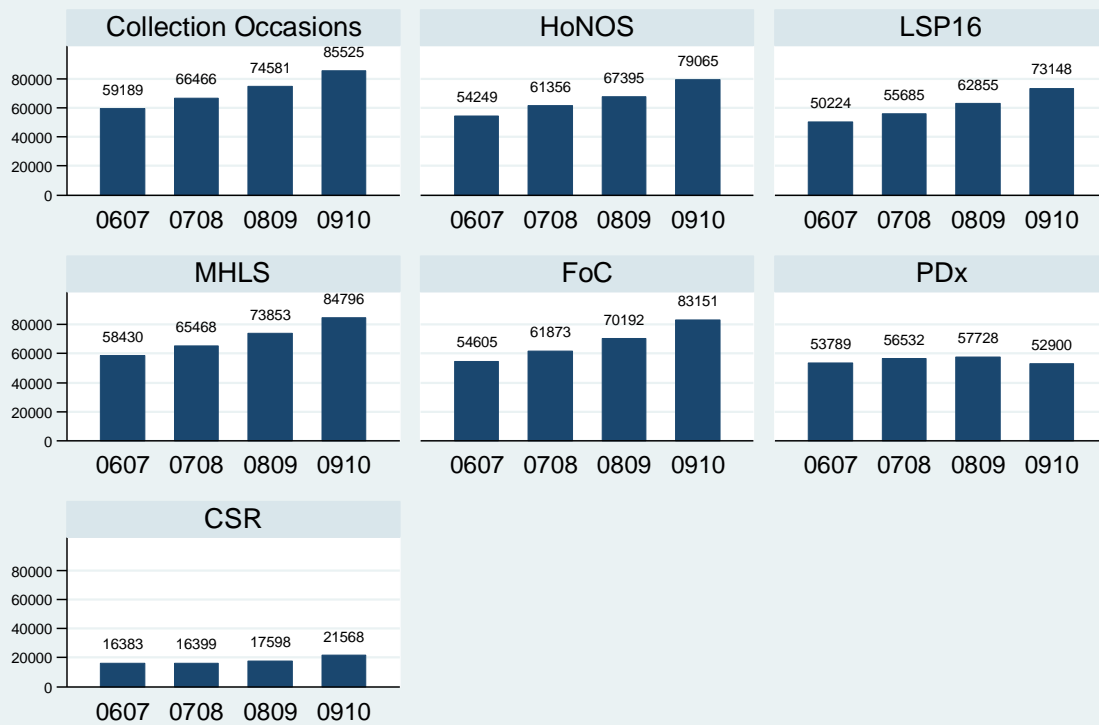
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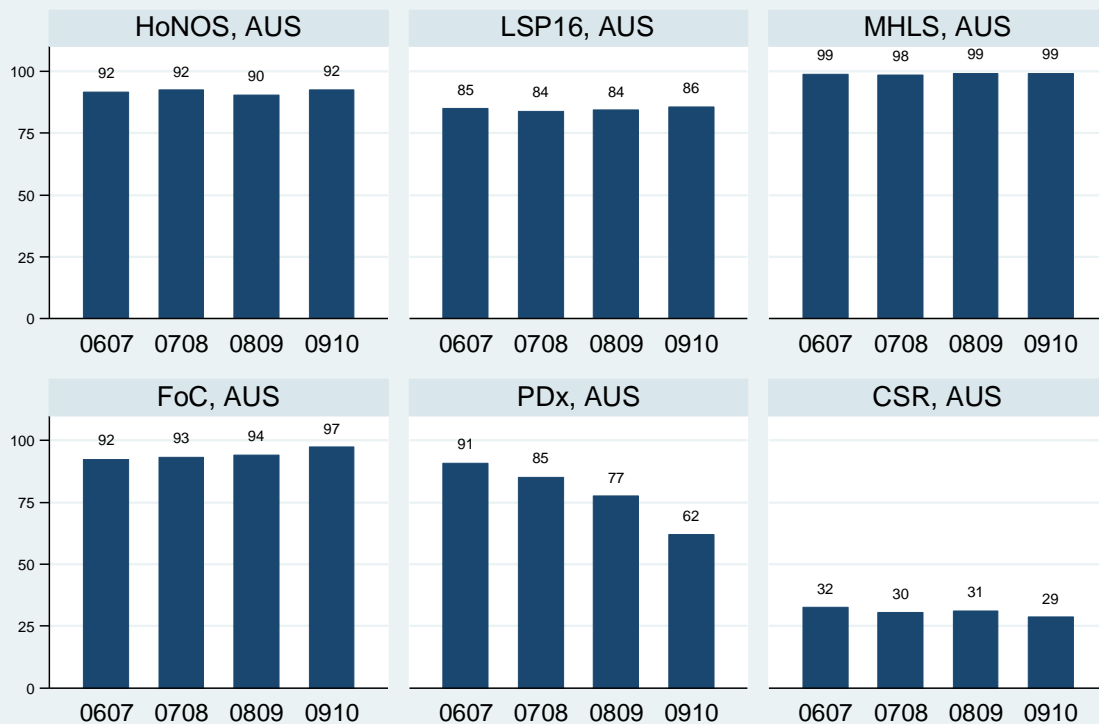
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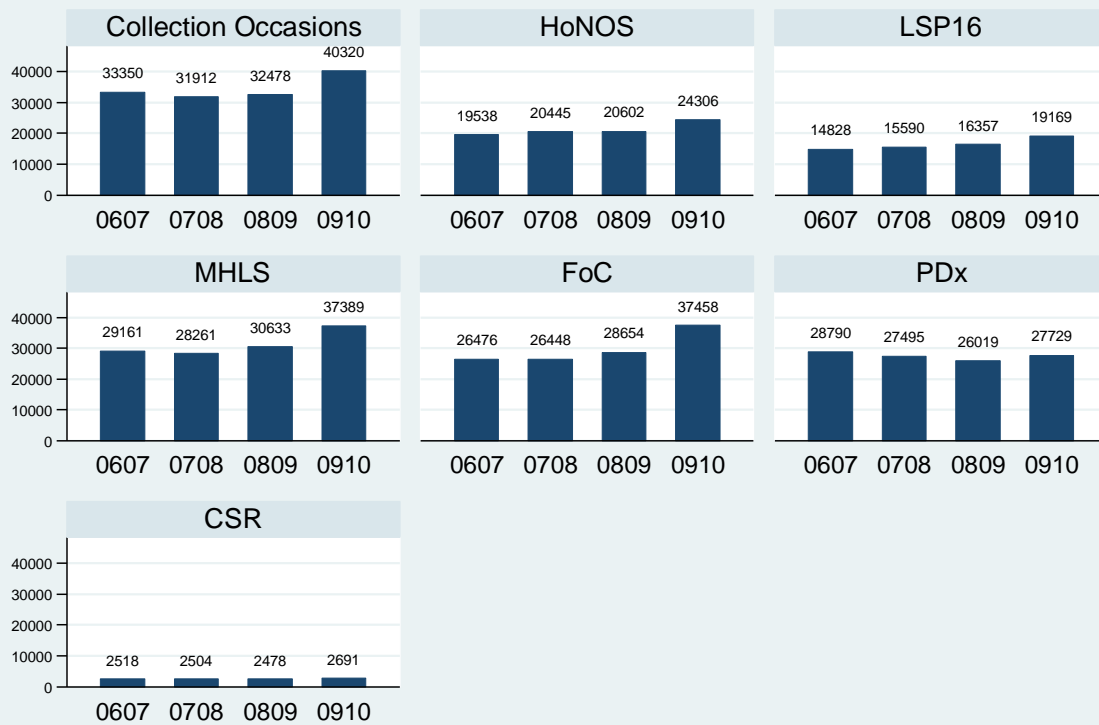
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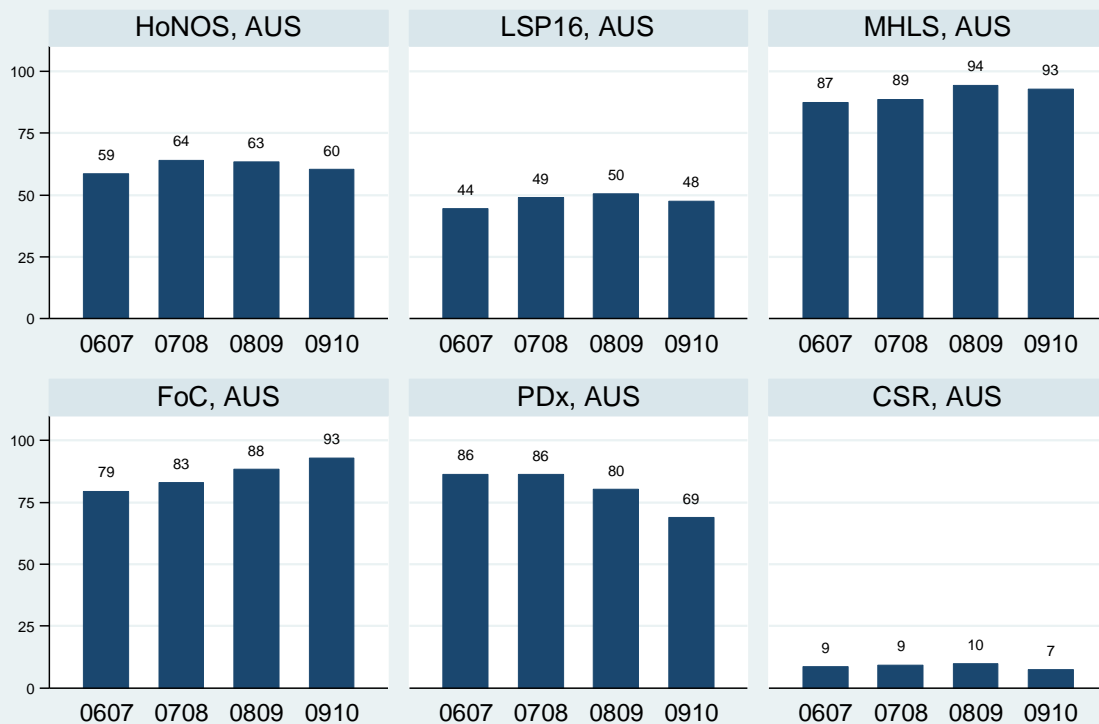
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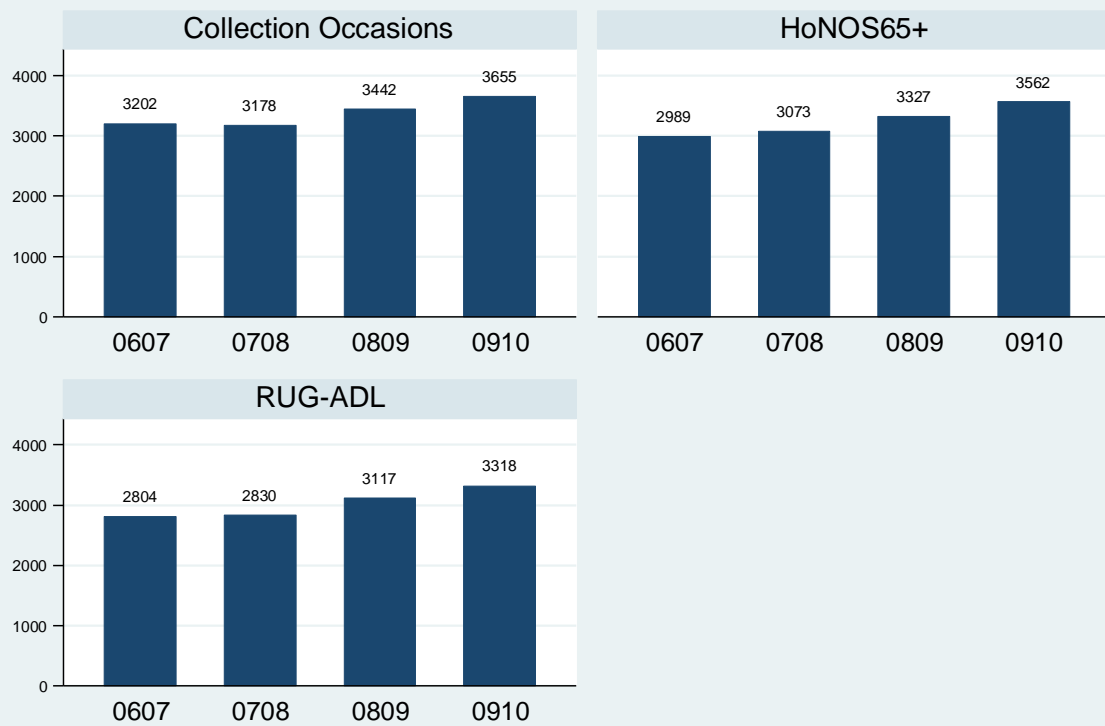
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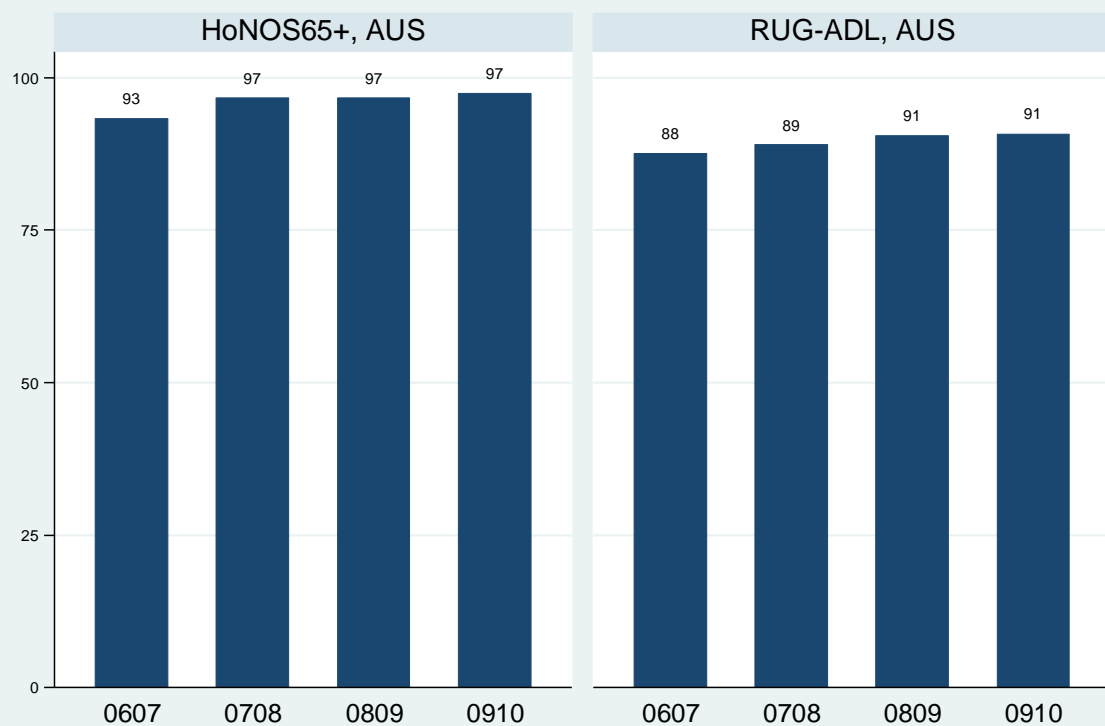
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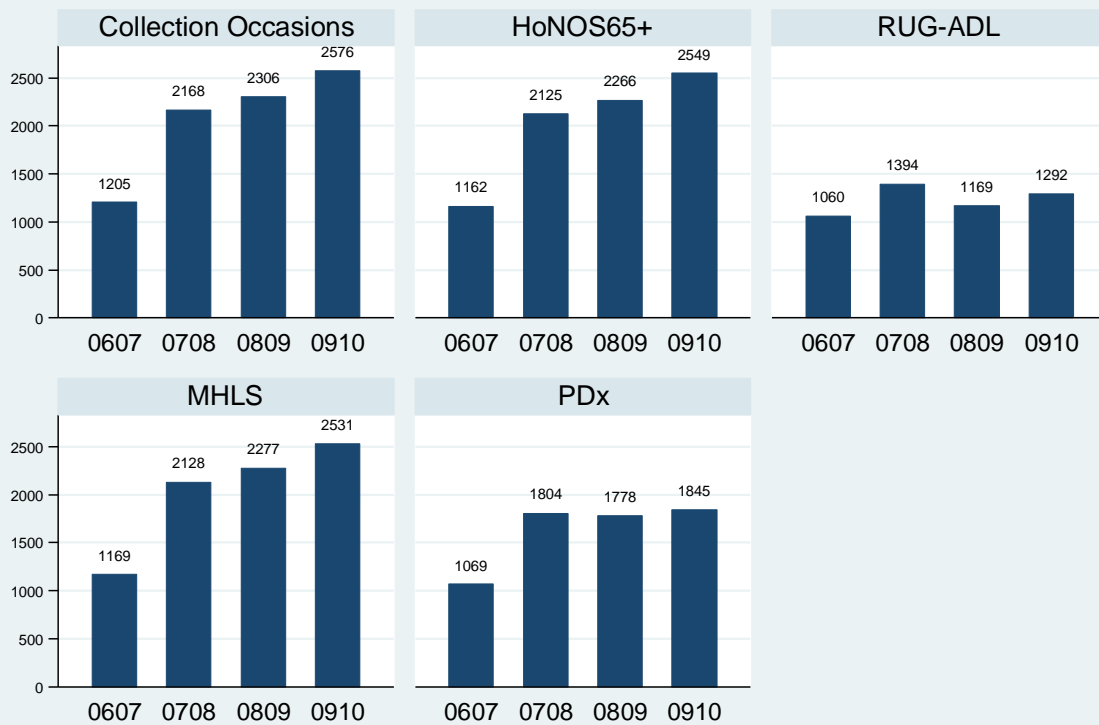
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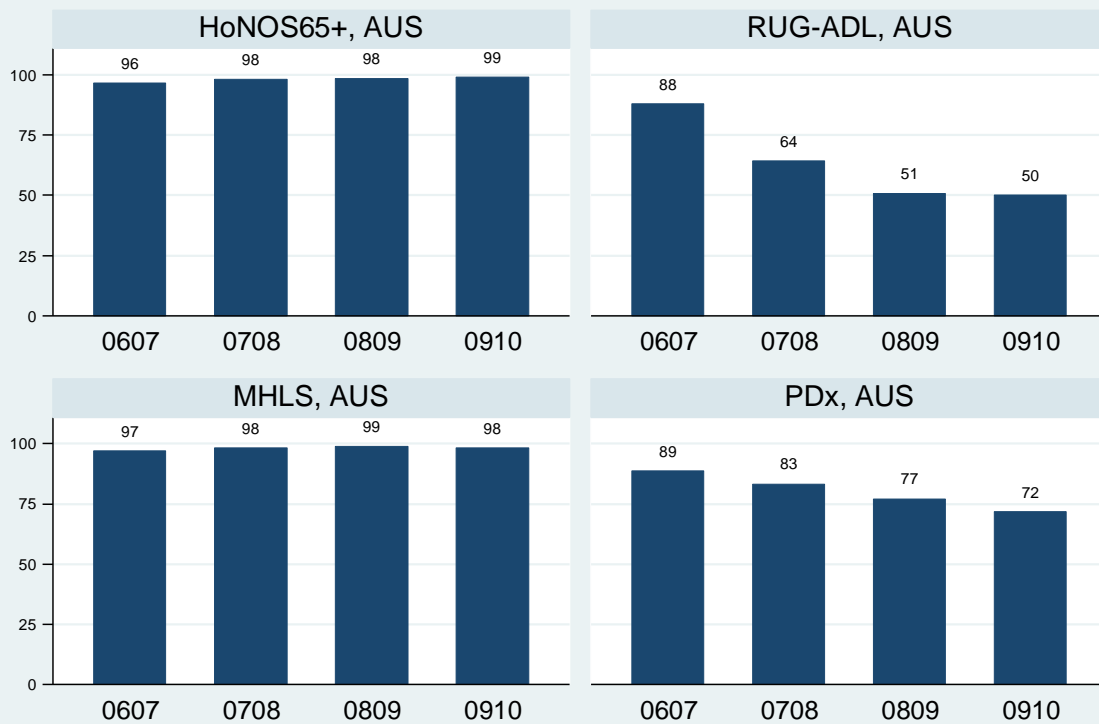
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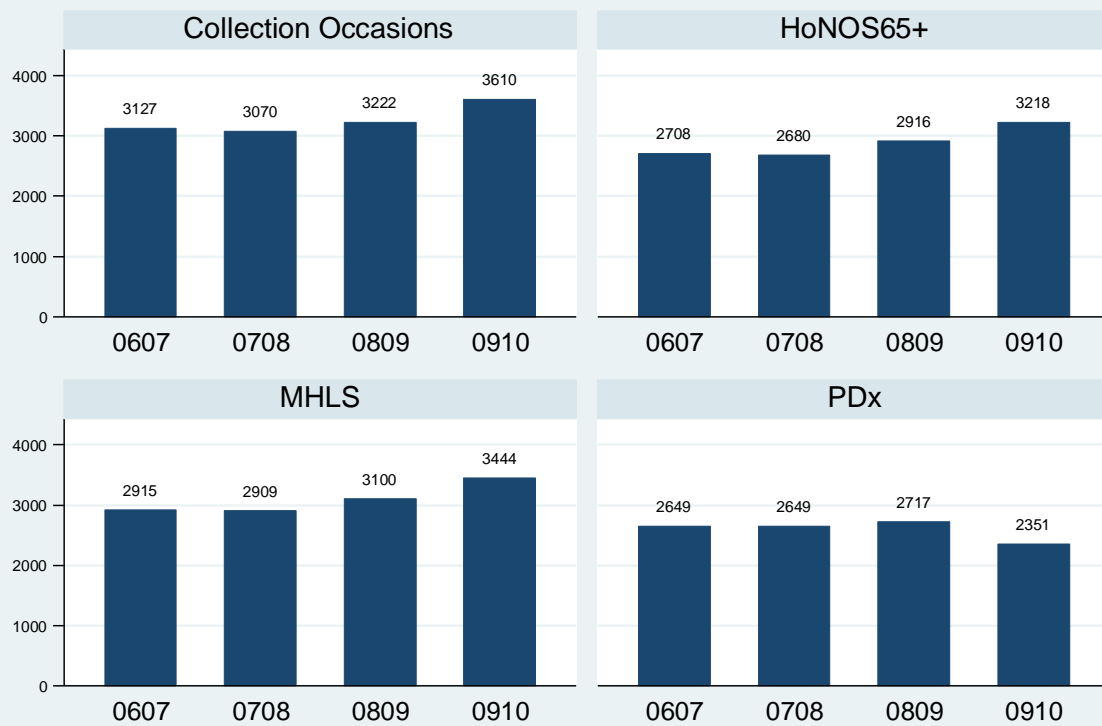
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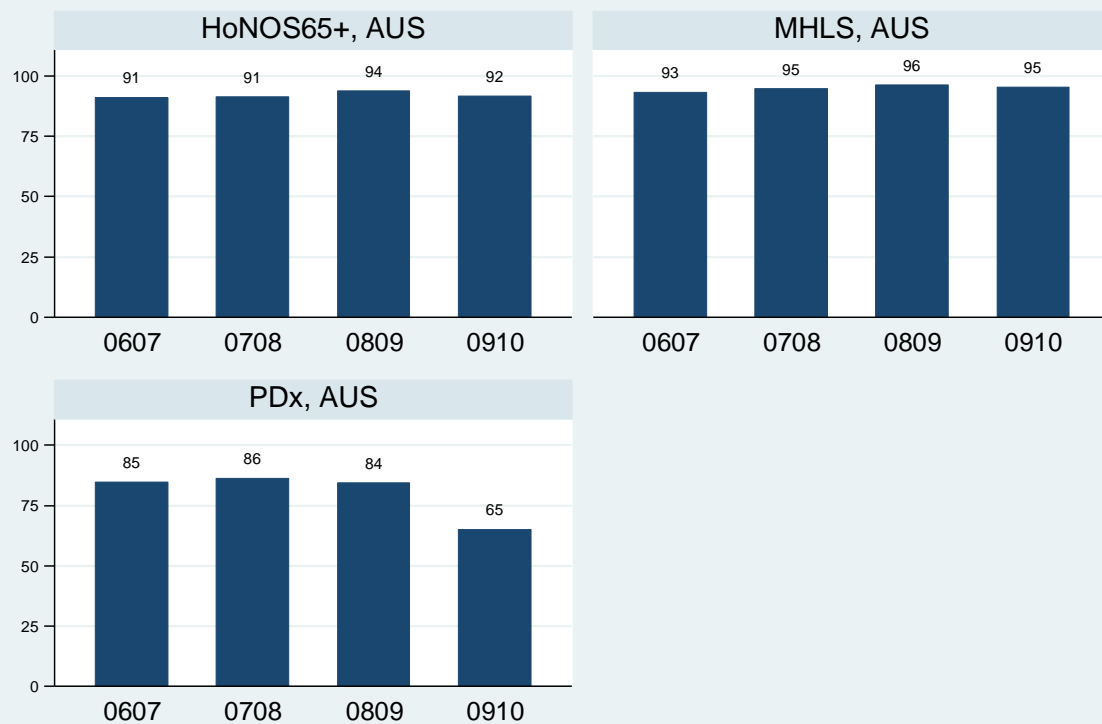
Older Persons - Inpatient - Discharge

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Graphs by NOCC Clinical Measure - Data Extract - 23 February 2011

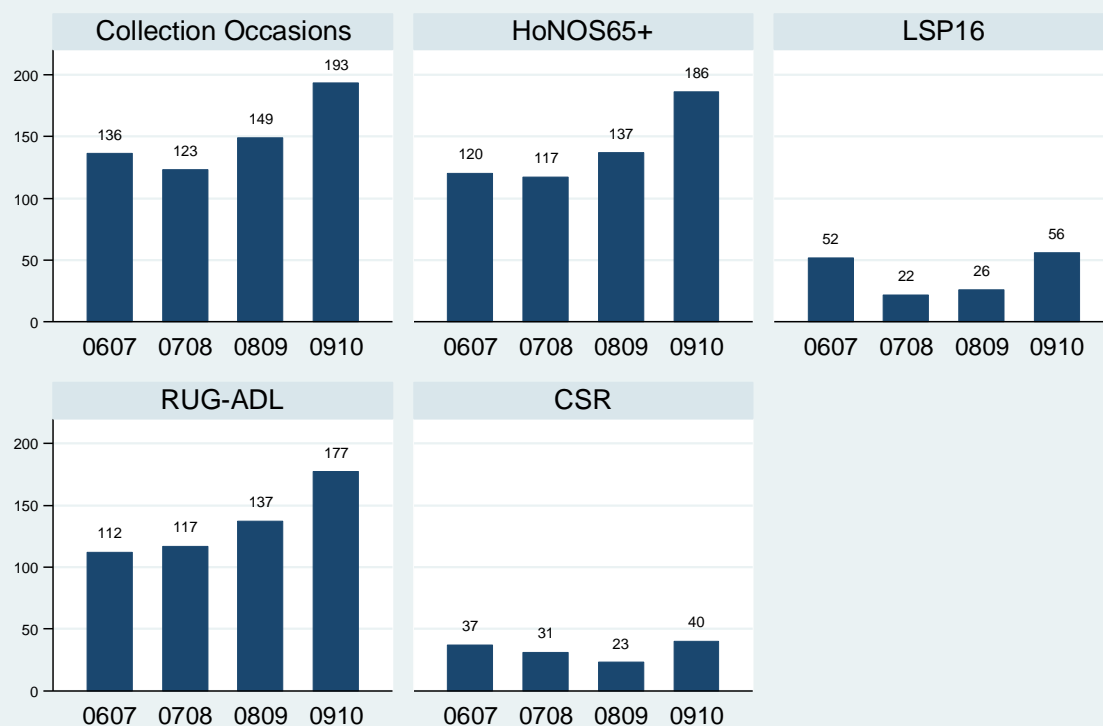
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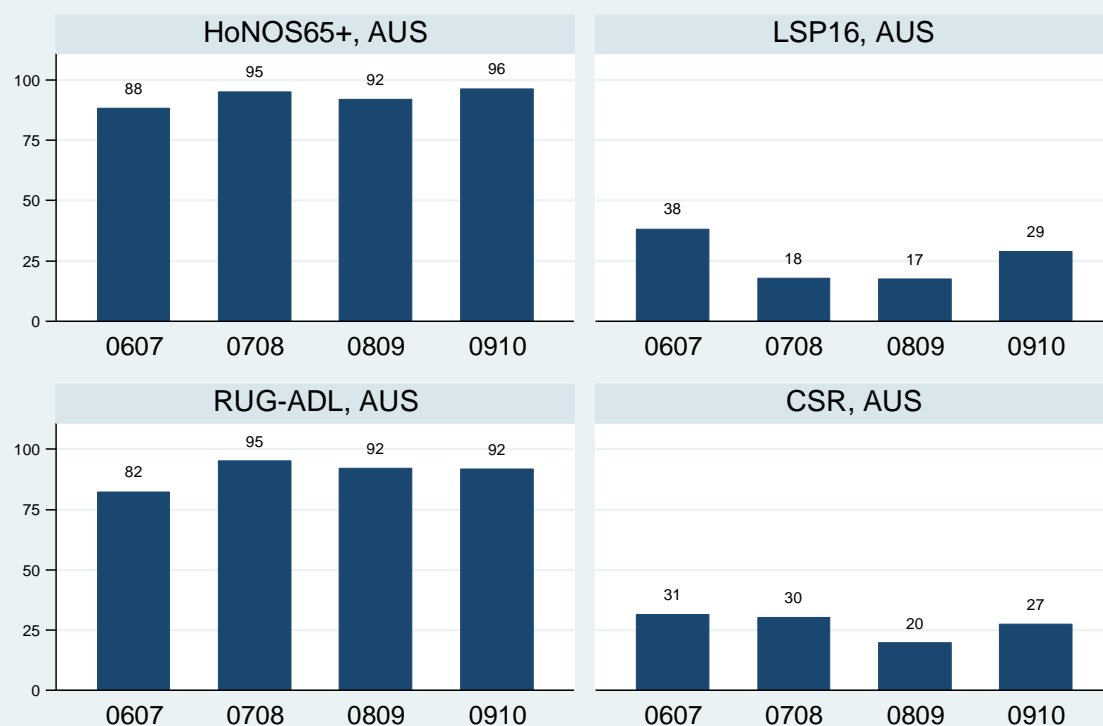
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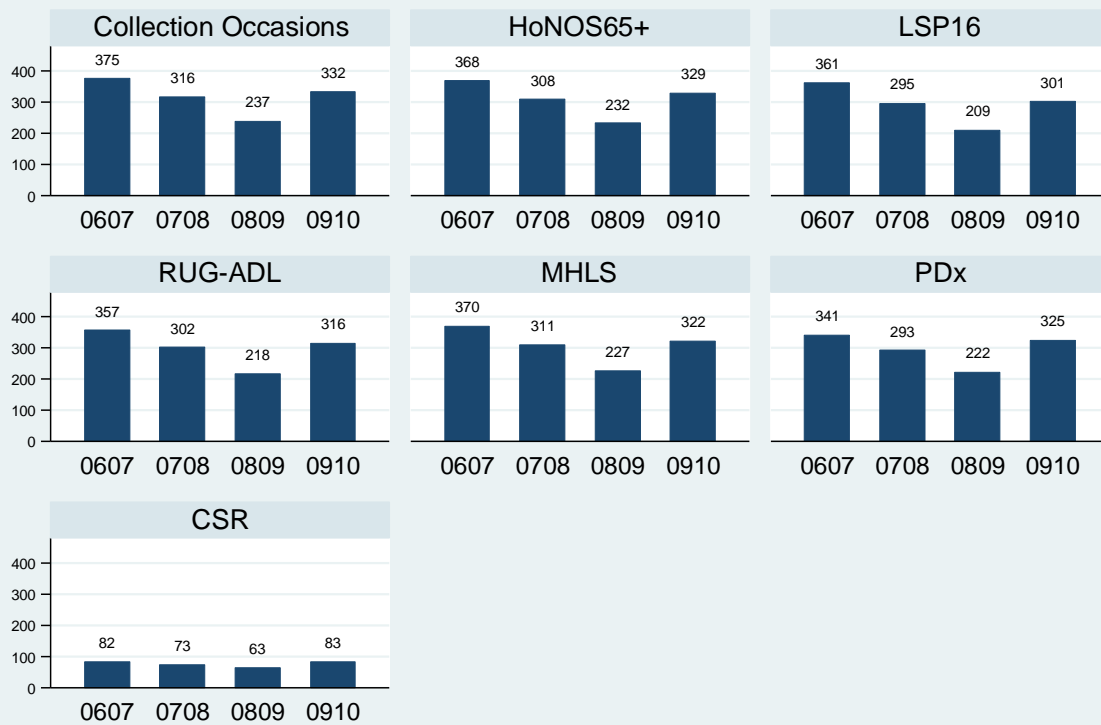
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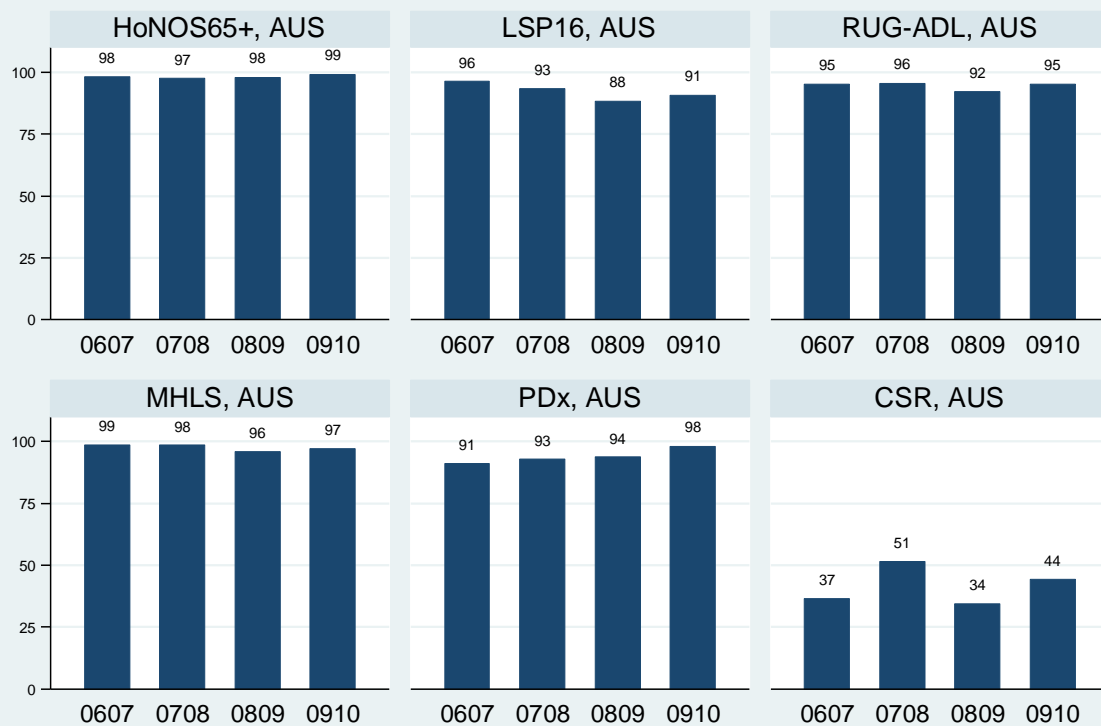
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Graphs by NOCC Clinical Measure - Data Extract - 23 February 2011

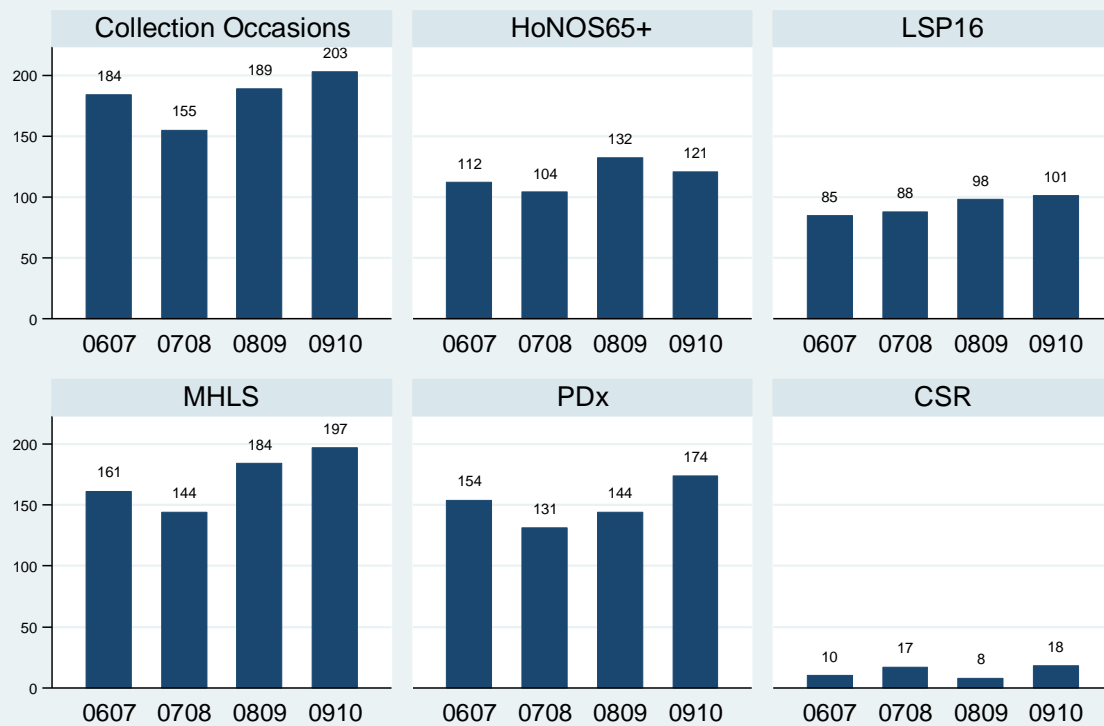
AUS: Figure 3.2.2.C: Older Persons - Residential - Review



Graphs by NOCC Clinical Measure and Jurisdiction - Data Extract - 23 February 2011

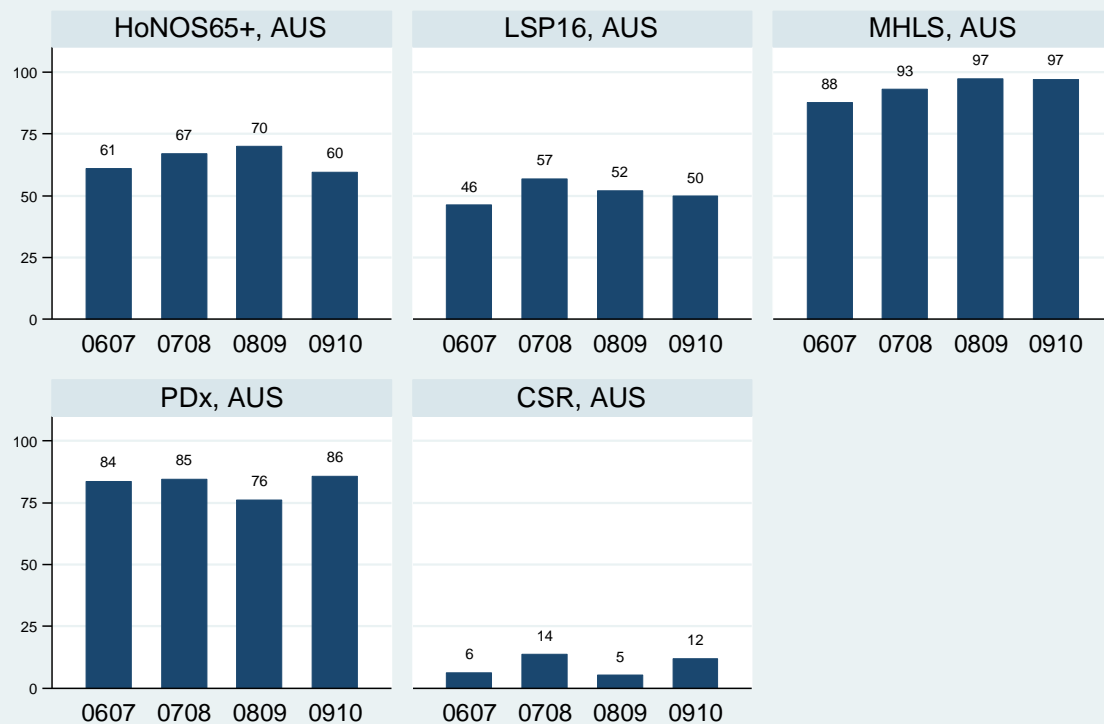
Older Persons - Residential - Discharge

AUS: Figure 3.2.3.V: Older Persons - Residential - Discharge



Graphs by NOCC Clinical Measure - Data Extract - 23 February 2011

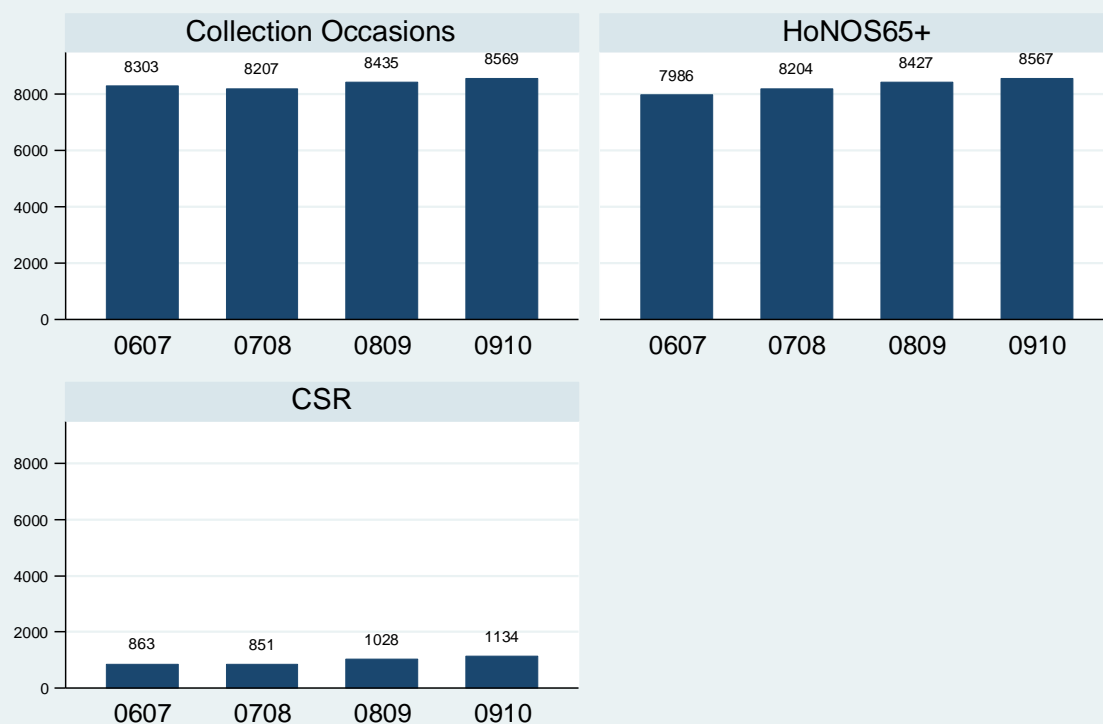
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Graphs by NOCC Clinical Measure and Jurisdiction - Data Extract - 23 February 2011

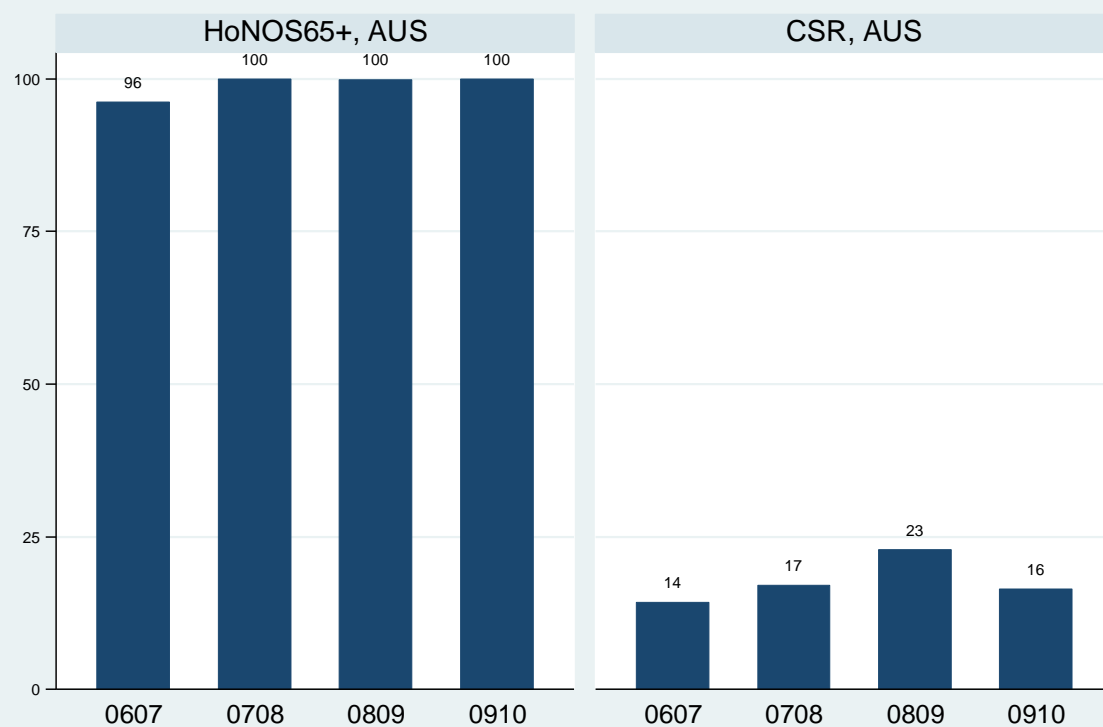
Older Persons - Ambulatory - Admission

AUS: Figure 3.3.1.V: Older Persons - Ambulatory - Admission



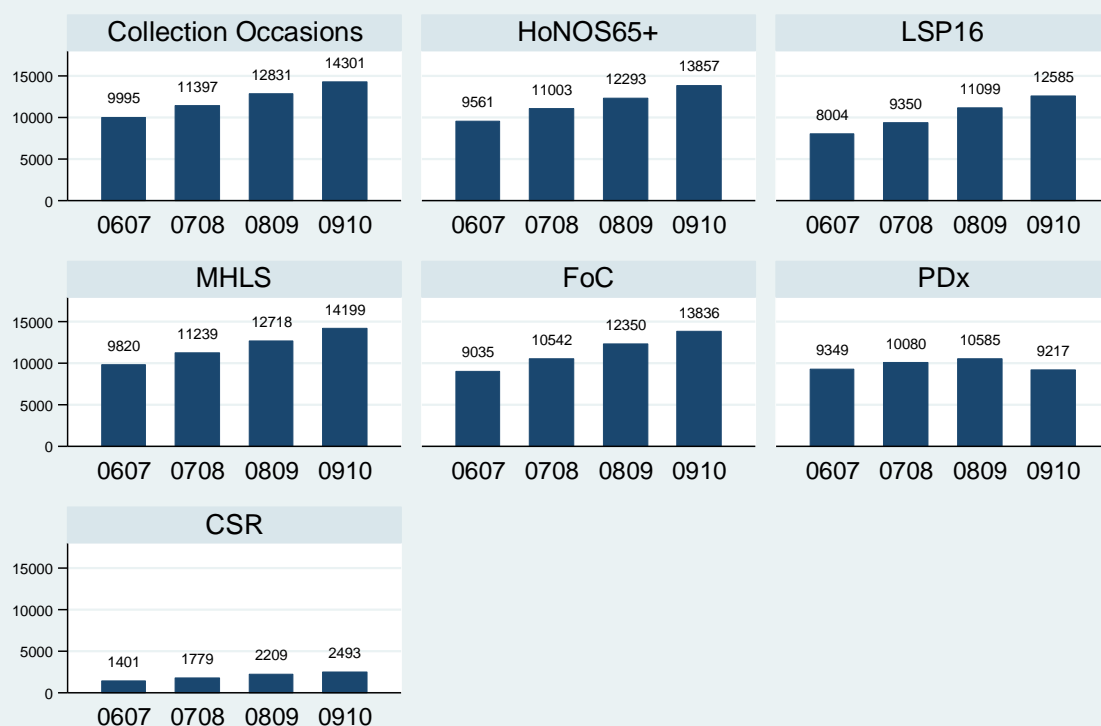
Graphs by NOCC Clinical Measure - Data Extract - 23 February 2011

AUS: Figure 3.3.1.C: Older Persons - Ambulatory - Admission



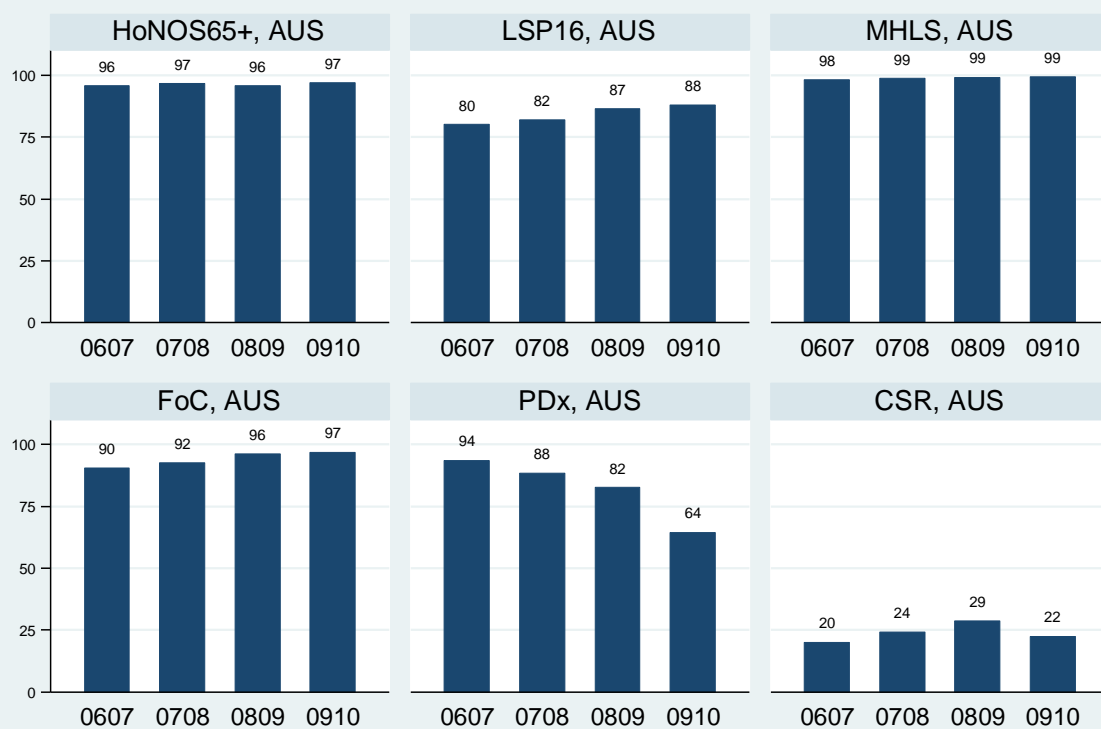
Graphs by NOCC Clinical Measure and Jurisdiction - Data Extract - 23 February 2011

AUS: Figure 3.3.2.V: Older Persons - Ambulatory - Review



Graphs by NOCC Clinical Measure - Data Extract - 23 February 2011

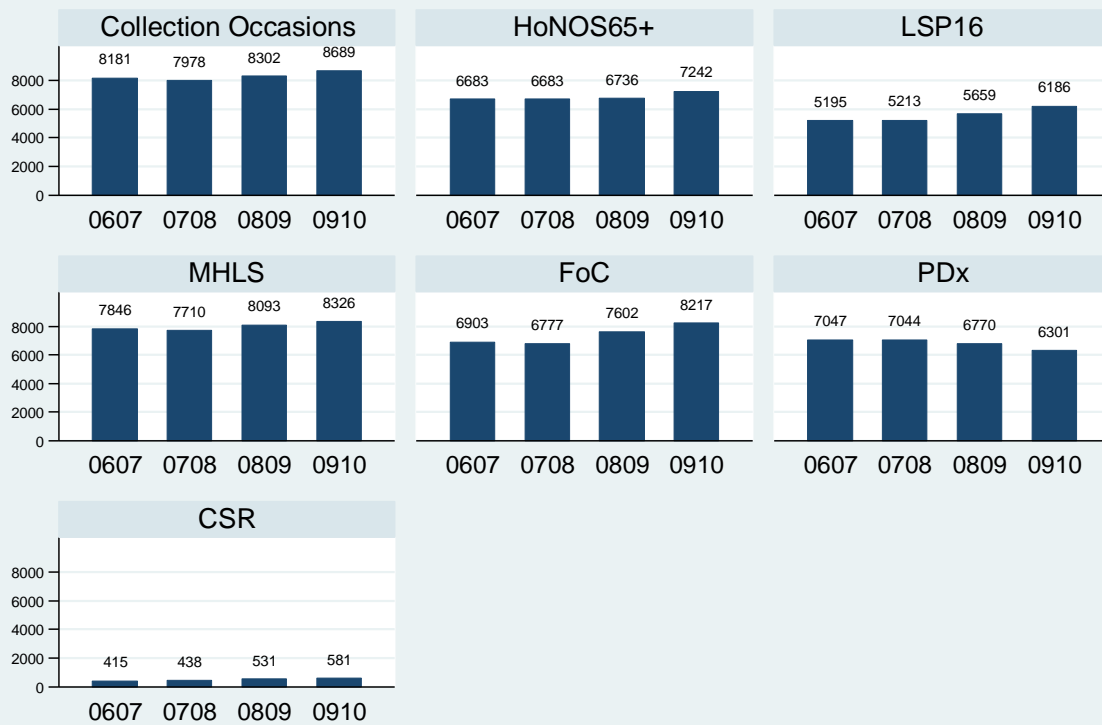
AUS: Figure 3.3.2.C: Older Persons - Ambulatory - Review



Graphs by NOCC Clinical Measure and Jurisdiction - Data Extract - 23 February 2011

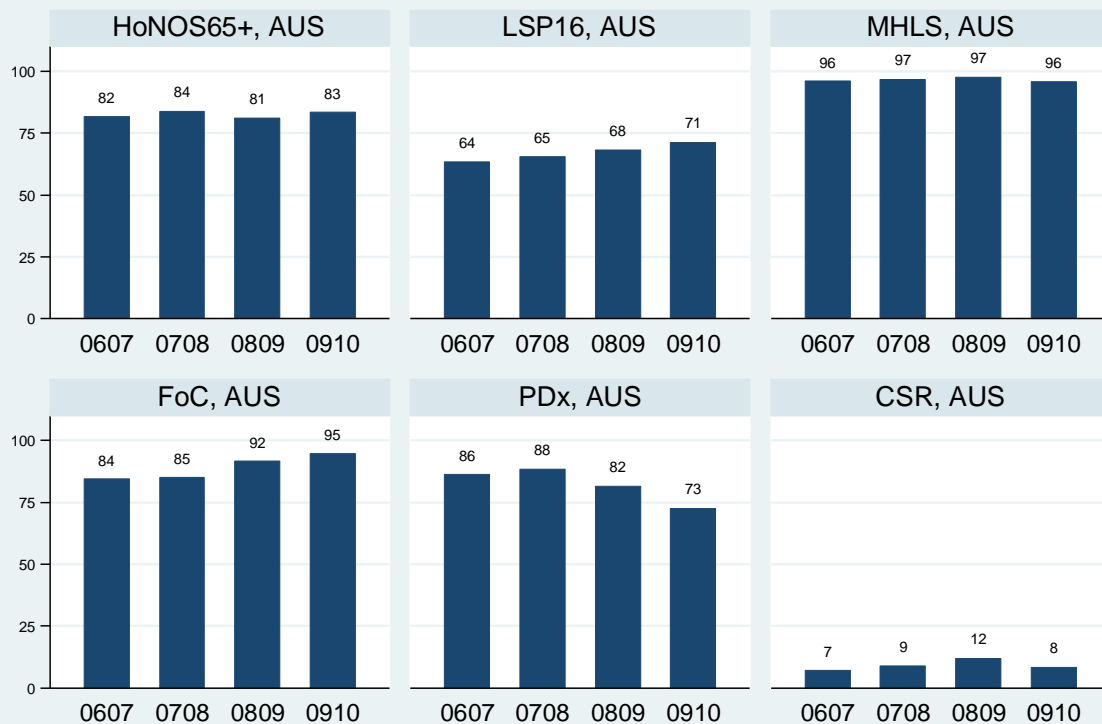
Older Persons - Ambulatory - Discharge

AUS: Figure 3.3.3.V: Older Persons - Ambulatory - Discharge



Graphs by NOCC Clinical Measure - Data Extract - 23 February 2011

AUS: Figure 3.3.3.C: Older Persons - Ambulatory - Discharge



Graphs by NOCC Clinical Measure and Jurisdiction - Data Extract - 23 February 2011

***Attachment 1: Selected extracts from the User's Guide to the NOCC
Standard Reports***

Key features of the national protocol

The national protocol prescribes what is collected and when it is collected. Table 4 from Section 7.1.4 of the *NOCC Technical Specification* summarises the protocol and is reproduced below. It is important to note that there has been variation of this national protocol in some jurisdictions.

“Table 4: Data to be reported at each *Collection Occasion* within each *Episode Service Setting*, for consumers in each *Age Group*”

| <i>Episode Service Setting</i> <i>Collection Occasion</i> | INPATIENT | | | COMMUNITY RESIDENTIAL | | | AMBULATORY | | |
|--|-----------|---|---|-----------------------|---|---|------------|---|---|
| | A | R | D | A | R | D | A | R | D |
| Children and Adolescents | | | | | | | | | |
| HoNOSCA ⁽²⁾ | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| CGAS | ● | ● | ✘ | ● | ● | ✘ | ● | ● | ✘ |
| FIHS | ✘ | ● | ● | ✘ | ● | ● | ✘ | ● | ● |
| Parent / Consumer self report (SDQ) ^(3,4) | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Principal and Additional Diagnoses | ✘ | ● | ● | ✘ | ● | ● | ✘ | ● | ● |
| Mental Health Legal Status | ✘ | ● | ● | ✘ | ● | ● | ✘ | ● | ● |
| Adults | | | | | | | | | |
| HoNOS ⁽²⁾ | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| LSP-16 ⁽⁵⁾ | ✘ | ✘ | ✘ | ● | ● | ● | ✘ | ● | ● |
| Consumer self-report (MHI, BASIS32, K10+) ^(4,6) | ✘ | ✘ | ✘ | ● | ● | ● | ● | ● | ● |
| Principal and Additional Diagnoses | ✘ | ● | ● | ✘ | ● | ● | ✘ | ● | ● |
| Focus of Care ⁽⁷⁾ | ✘ | ✘ | ✘ | ✘ | ✘ | ✘ | ✘ | ● | ● |
| Mental Health Legal Status | ✘ | ● | ● | ✘ | ● | ● | ✘ | ● | ● |
| Older persons | | | | | | | | | |
| HoNOS 65+ ⁽²⁾ | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| LSP-16 ⁽²⁾ | ✘ | ✘ | ✘ | ● | ● | ● | ✘ | ● | ● |
| RUG-ADL | ● | ● | ✘ | ● | ● | ✘ | ✘ | ✘ | ✘ |
| Consumer self-report (MHI, BASIS32, K10+) ^(4,6) | ✘ | ✘ | ✘ | ● | ● | ● | ● | ● | ● |
| Principal and Additional Diagnoses | ✘ | ● | ● | ✘ | ● | ● | ✘ | ● | ● |
| Focus of Care ⁽⁷⁾ | ✘ | ✘ | ✘ | ✘ | ✘ | ✘ | ✘ | ● | ● |
| Mental Health Legal Status | ✘ | ● | ● | ✘ | ● | ● | ✘ | ● | ● |

Abbreviations and Symbols

| | | | |
|----------|-----------------------------------|---|---|
| A | Admission to Mental Health Care | ● | Reporting of data on this occasion is mandatory |
| R | Review of Mental Health Care | ✘ | No reporting requirements apply |
| D | Discharge from Mental Health Care | | |

Of primary significance is the fact that the clinical measures are specific to:

1. the *Collection Occasion Age Group* of the consumer – either Children & Adolescents, or Adults or Older Persons;
2. the *Reason for Collection* – broadly, either Admission, Review or Discharge; and
3. the *Mental Health Service Setting* – either Psychiatric Inpatient, Community Residential or Ambulatory.

These are the fundamental partitions that are used for analysis and reporting in the first edition of NOCC standard reports.

Identifying valid sequences of Collection Occasions

In these reports, where the unit of analysis is Collection Occasion, all Collection Occasions that pass AMHOCN's data validation processes are considered valid with respect to analysis and reporting. Where the unit of analysis is either Periods of Care or Episodes of Care, it is necessary to assemble sequences of Collection Occasions.

From the above discussion, it follows that a valid sequence of collection occasions requires a logical ordering of events, for a given consumer who receives mental health services from a given provider, in a particular setting. The initial checks for the validity of the collection occasion sequences require specific relationships among five key fields:

1. Who provided? (i.e., which mental health service organisation);
2. To whom? (i.e., the consumer);
3. When? (i.e., the date of the Collection Occasion);
4. Where? (i.e., the mental health service setting);
5. Why? (i.e., the reason for collection).

The sequencing process begins with identifying all of the Collection Occasions for a consumer at a mental health service organisation. These are then organised chronologically. Sequences are then evaluated in terms of the logical relations among the reasons for collection (e.g., Admissions precede Reviews which in turn precede Discharge) as well as the setting in which the collection occurred.

In the current edition of NOCC Standard Reports, a strict algorithm was implemented where all of a consumer's Collection Occasions at a specific mental health service organisation were excluded from further analysis if there was failure on any single evaluation.

The following figures illustrate some of the issues with respect to the validation of collection occasion sequences. The figures also serve to illustrate the AMHOCN approach to 'counting' Periods of Care (namely, consecutive pairs of Collection Occasions within a valid sequence) and Episodes of Care (namely, the first and the last Collection Occasions within a valid sequence).

Figure 1: Representation of a valid NOCC sequence with 2 Collection Occasions – Any Admission > Any Discharge

| | A1 | D2 |
|----------------------------|----------------------|-------------------------------|
| Collection Occasion | <u>θ1</u> | <u>θ2</u> |
| Period of Care | π 1 | |
| Episode of Care | ε1 | |
| Explanatory Notes | | |
| θ1 | Collection Occasion1 | Admission |
| θ 2 | Collection Occasion2 | Discharge |
| π 1 | Period of Care1 | Any Admission > Any Discharge |
| ε1 | Episode of Care1 | Any Admission > Any Discharge |

Figure 2: Representation of an invalid NOCC sequence with 2 Collection Occasions – Any Admission > Any Admission

| | A1 | A2 |
|----------------------------|----------------------|-----------|
| Collection Occasion | <u>θ1</u> | <u>θ2</u> |
| Period of Care | - | |
| Episode of Care | - | |
| Explanatory Notes | | |
| θ1 | Collection Occasion1 | Admission |
| θ 2 | Collection Occasion2 | Admission |

| Figure 3: Representation of a valid NOCC sequence with 3 Collection Occasions | | | |
|--|-----------------------------|---|------------------|
| | A1 | R2 | D3 |
| Collection Occasion | <u>θ1</u> | <u>θ2</u> | <u>θ3</u> |
| Period of Care | π 1 | | π 2 |
| Episode of Care | ε1 | | |
| Explanatory Notes | | | |
| θ1 | Collection Occasion1 | Admission | |
| θ 2 | Collection Occasion2 | Review | |
| θ 3 | Collection Occasion3 | Discharge | |
| π 1 | Period of Care1 | Any Admission > Any Review | |
| π 2 | Period of Care2 | Any Review > Any Discharge | |
| ε1 | Episode of Care1 | Any Admission > Any Discharge | |

| Figure 4: Representation of an invalid NOCC sequence with 3 Collection Occasions | | | |
|---|-----------------------------|-----------------------|------------------|
| | R1 | A2 | D3 |
| Collection Occasion | <u>θ1</u> | <u>θ2</u> | <u>θ3</u> |
| Period of Care | - | ? π 1 | |
| Episode of Care | - | ? ε 1 | |
| Explanatory Notes | | | |
| θ1 | Collection Occasion1 | Review | |
| θ 2 | Collection Occasion2 | Admission | |
| θ 3 | Collection Occasion3 | Discharge | |
| ? π 1 | Period of Care1 | Deemed Invalid | |
| ? ε1 | Episode of Care1 | Deemed Invalid | |

Data integrity considerations

A major issue for the analysis and reporting of the NOCC measures is to determine when a measure is 'valid' with respect to the clinical ratings provided.

Outcome measures such as the HoNOS family are referred to here as measures (elsewhere, these have been variously referred to as scales, instruments). Some measures comprise multiple components, such as items (these have been variously referred to as scales). Items can be aggregated into subscales and total scores (these have been variously referred to as summary and total scores).

Ratings of items can be described in terms of three mutually exclusive categories:

1. valid 'clinical' ratings that typically indicate levels of problem severity;
2. valid 'non-clinical' ratings that typically indicate reasons why problem severity was not rated; and
3. invalid values such as 'nulls' or values outside of the range for 1 and 2 above.

The validity of a measure is derived from consideration of the validity of the items that comprises that measure. Valid scores can be estimated either when all of the items are clinically valid OR when a sufficient number of items are clinically valid. Two questions require resolution:

1. How many items need to have a valid clinical rating in order for the overall measure to be considered valid?
2. If one or more of the items does not have a valid clinical rating, how does this impact on the scoring of subscale and total scores?

In order to answer these questions, AMHOCN undertook descriptive analyses of the available data. Judgements regarding the validity of a measure were based on several principles. The overarching goal was to minimise potential loss of data via exclusion of partially completed measures and to balance that with the retention of measures that would still enable statistical analysis. While there are sophisticated methods for resolving 'missing data', a further principle was to implement transparent solutions that can be replicated readily at local levels.

The frequency distributions of partially completed measures were examined and thresholds specific to each measure were determined as minimal requirements for analysis. It is important to note that these criteria are relevant for the data available for analysis at April 2005; these criteria may change over time and will be published with each release of national level reports.

The following table shows the criteria used to determine whether a NOCC measure had been validly completed for the purposes of subsequent statistical reporting:

| Table 4: Completion criteria for each of the NOCC measures | | |
|---|--|---|
| NOCC Measure | Age Group | Completion Criteria |
| HoNOSCA | C&A | At least 11 of the first 13 HoNOSCA items have Valid Clinical Ratings |
| CGAS | C&A | Any Valid Clinical Rating |
| FIHS | C&A | At least 6 of the 7 FIHS items have Valid Clinical Ratings |
| SDQ – all Versions | C&A | At least 20 of the first 25 items have Valid Clinical Ratings |
| Age | C&A | Aged at least 1 day to less than 25 years inclusive |
| HoNOS / 65+ | A&OP | At least 10 items have Valid Clinical Ratings |
| LSP-16 | A&OP | At least 14 items have Valid Clinical Ratings |
| FoC | A&OP | Any Valid Clinical Rating |
| BASIS-32 | A&OP | At least 27 items have Valid Clinical Ratings*** |
| K10+ | A&OP | At least 9 items have Valid Clinical Ratings |
| MHI-38 | A&OP | At least 30 items have Valid Clinical Ratings |
| Age | A | Aged between 15 and 110 years inclusive |
| RUG-ADL | OP | All 4 items have Valid Clinical Ratings |
| Age | OP | Aged between 55 and 110 years inclusive |
| Principal Diagnosis | All | Any Valid Mental Health Diagnosis Summary Group |
| MHLS | All | Either Voluntary or Involuntary Status recorded |
| Sex | All | Either Male or Female Sex recorded |
| Explanatory Notes: | | |
| *** | BASIS-32 items 2, 3 & 4 only count as one item | |
| C&A | Child & Adolescent Collection Age Group | |
| A&OP | Adult AND Older Person Collection Age Group | |
| A | Adult Collection Age Group | |
| OP | Older Person Collection Age Group | |

These criteria apply to each of the Standard Reports where NOCC measures are further analysed and address the first question, “How many items need to have a valid clinical rating in order for the overall measure to be considered valid?”

In regards to the second question, “If one or more of the items does not have a valid clinical rating, how does this impact on the scoring of subscale and total scores?” Only the valid clinical ratings of the items comprising a measures subscale or total scores were considered. If a component item was ‘missing’, it was treated as contributing ‘0’ to the overall score’.

If all of the items comprising a subscale were 'missing', then the overall score was set to missing with no valid observations.

This method is not perfect since it results in 'averages' that are biased downwards: the fewer items that are completed, the less opportunity exists to achieve a high score. For example, the maximum of a HoNOS with only 10 completed items is 40. While the reporting of statistics could have been restricted to instances where there were no missing data, that method would have introduced other biases – specifically, the means and standard deviations only apply to populations where there are no missing data and the statistics will be based on a smaller set of observations. There is no single 'best' solution. The approach adopted here (i.e., setting both a high threshold for a measure to be considered valid and 'missing ratings' to 0) is transparent, can be replicated readily and reflects many clinical situations