



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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Feedback

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Table of Contents

Section 1: User's Guide	4
Section 2: NOCC Valid Clinical Ratings Reports	7
Child & Adolescent – Inpatient – Admission	8
Child & Adolescent – Inpatient – Review.....	8
Child & Adolescent – Inpatient – Discharge	10
Child & Adolescent – Residential – Admission	11
Child & Adolescent – Residential – Review	12
Child & Adolescent – Residential – Discharge	13
Child & Adolescent – Ambulatory – Admission	14
Child & Adolescent – Ambulatory – Review	15
Child & Adolescent – Ambulatory – Discharge	16
Adult – Inpatient – Admission.....	17
Adult – Inpatient – Review.....	18
Adult – Inpatient – Discharge	19
Adult – Residential – Admission	20
Adult – Residential – Review	21
Adult – Residential – Discharge	22
Adult – Ambulatory – Admission	23
Adult – Ambulatory – Review	24
Adult – Ambulatory – Discharge	25
Older Persons – Inpatient – Admission.....	26
Older Persons – Inpatient – Review.....	27
Older Persons – Inpatient – Discharge	28
Older Persons – Residential – Admission	29
Older Persons – Residential – Review.....	30
Older Persons – Residential – Discharge	31
Older Persons – Ambulatory – Admission	32
Older Persons – Ambulatory – Review	33
Older Persons – Ambulatory – Discharge	34
Attachment 1: Selected extracts from the User's Guide to the NOCC Standard Reports...35	
Key features of the national protocol.....	36
Identifying valid sequences of Collection Occasions	36
Data integrity considerations.....	40

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 12 April 2010.

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 at 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 following table provides a key to the figure schema:

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

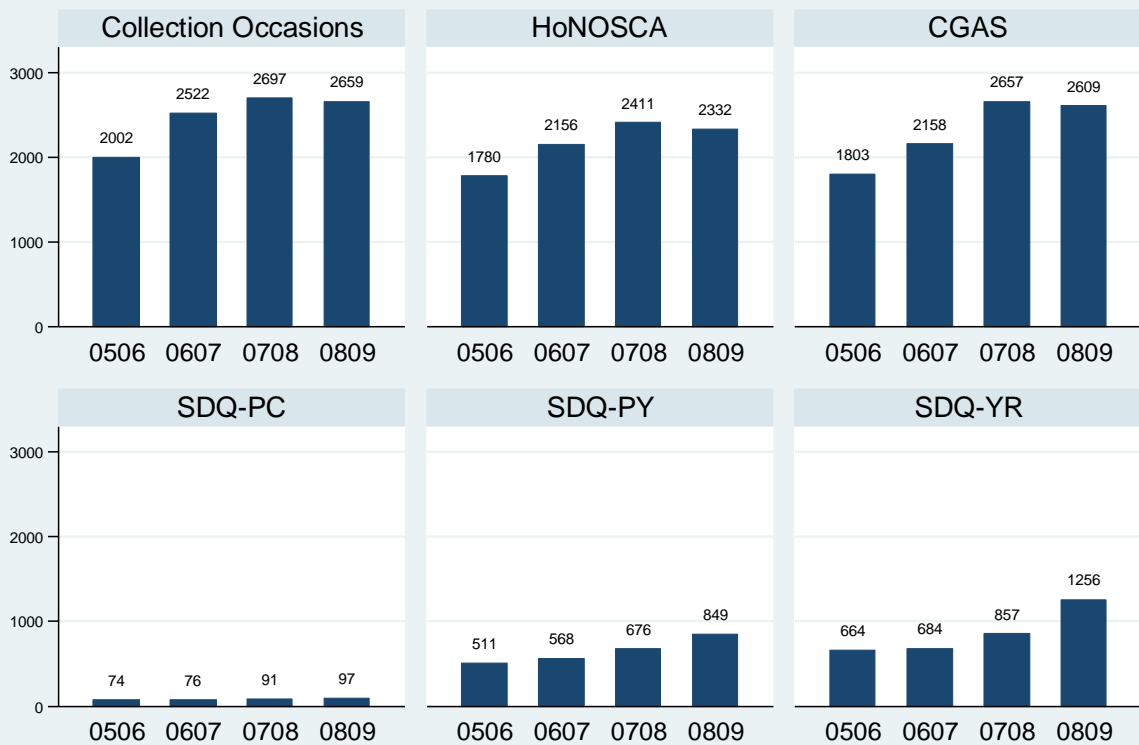
Note also that abbreviations are used to identify the NOCC Clinical measures as detailed in the following table. Whereas 3 different Consumer Self-Report measures are used by Jurisdictions, these are not analysed separately here. They are presented collectively in this report.

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

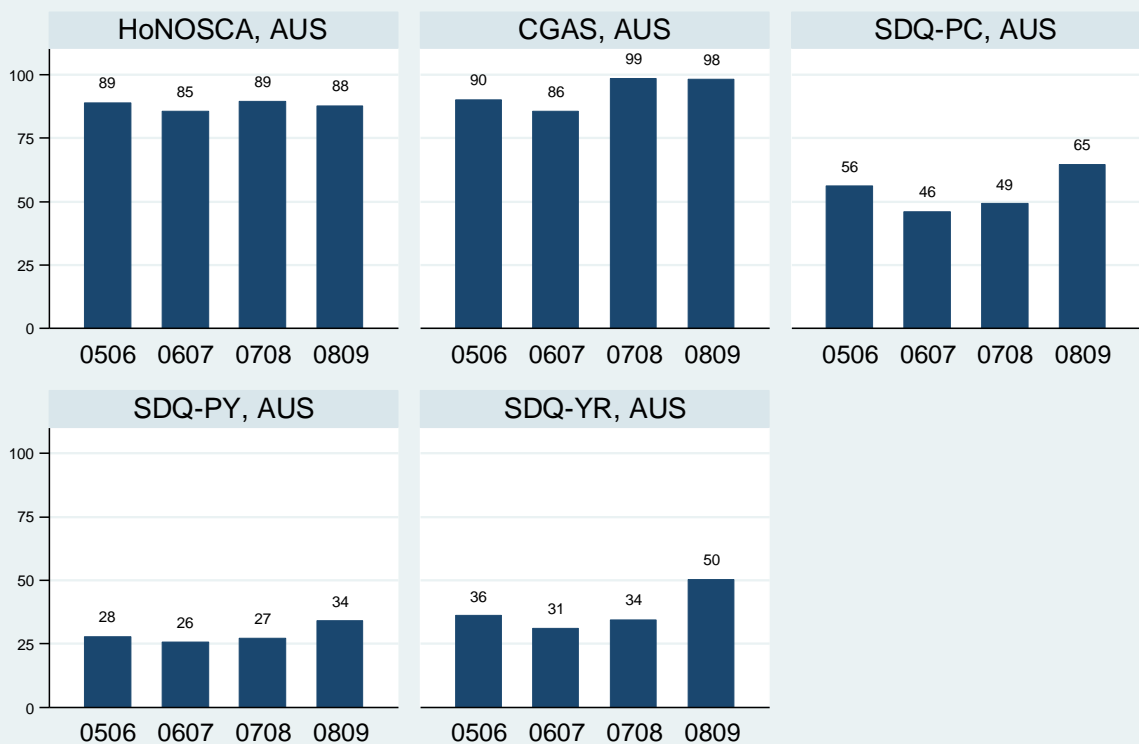
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Graphs by NOCC Clinical Measure - Data Extract - 12 April 2010

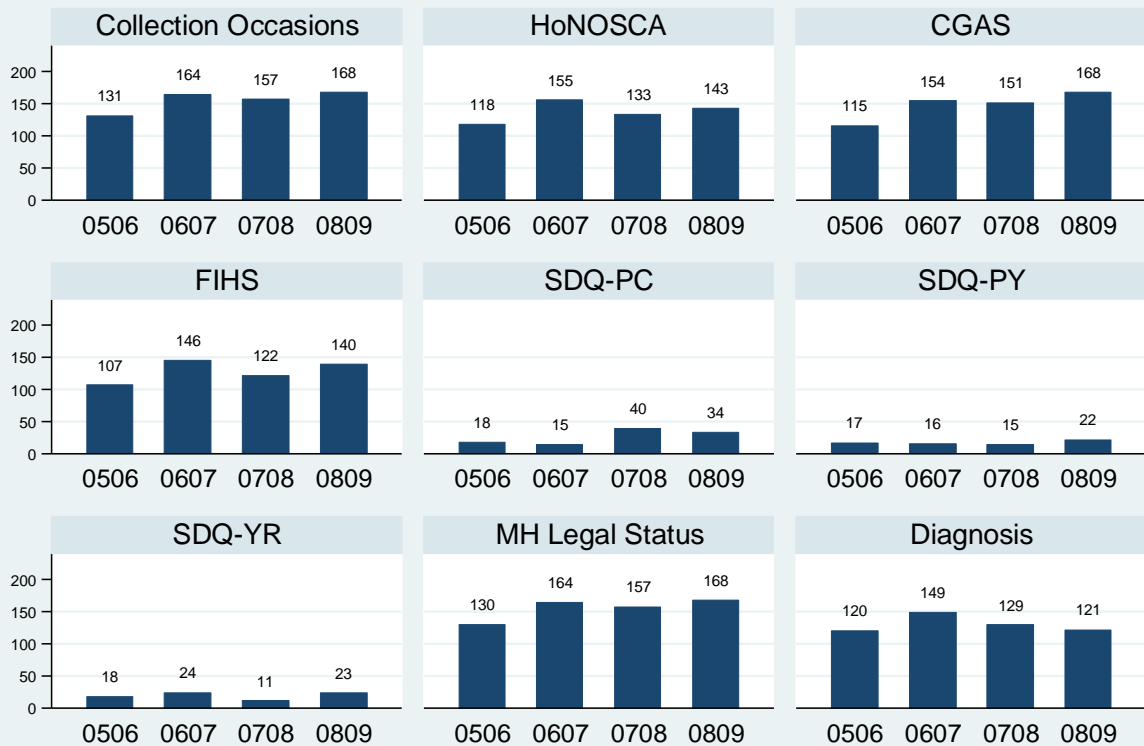
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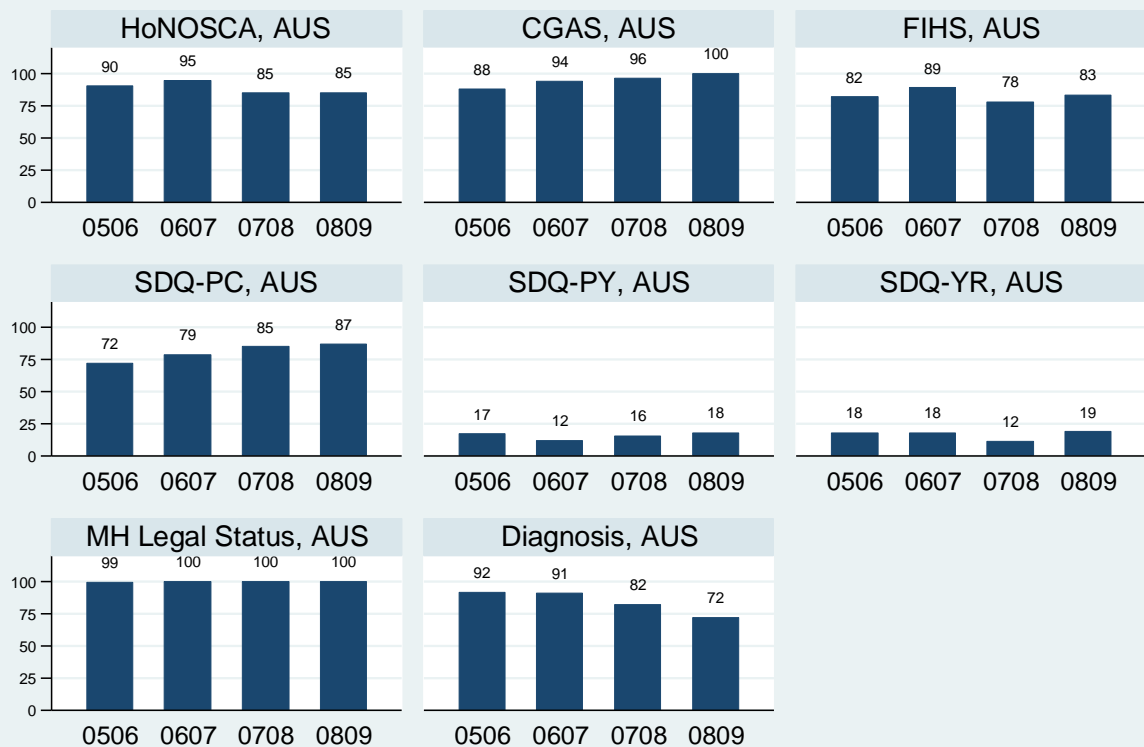
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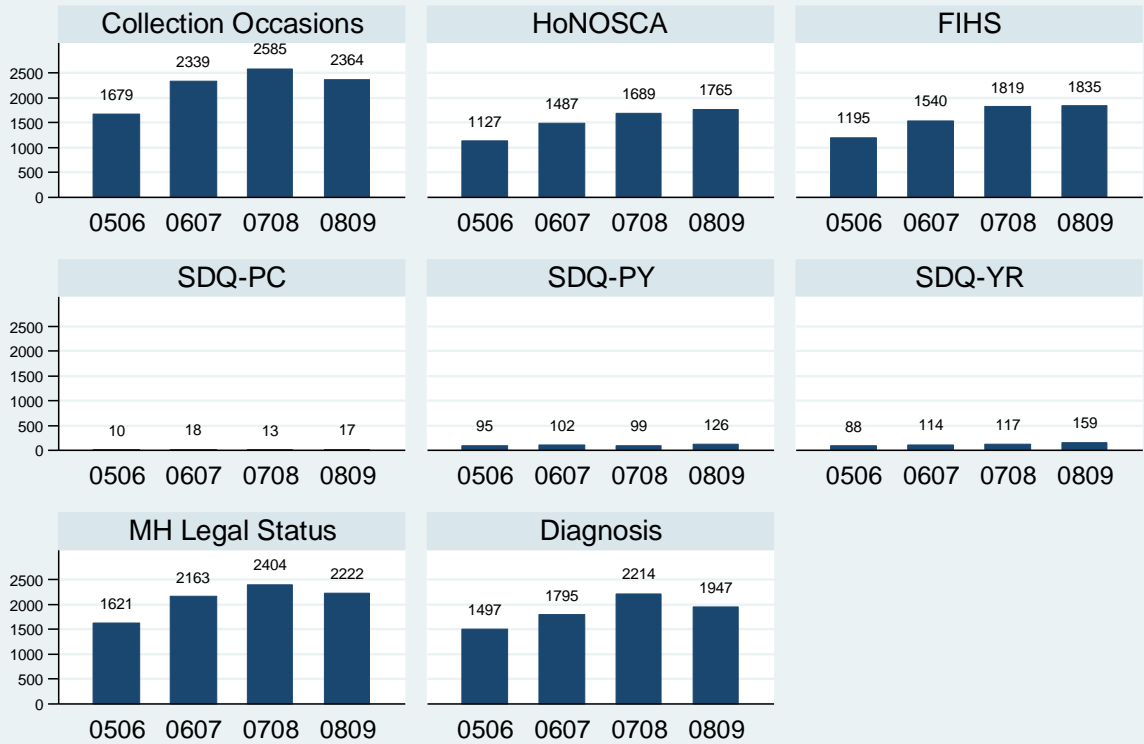
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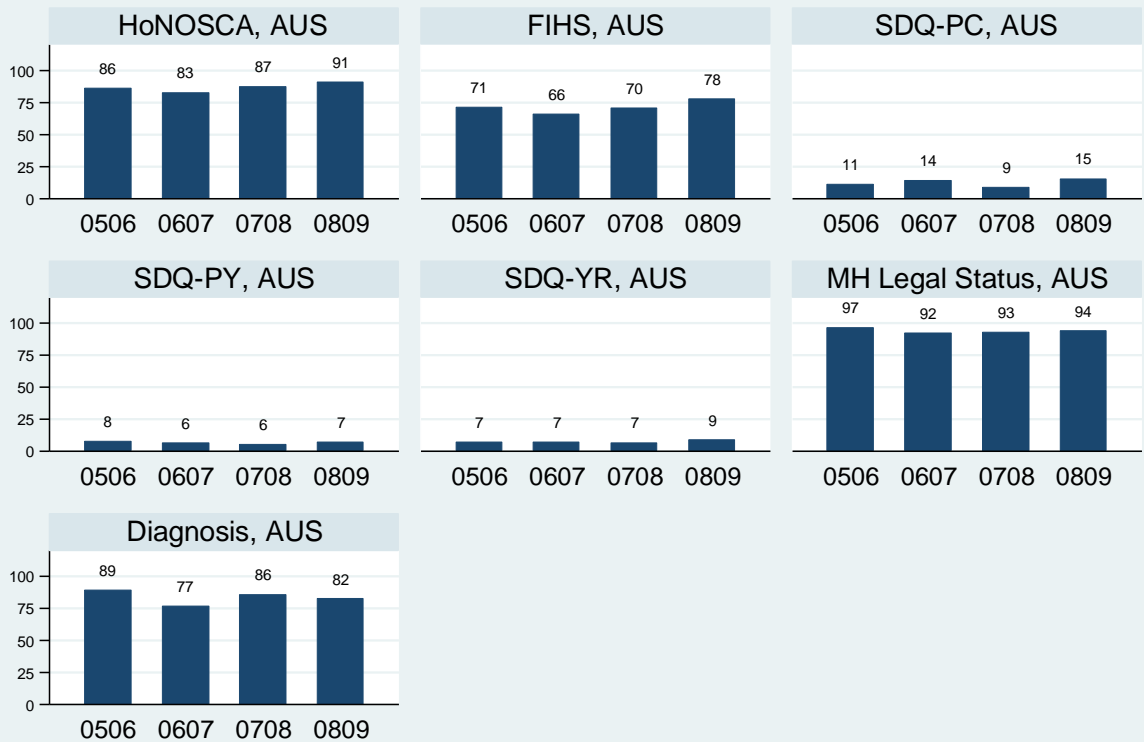
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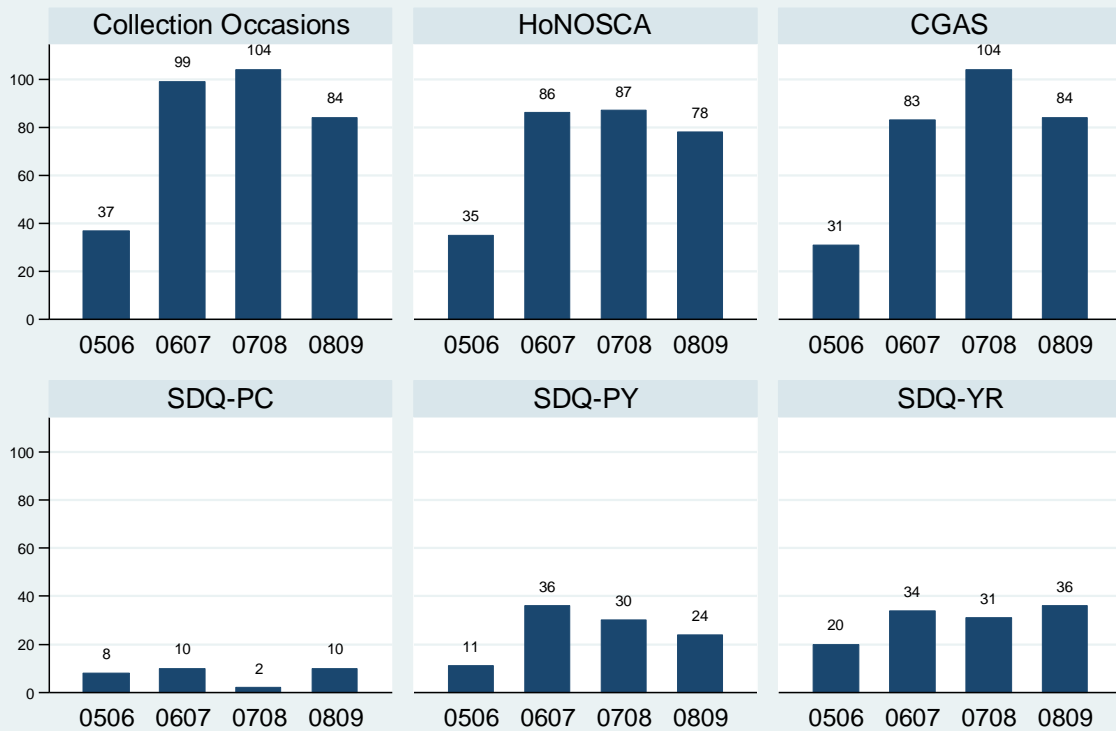
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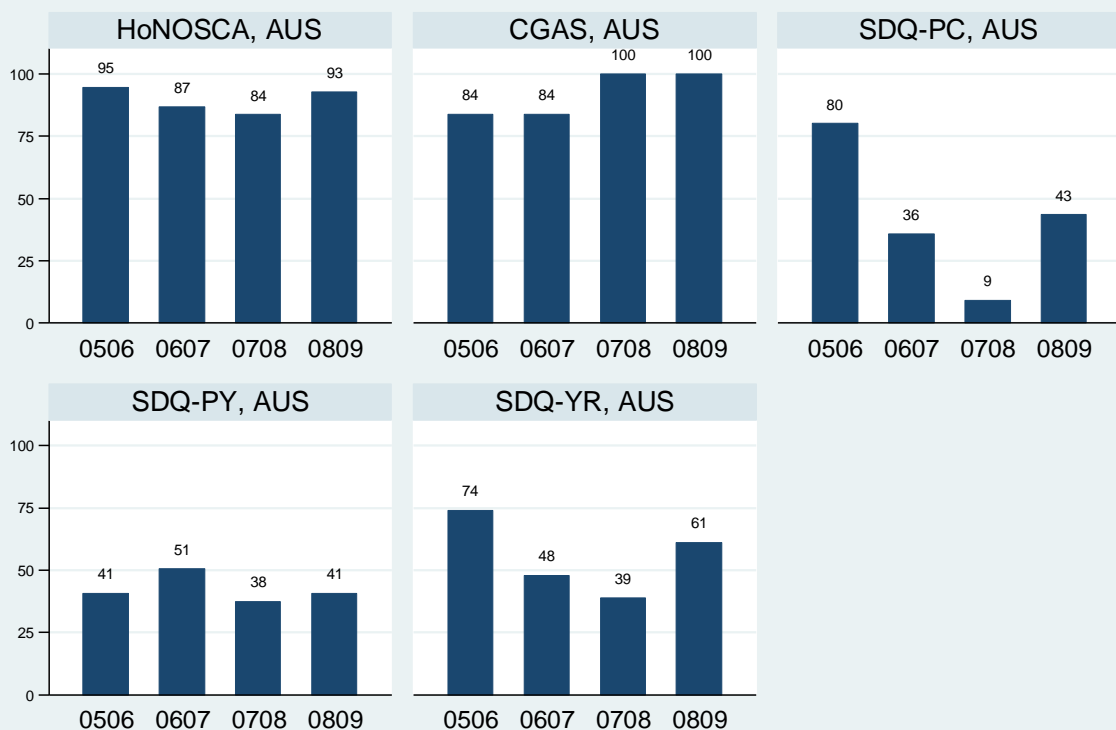
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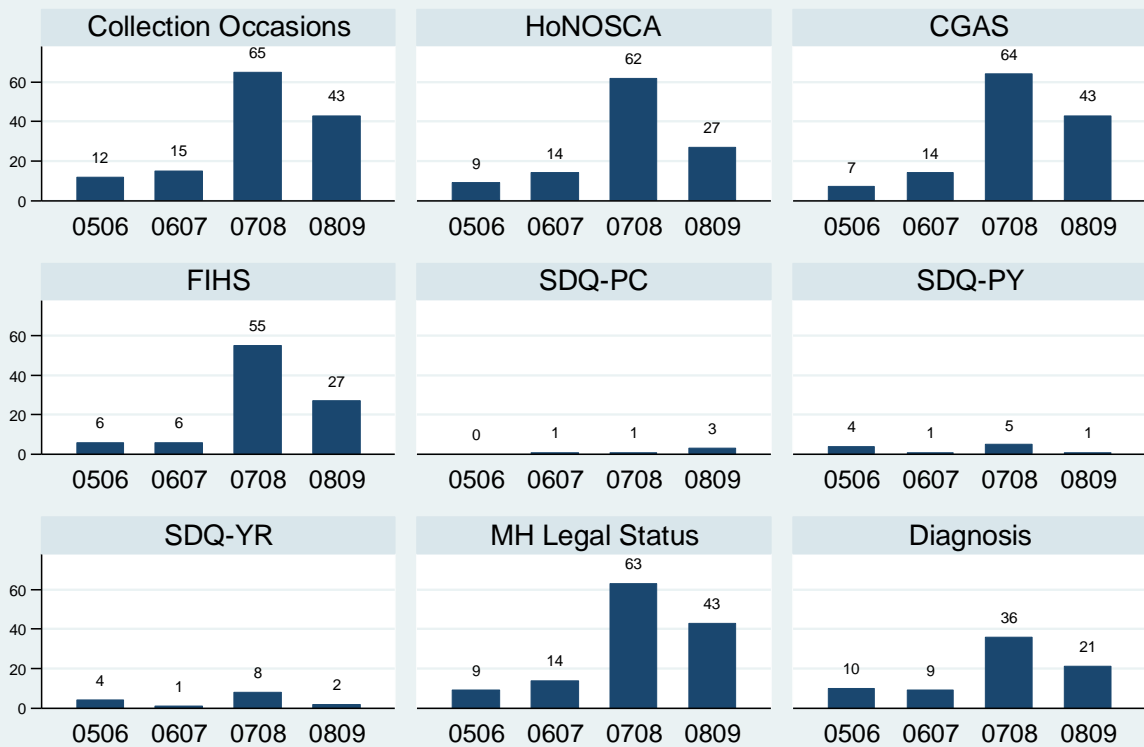
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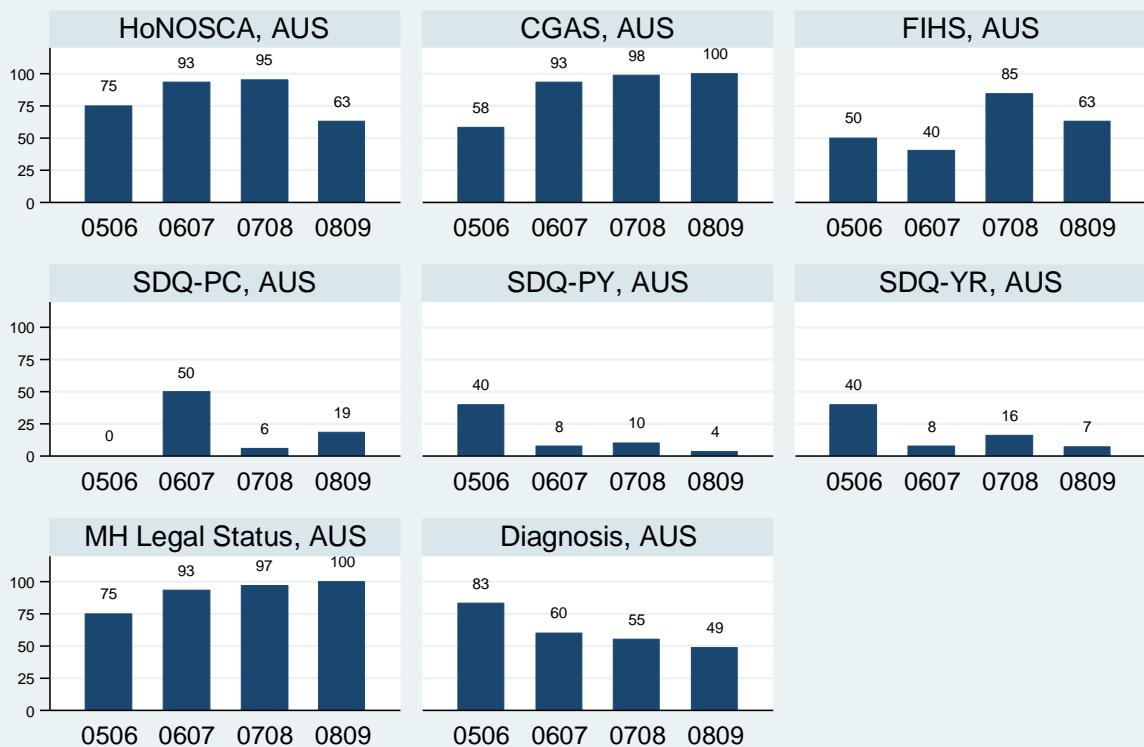
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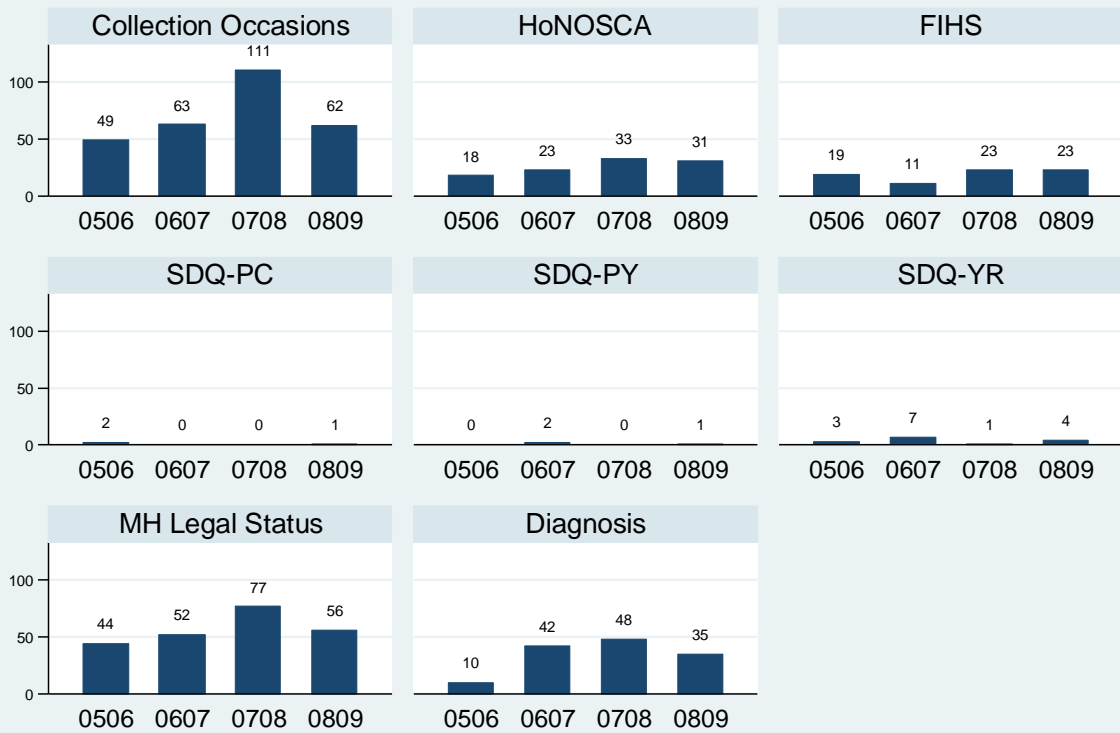
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Graphs by NOCC Clinical Measure and Jurisdiction - Data Extract - 12 April 2010

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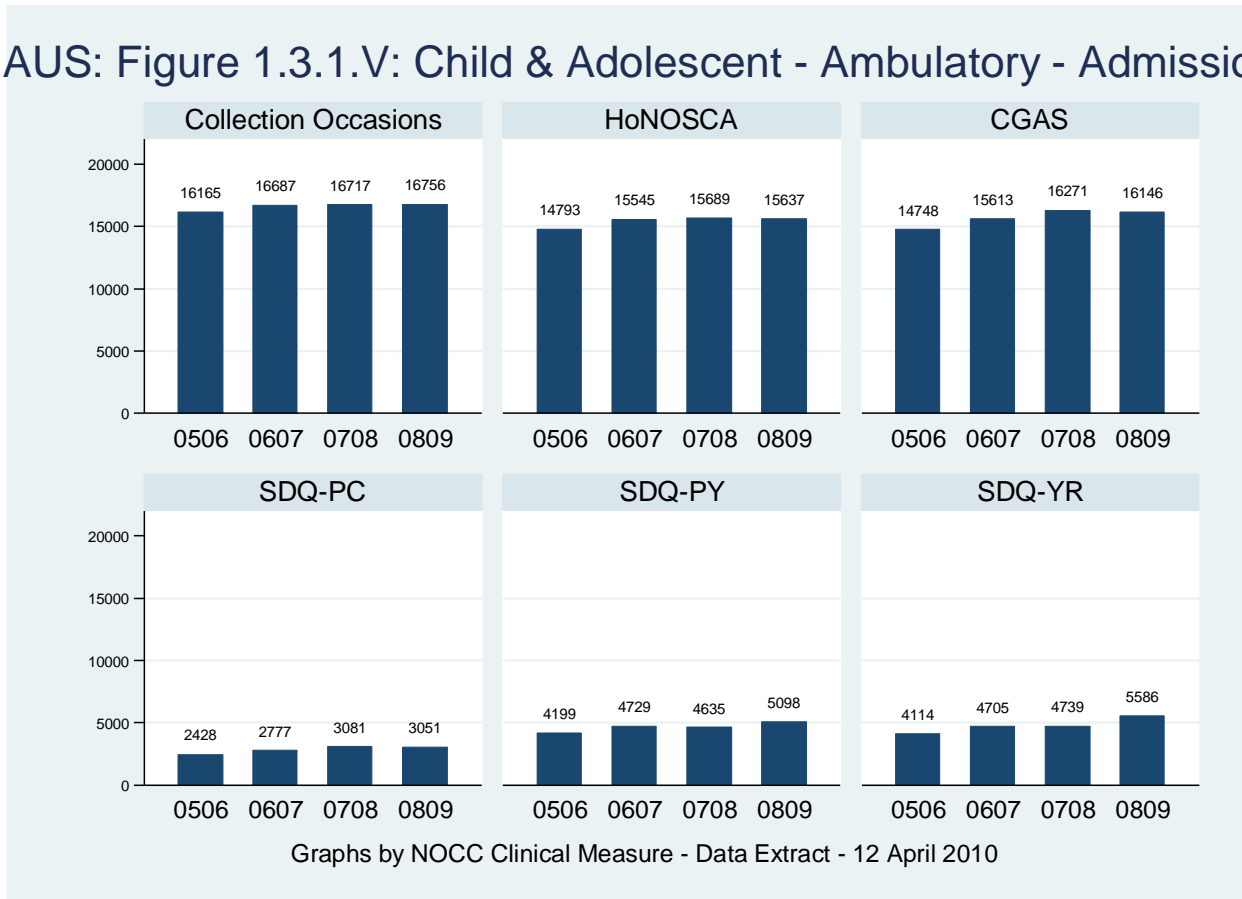
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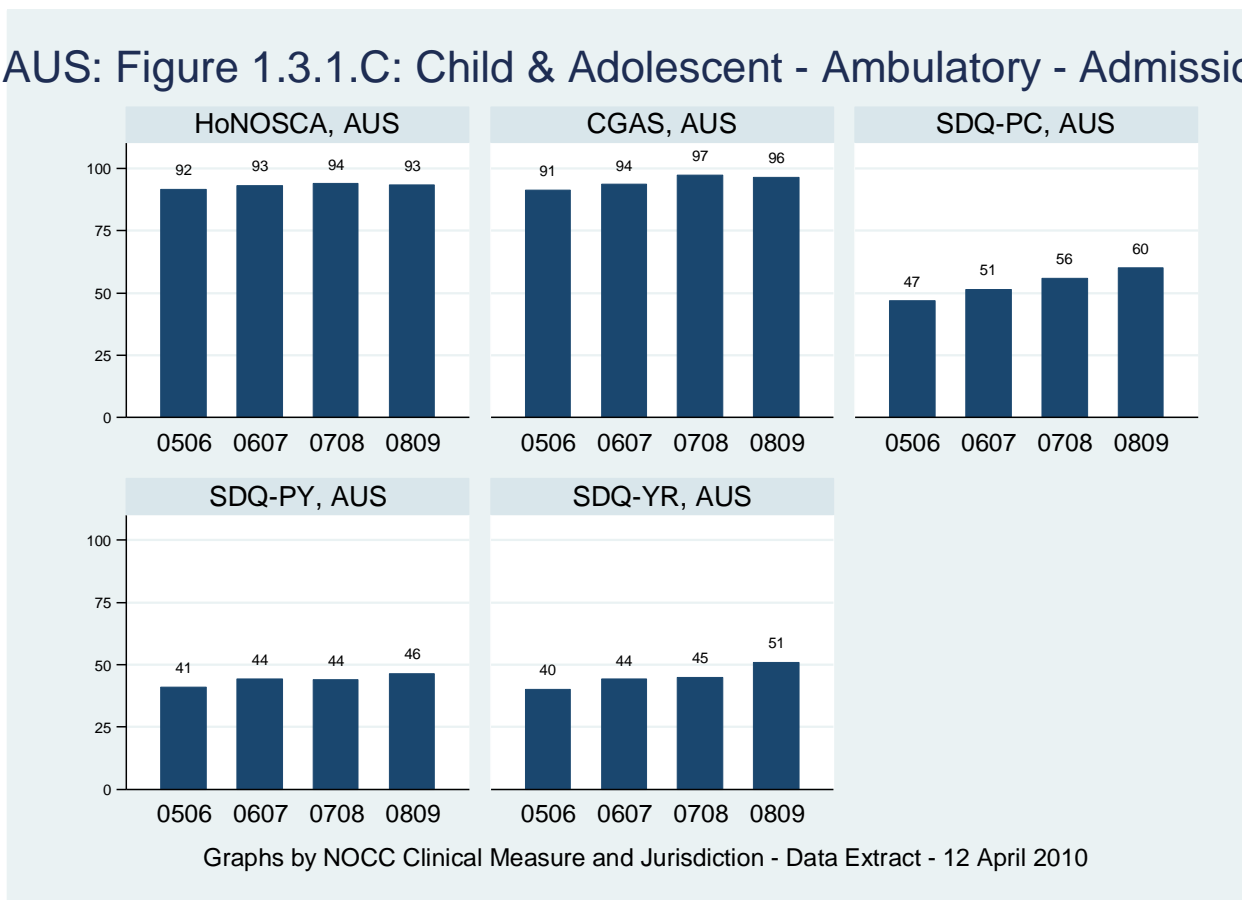
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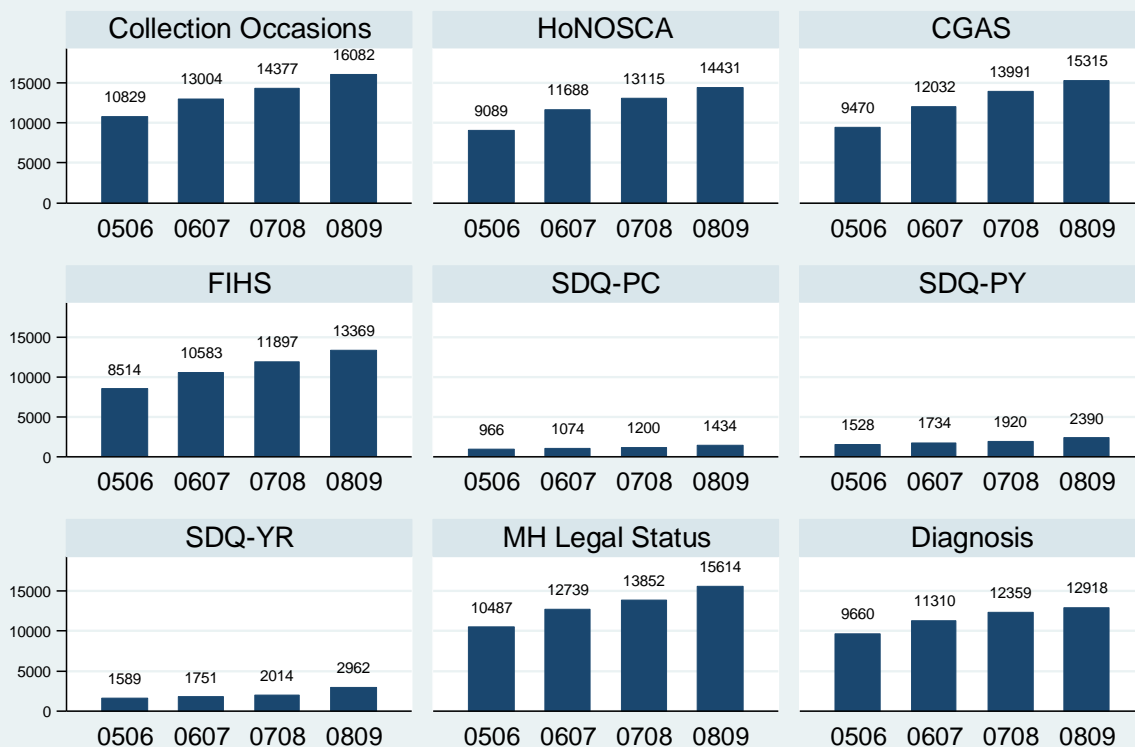


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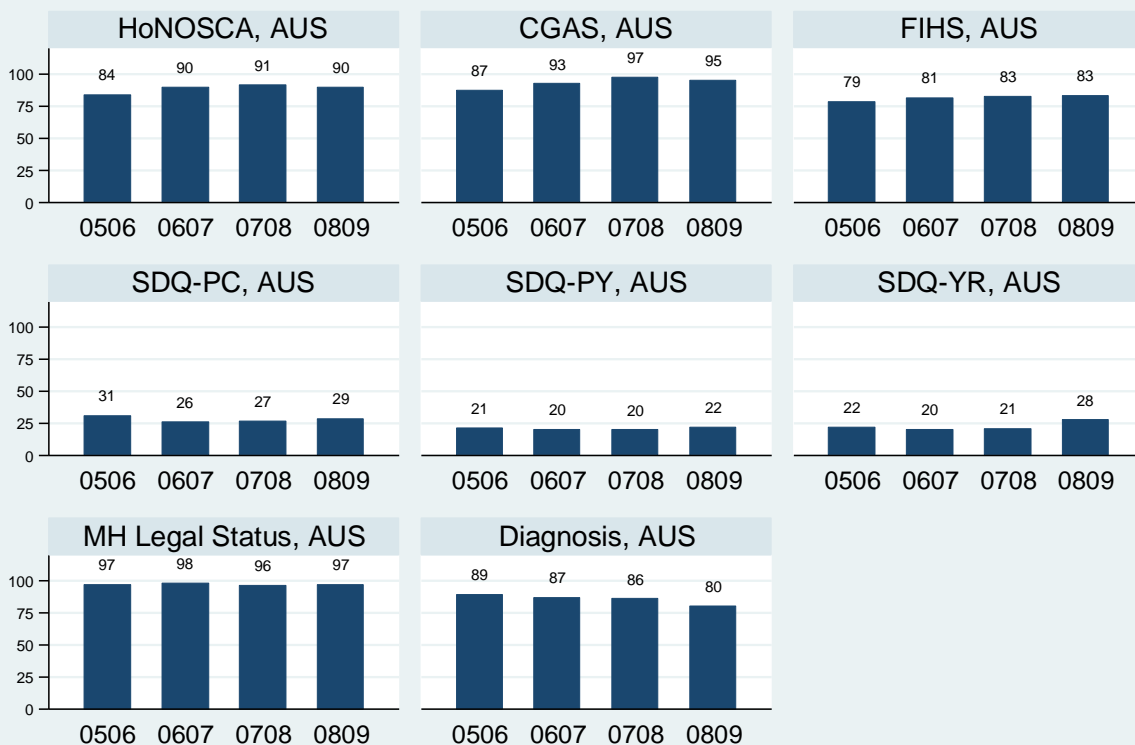
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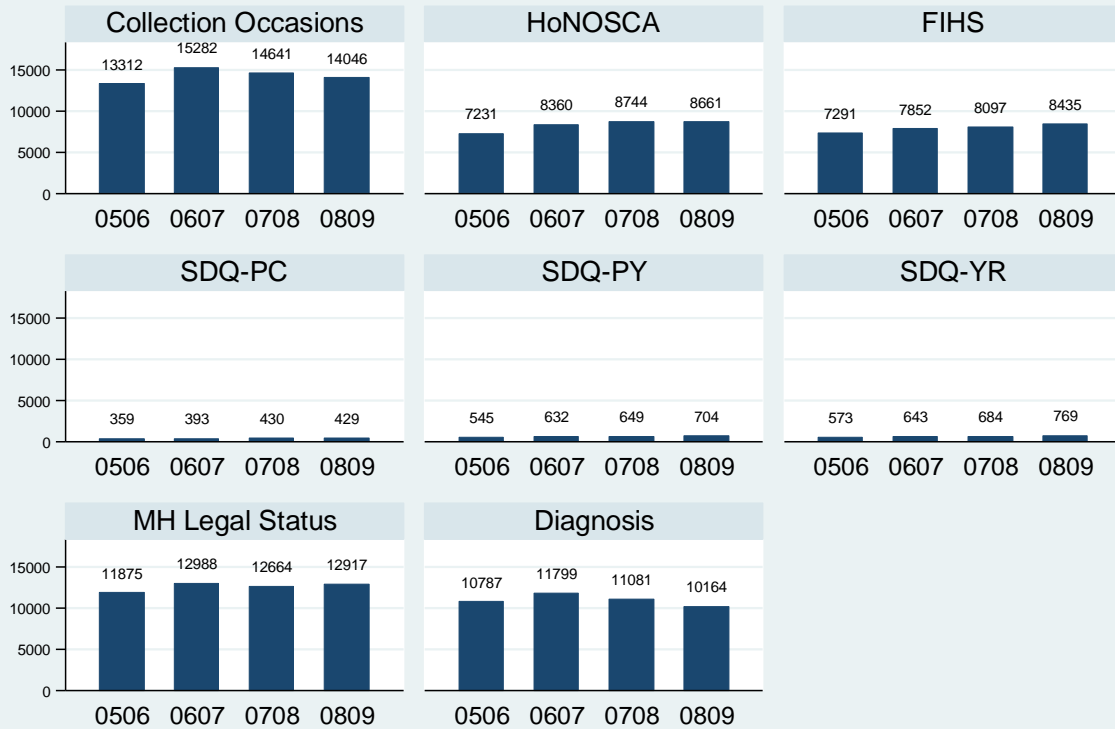
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Child & Adolescent - Ambulatory - Discharge

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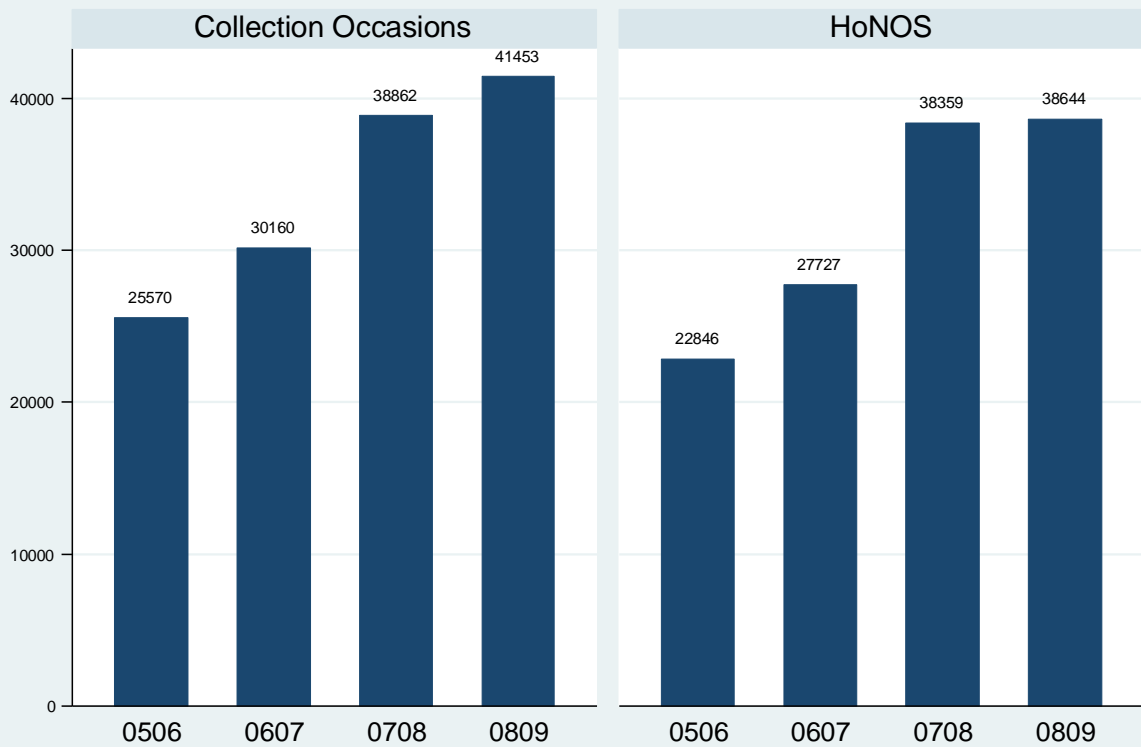
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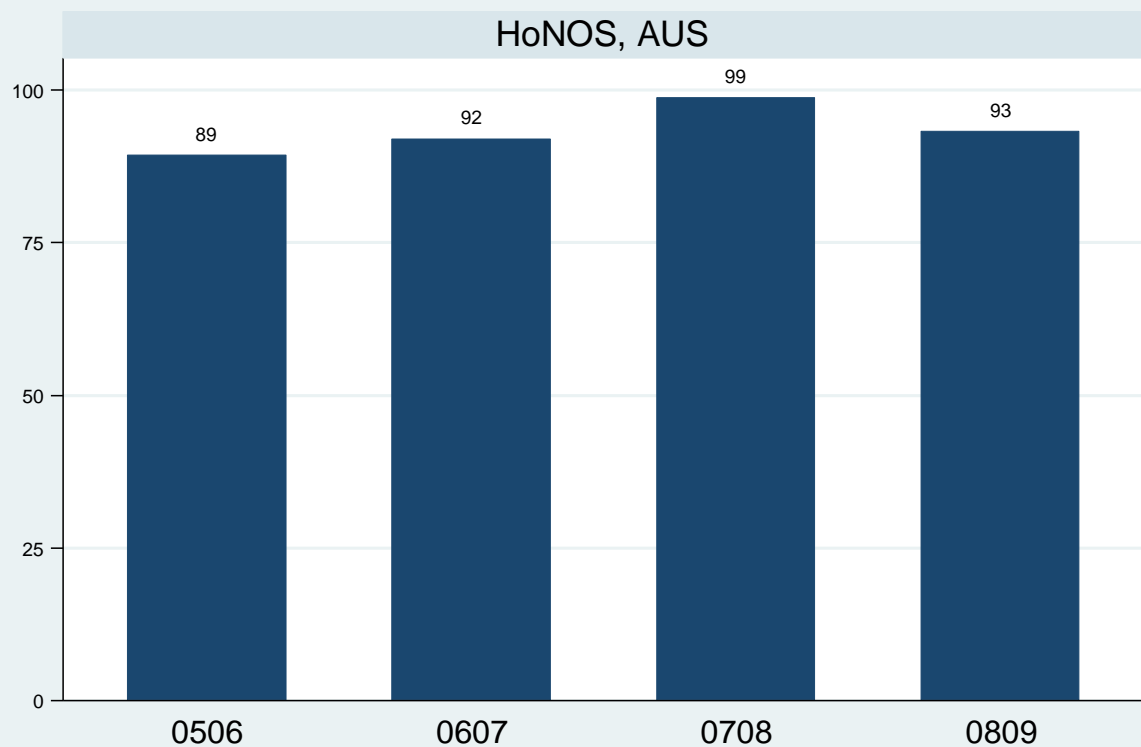
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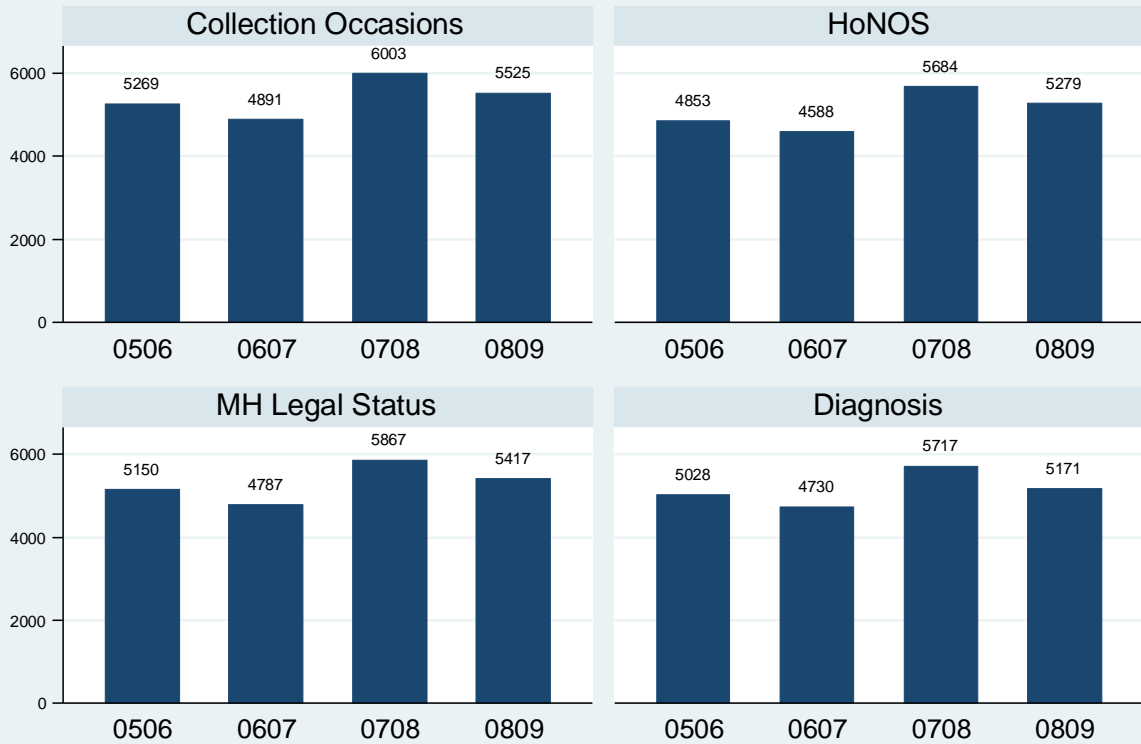
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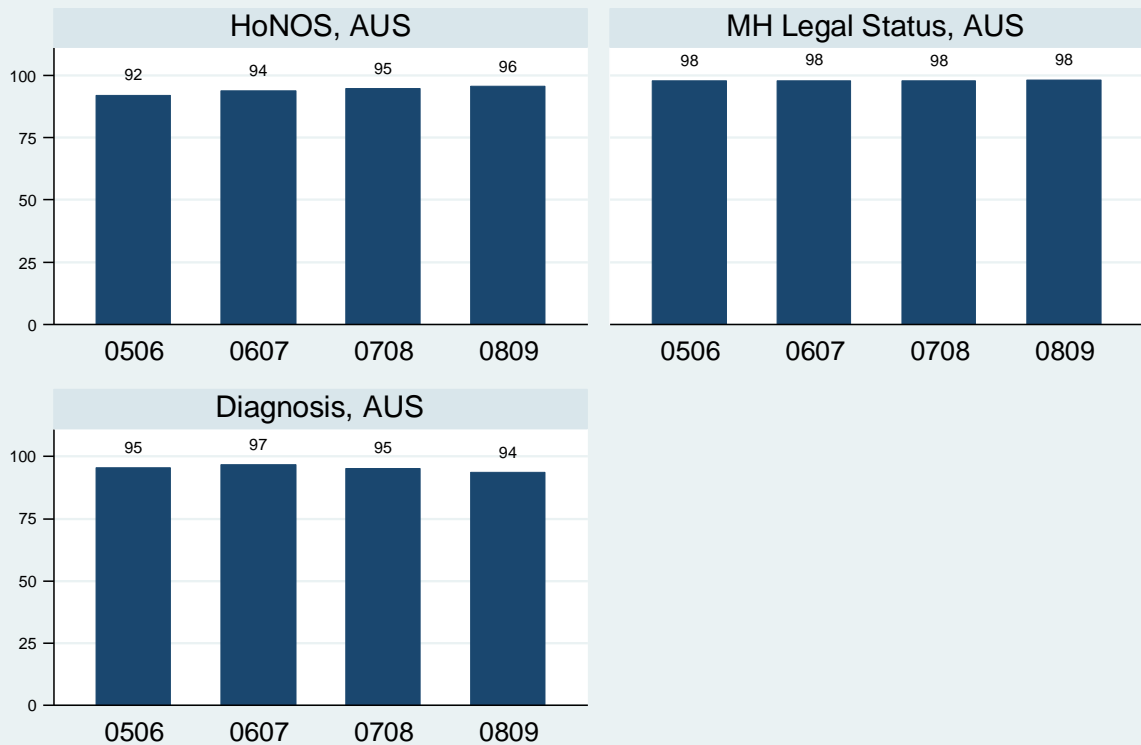
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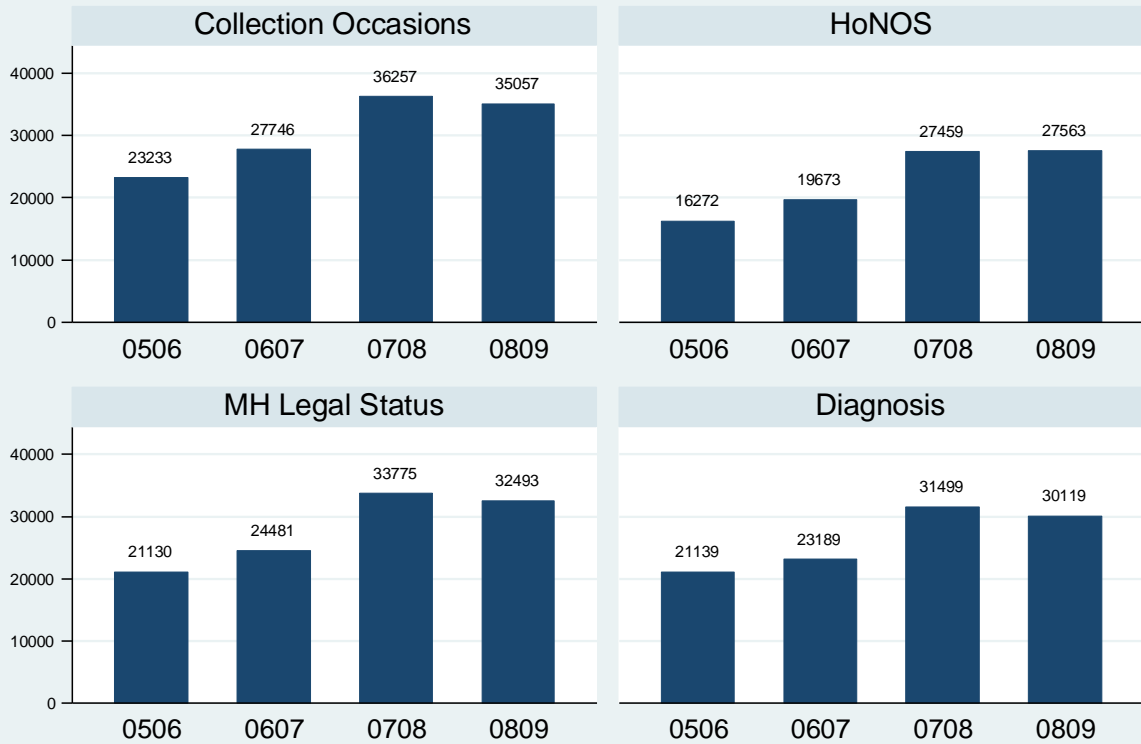
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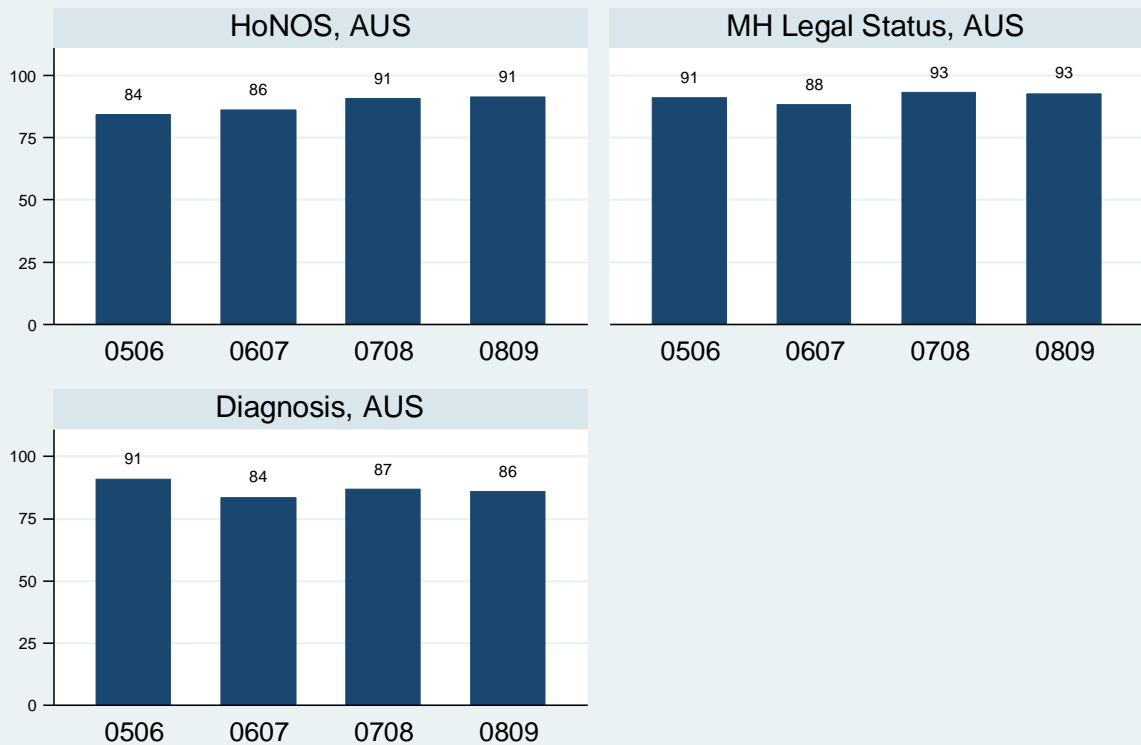
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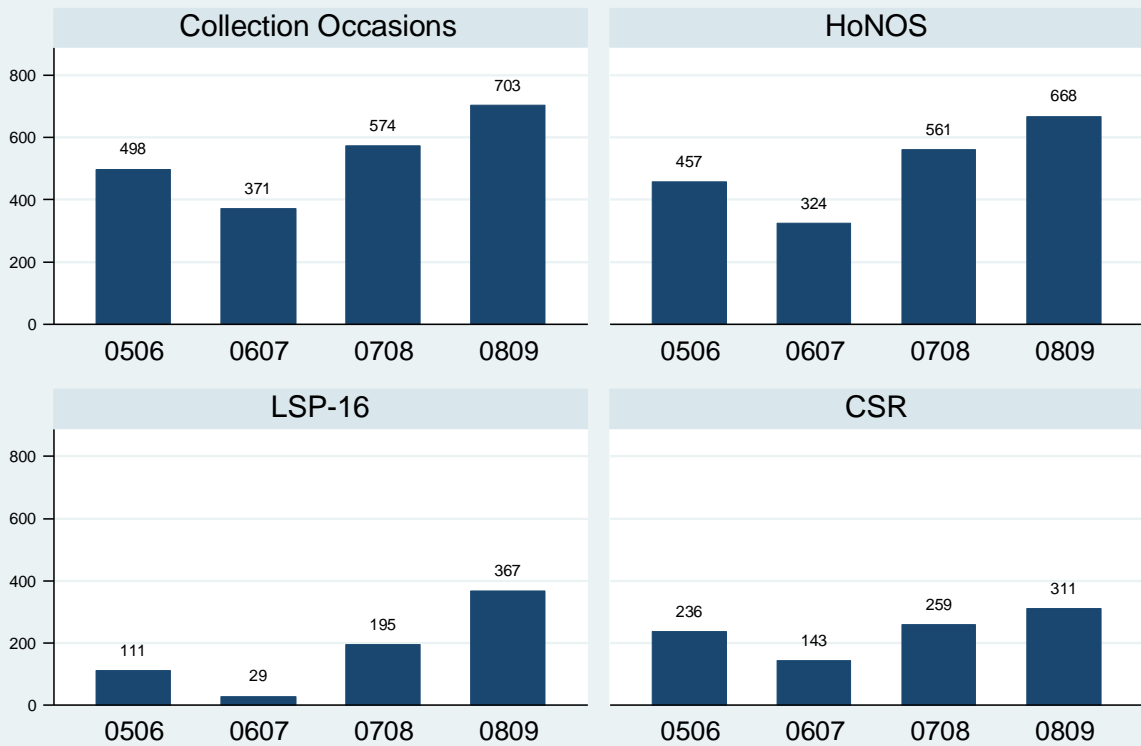
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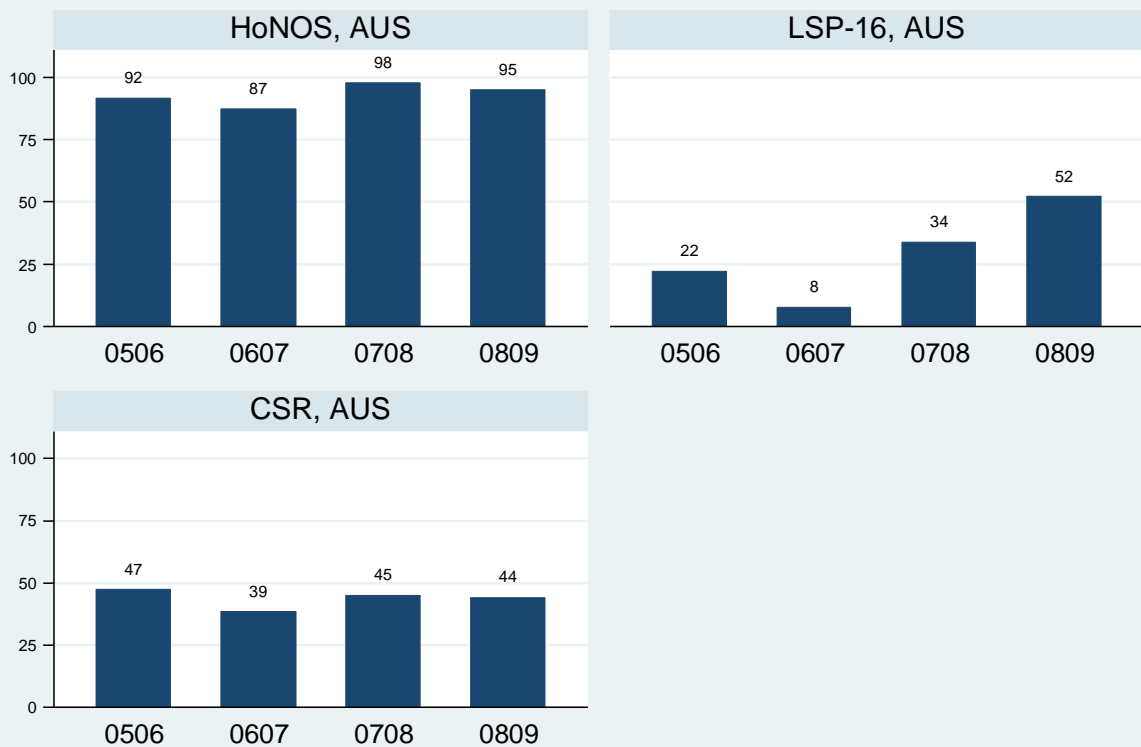
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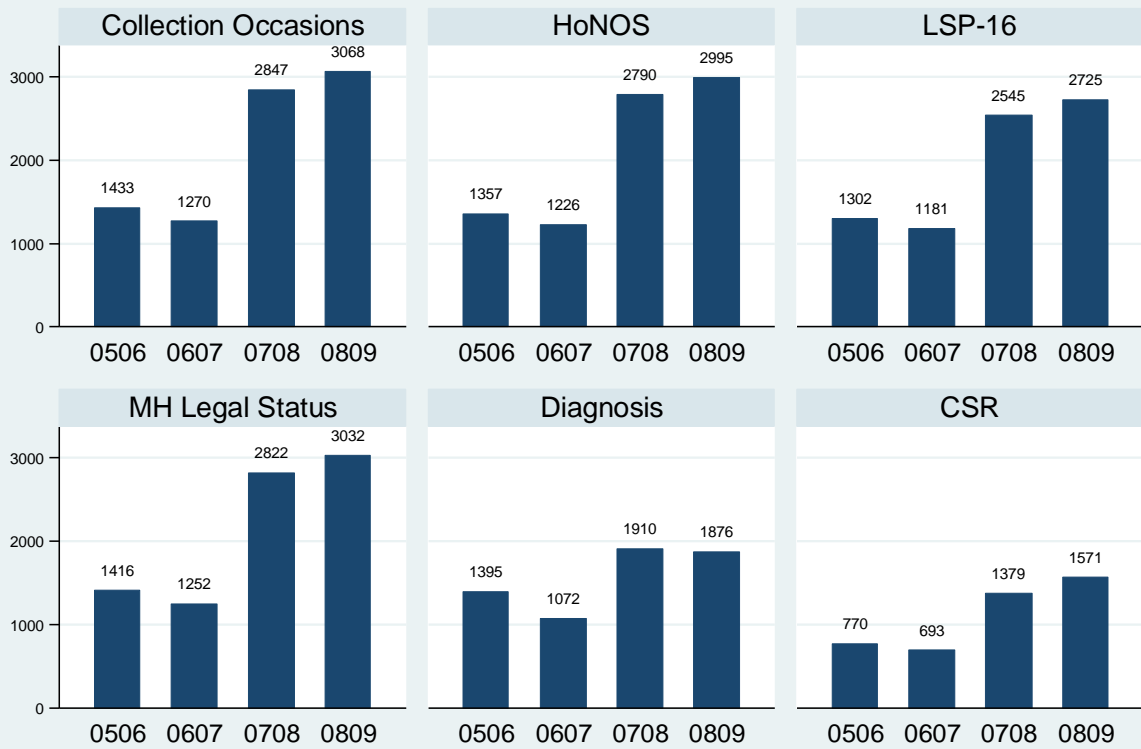
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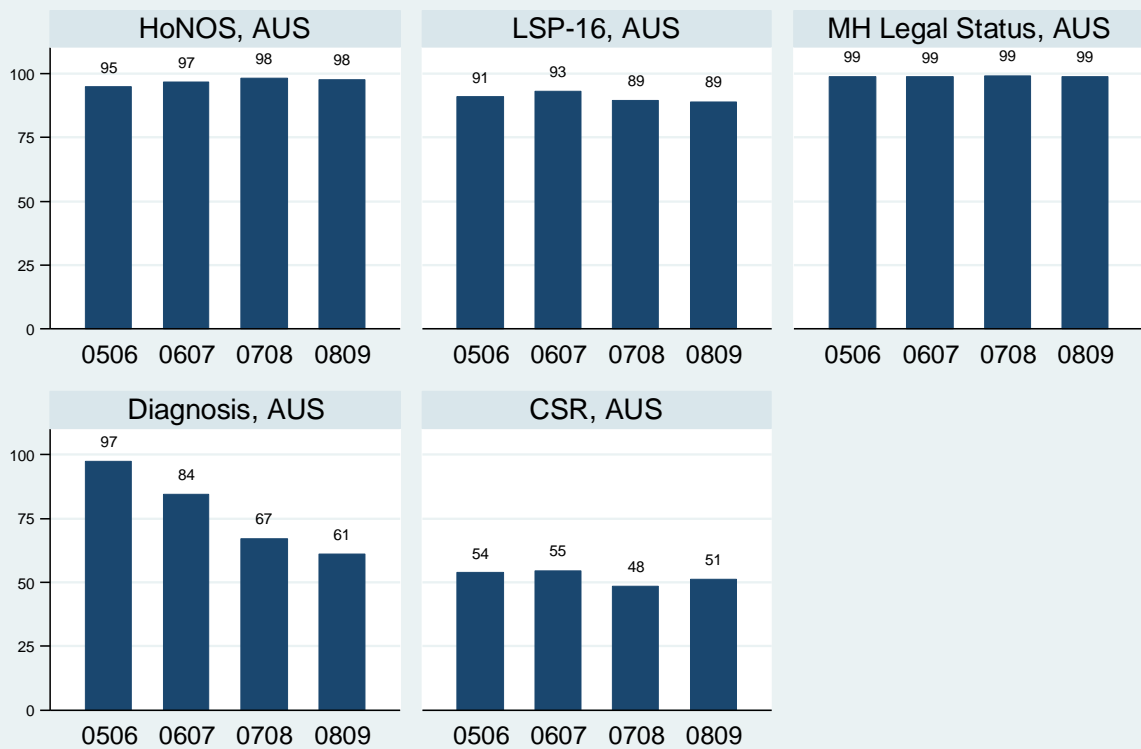
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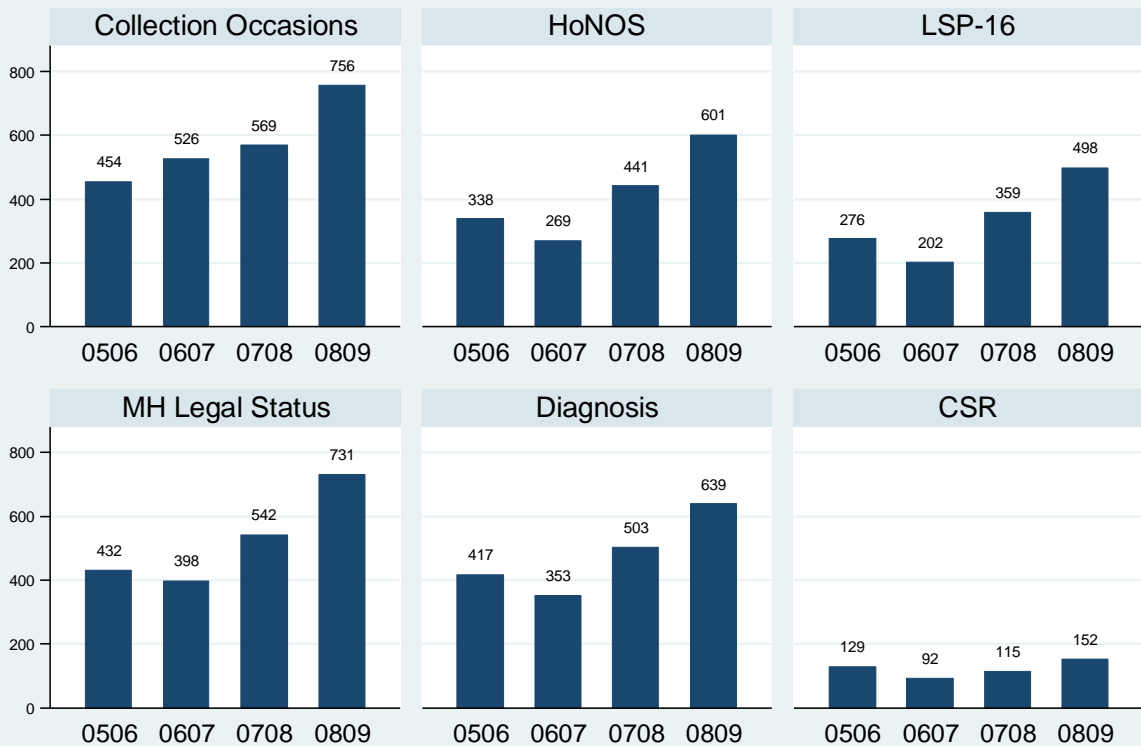
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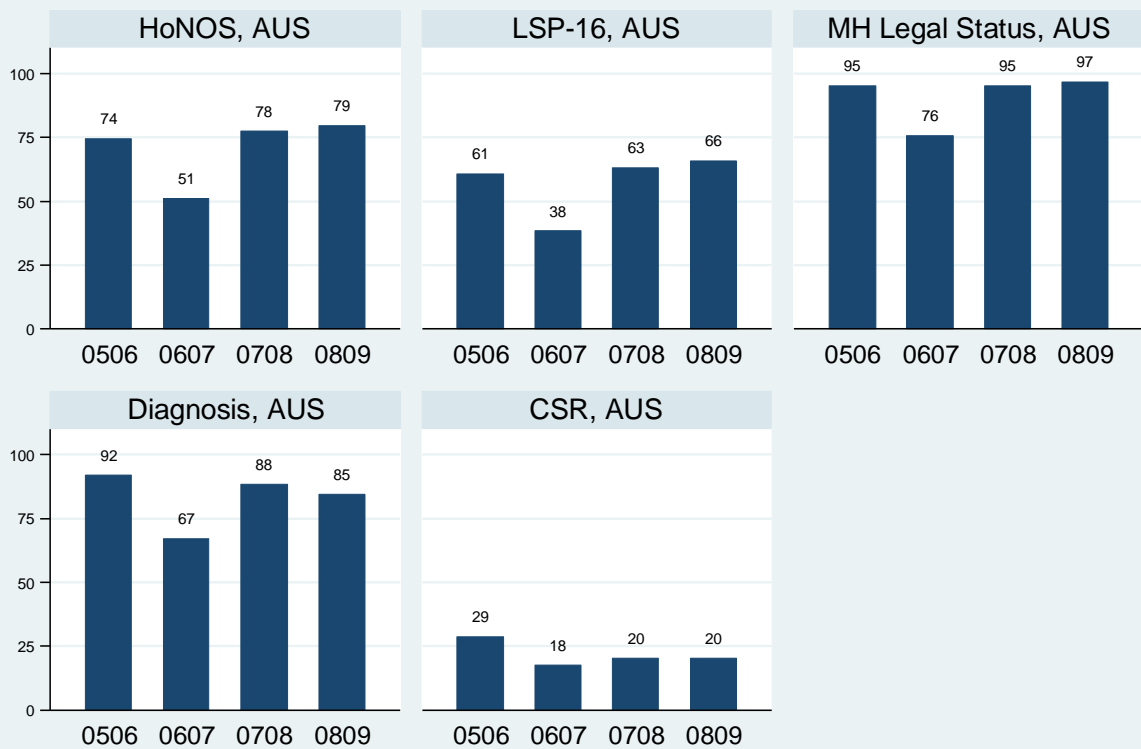
Adult - Residential - Discharge

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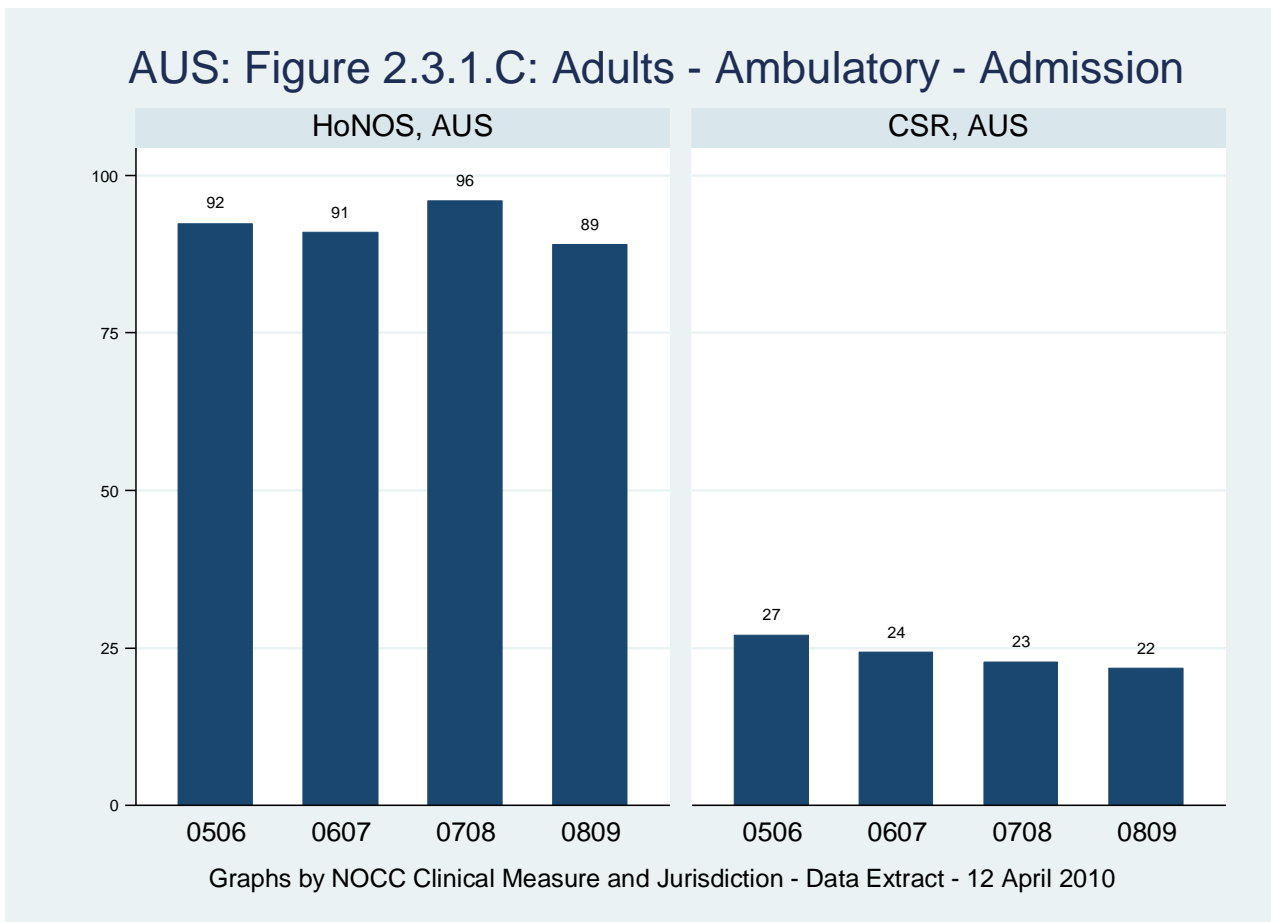
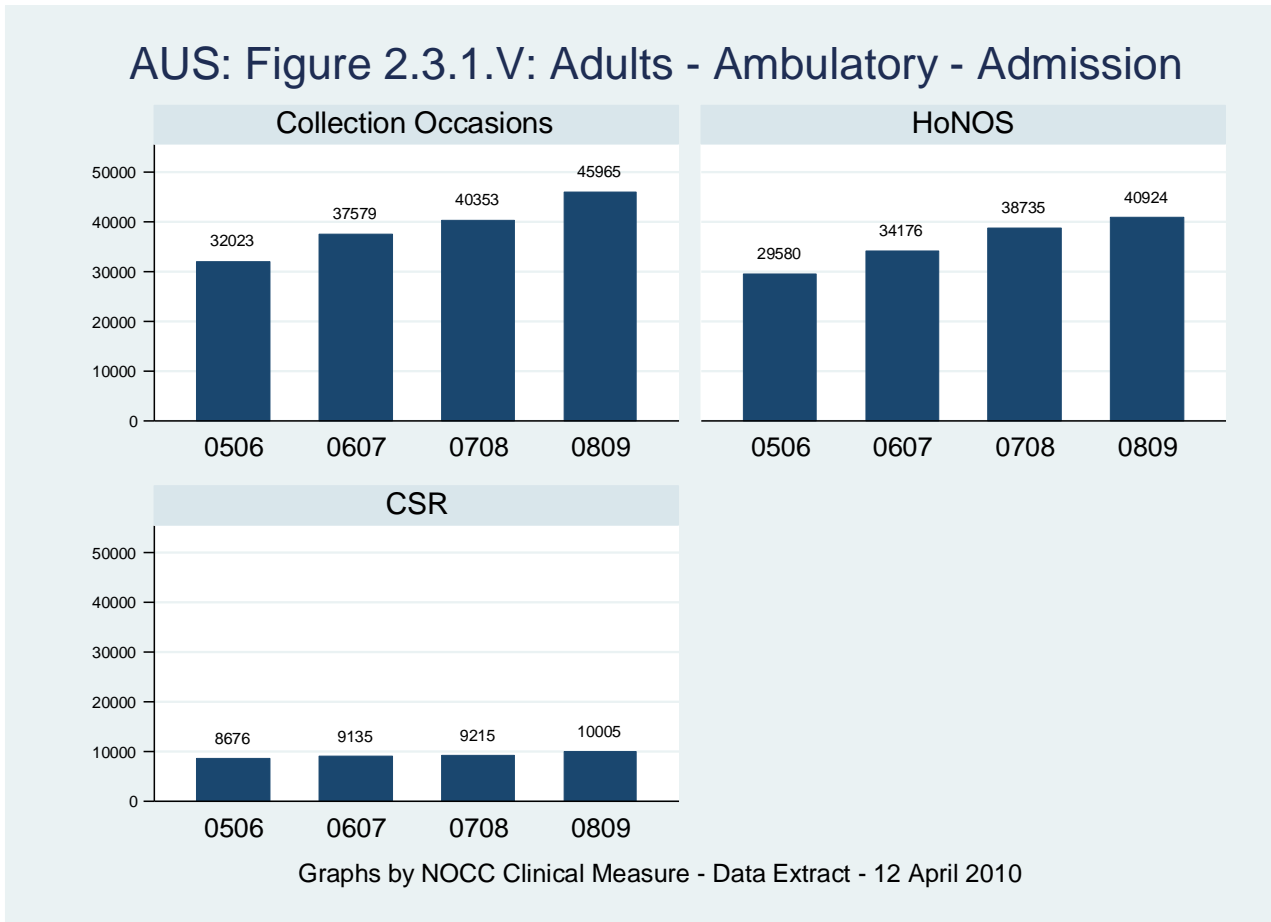
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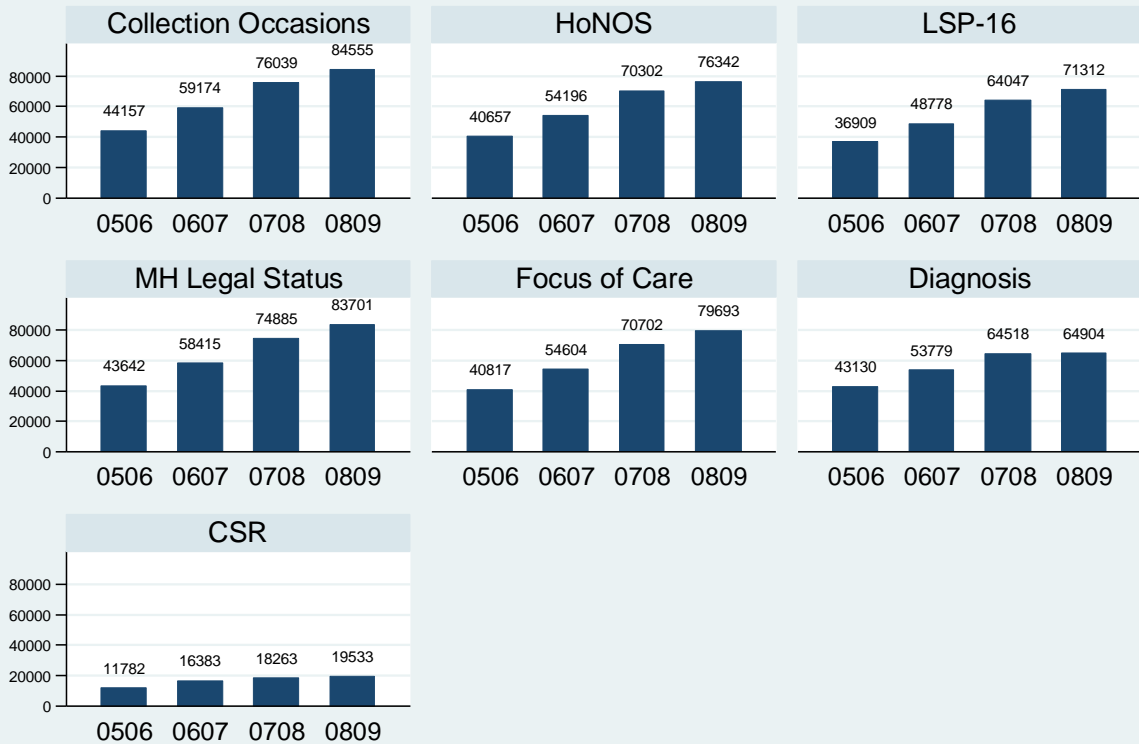
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Adult - Ambulatory - Admission



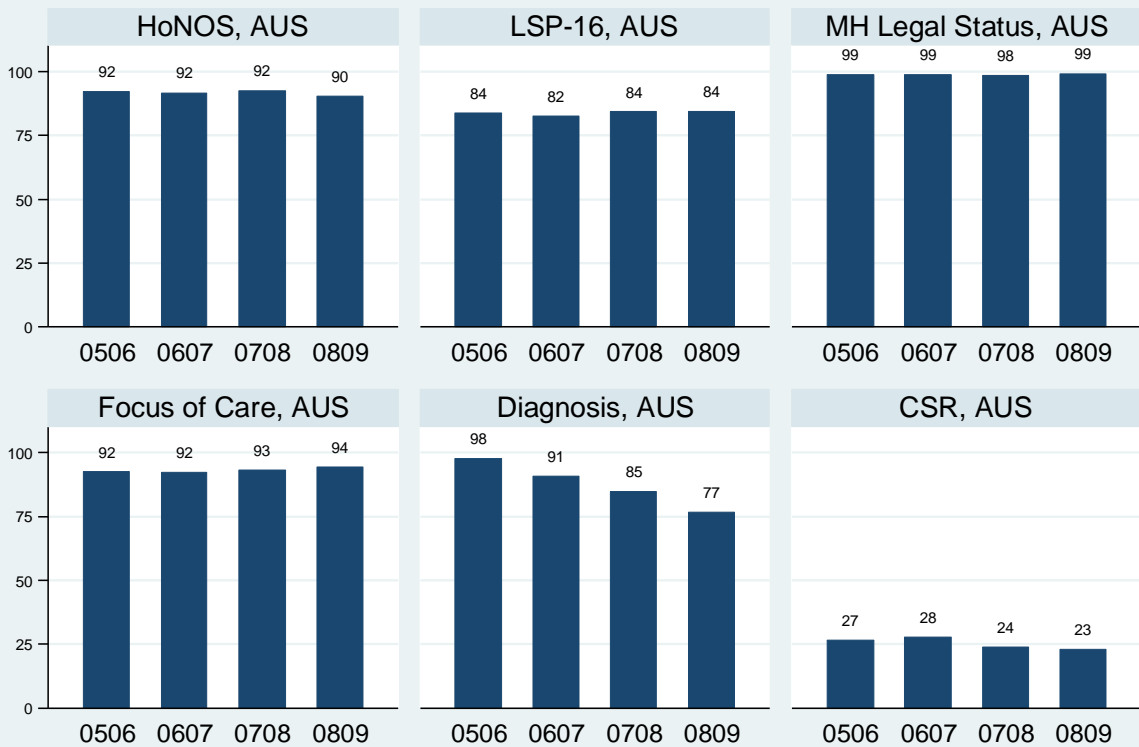
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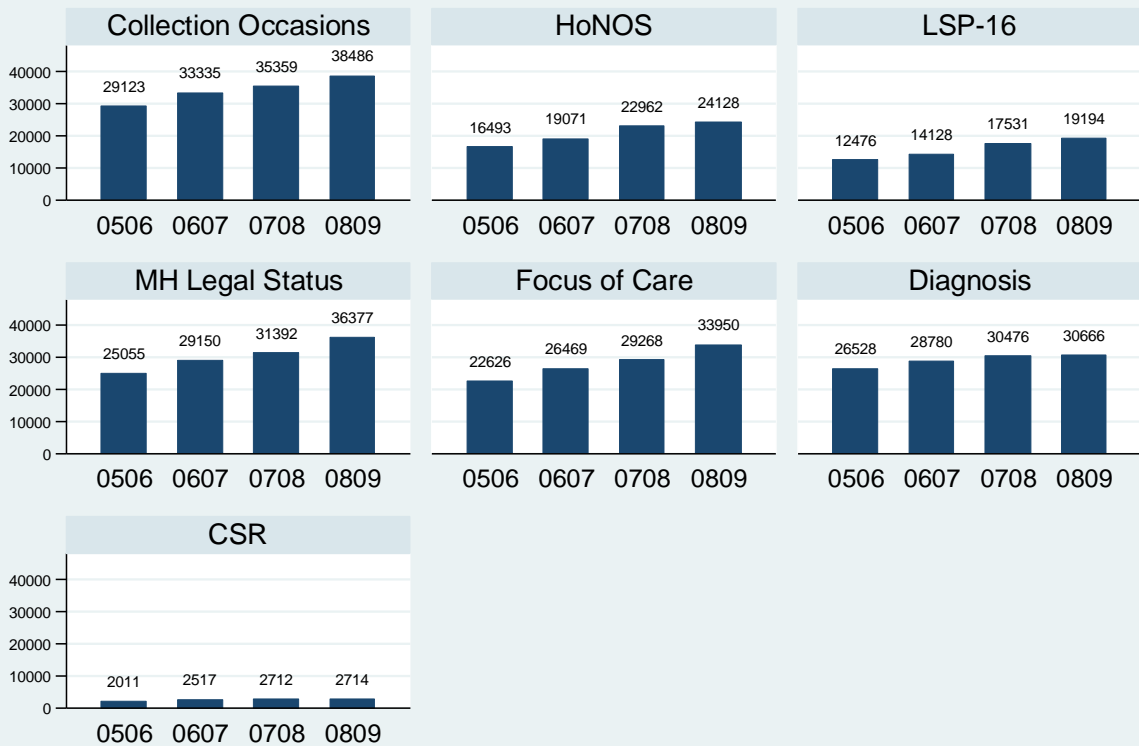
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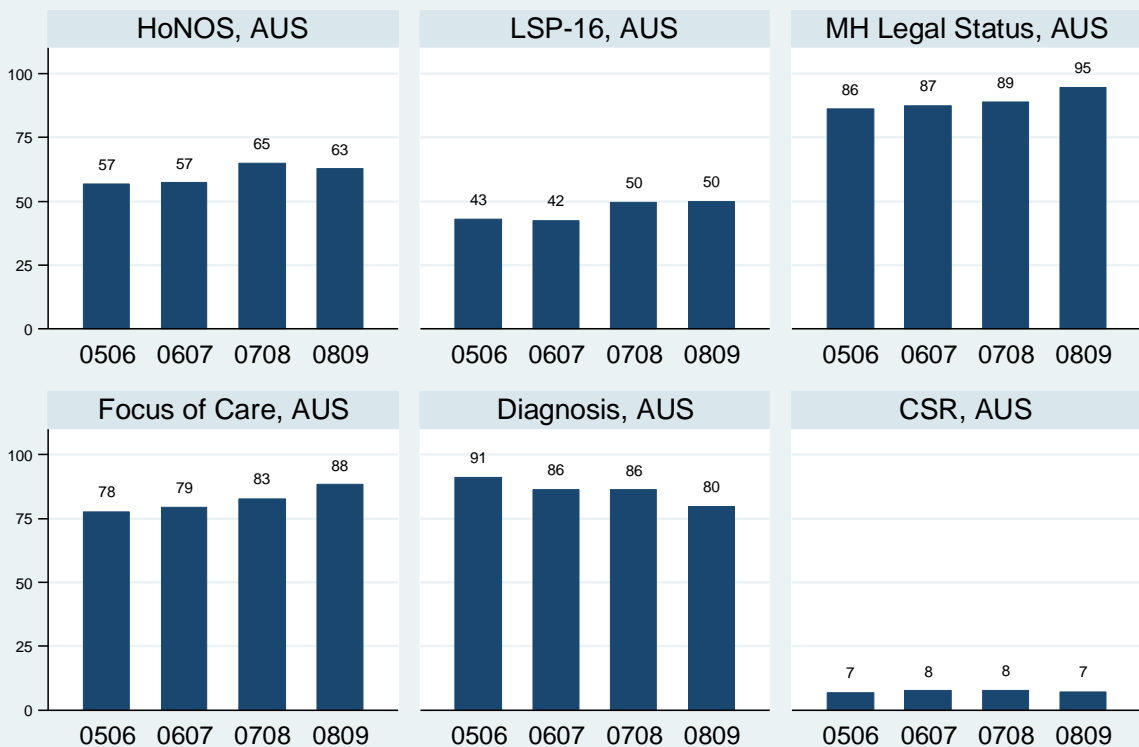
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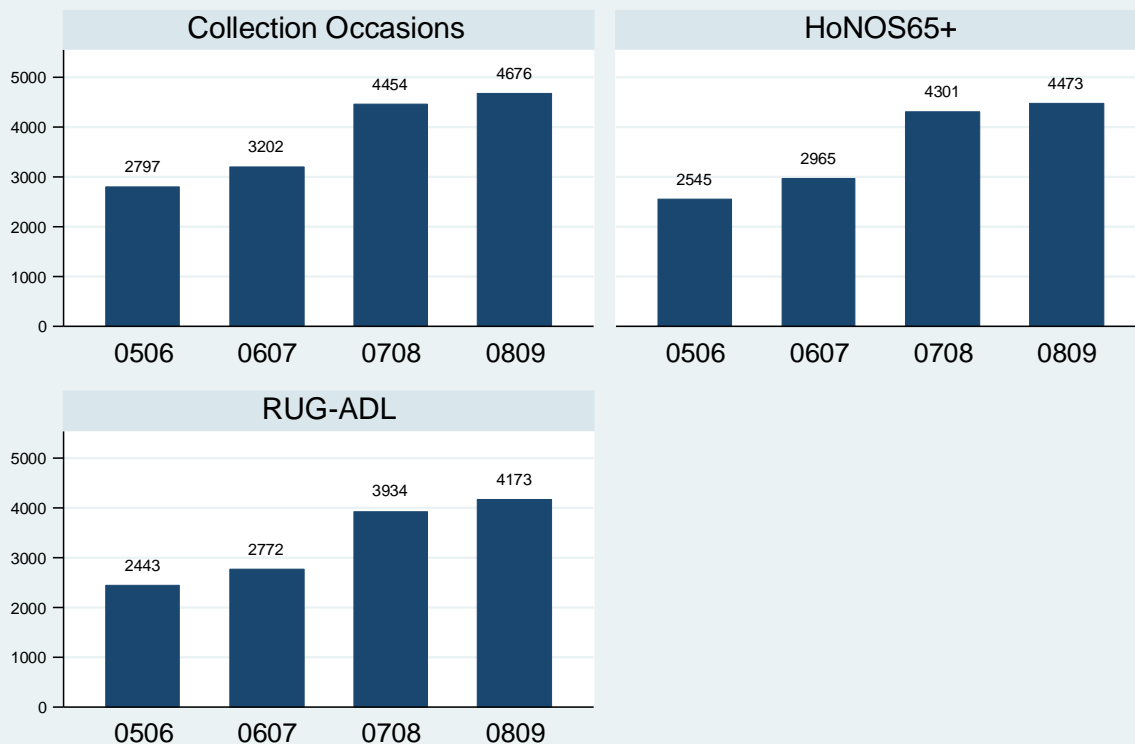
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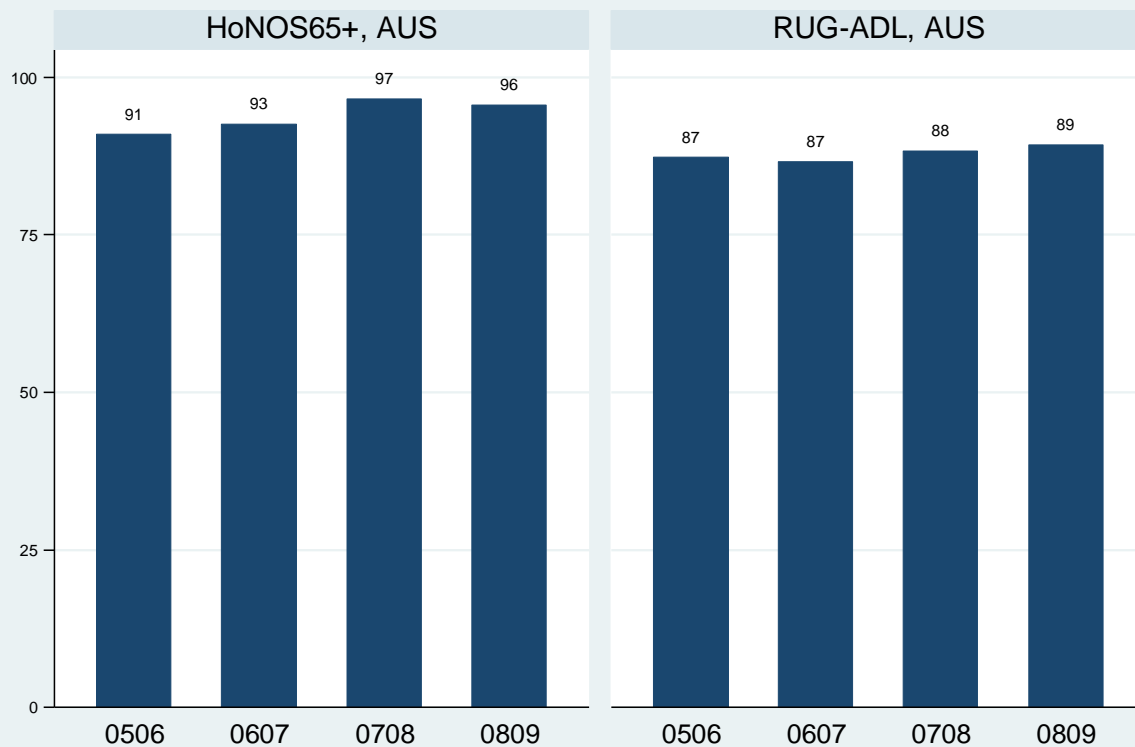
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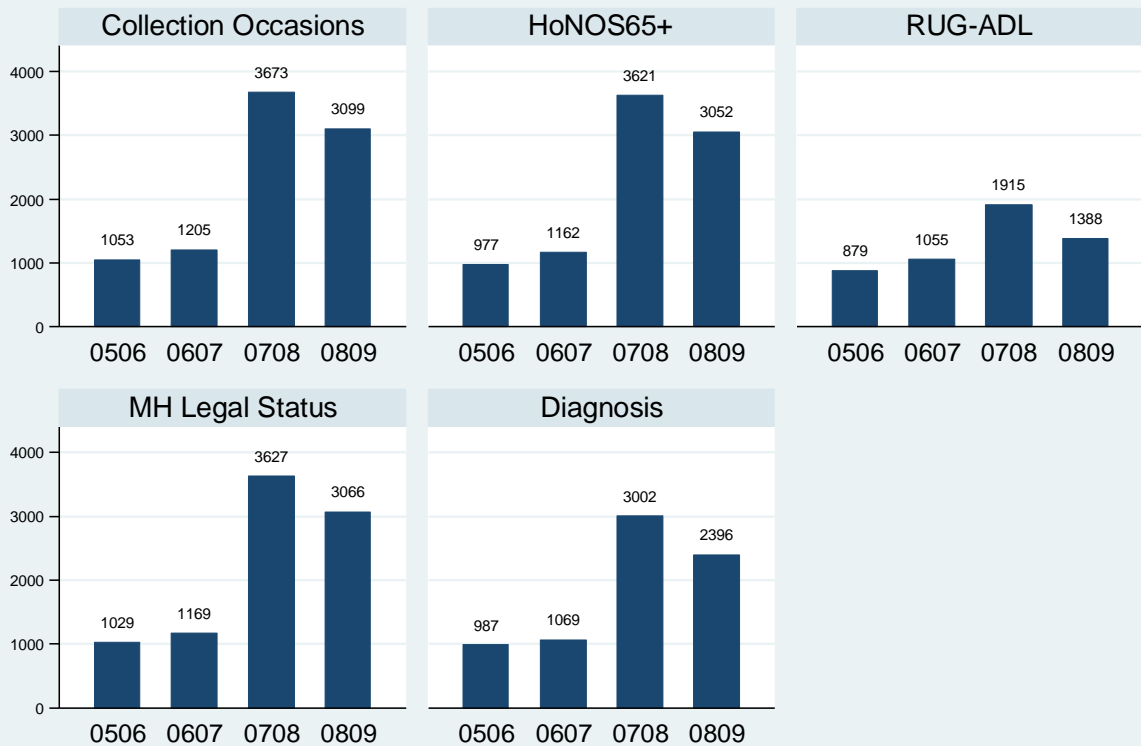
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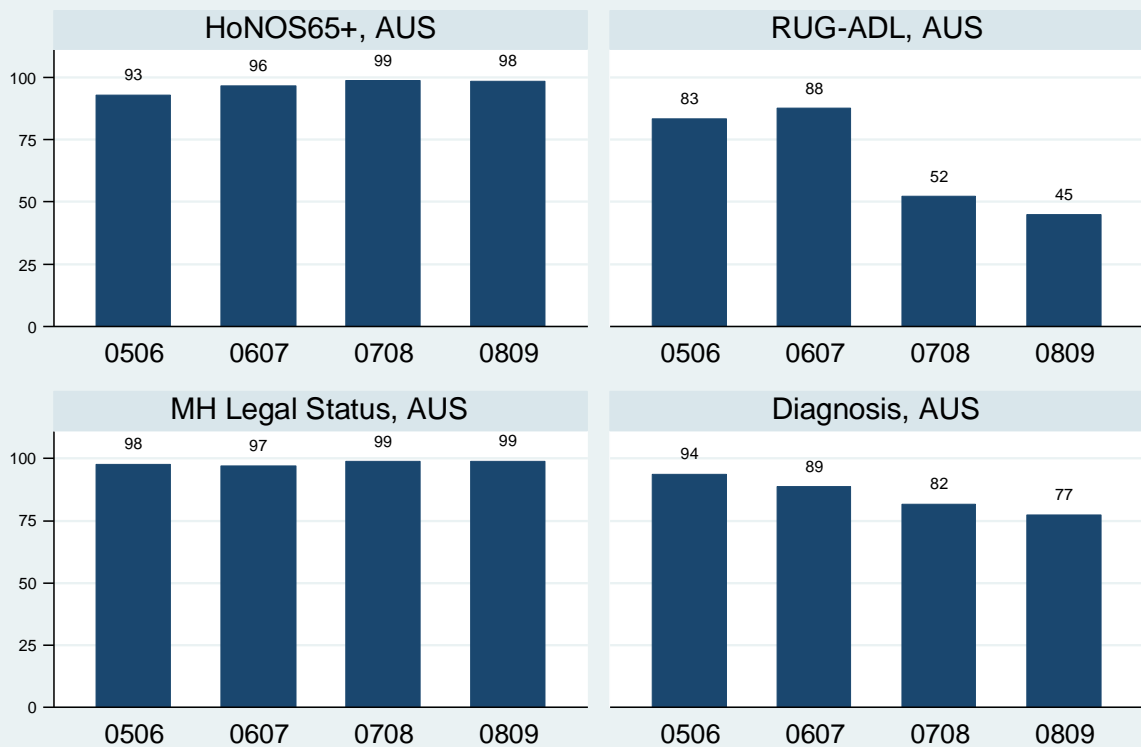
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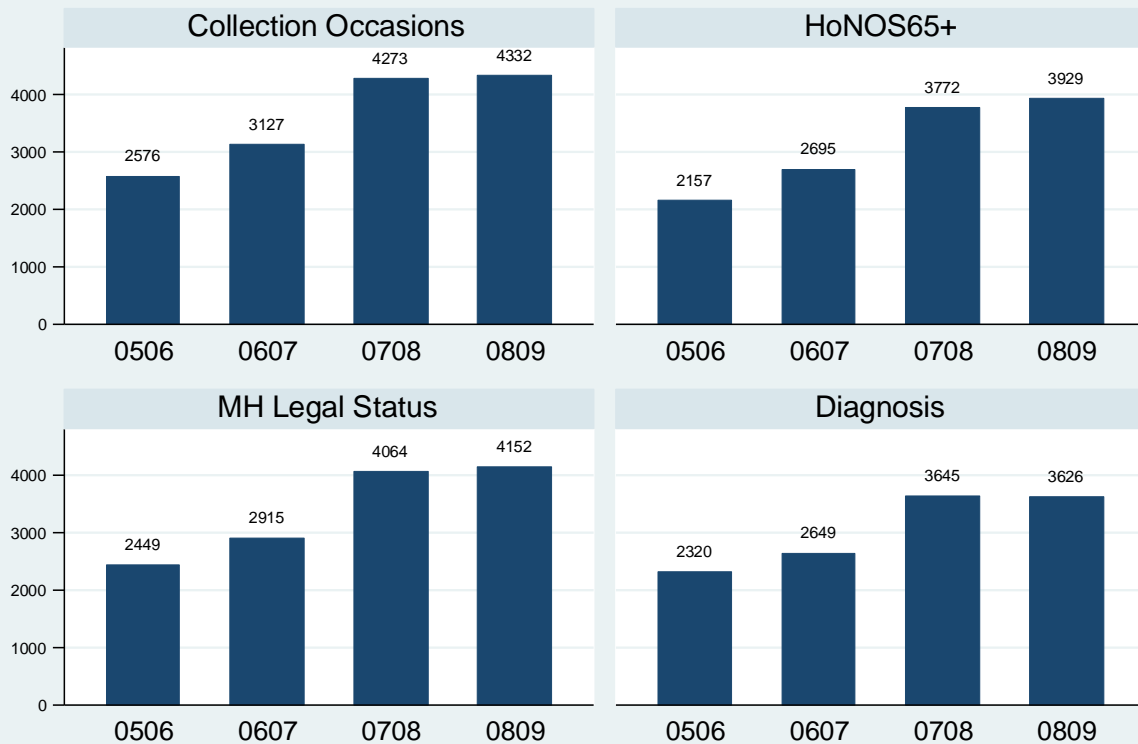
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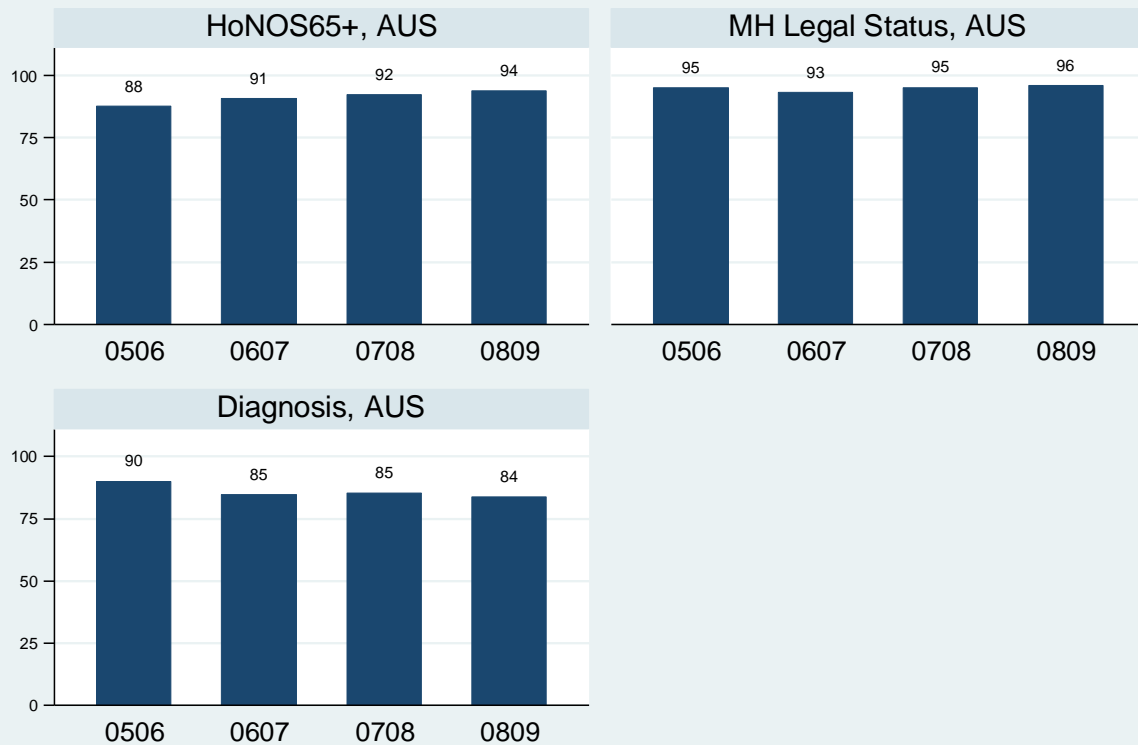
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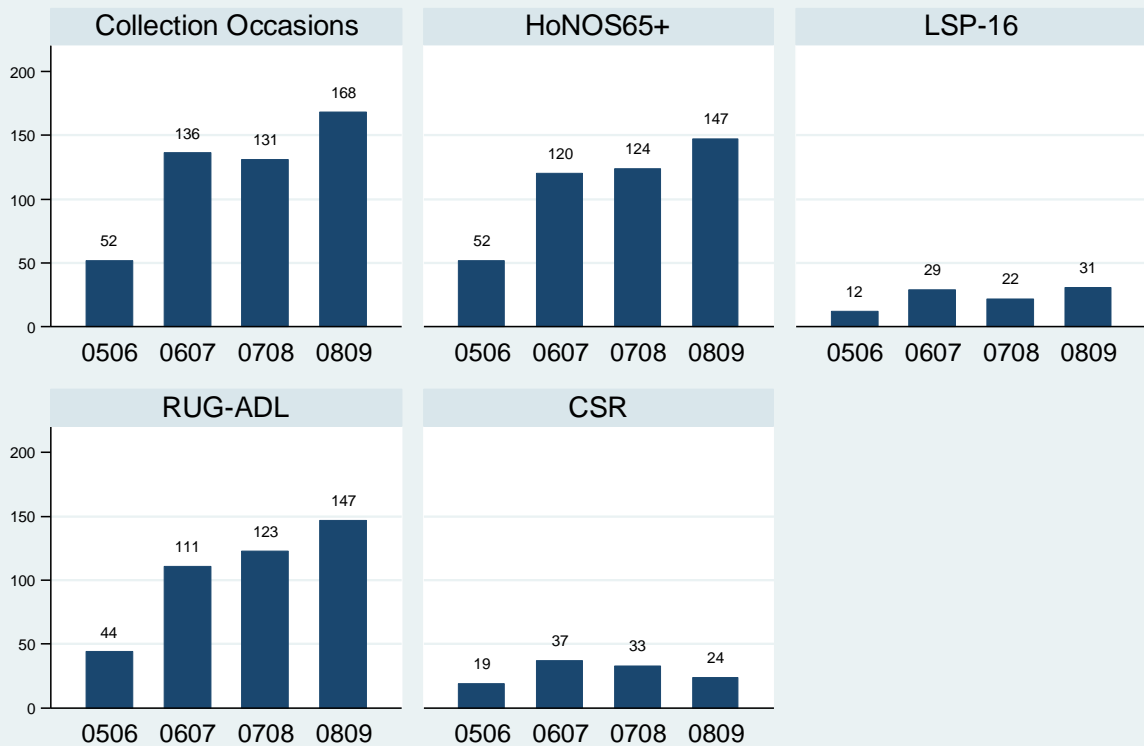
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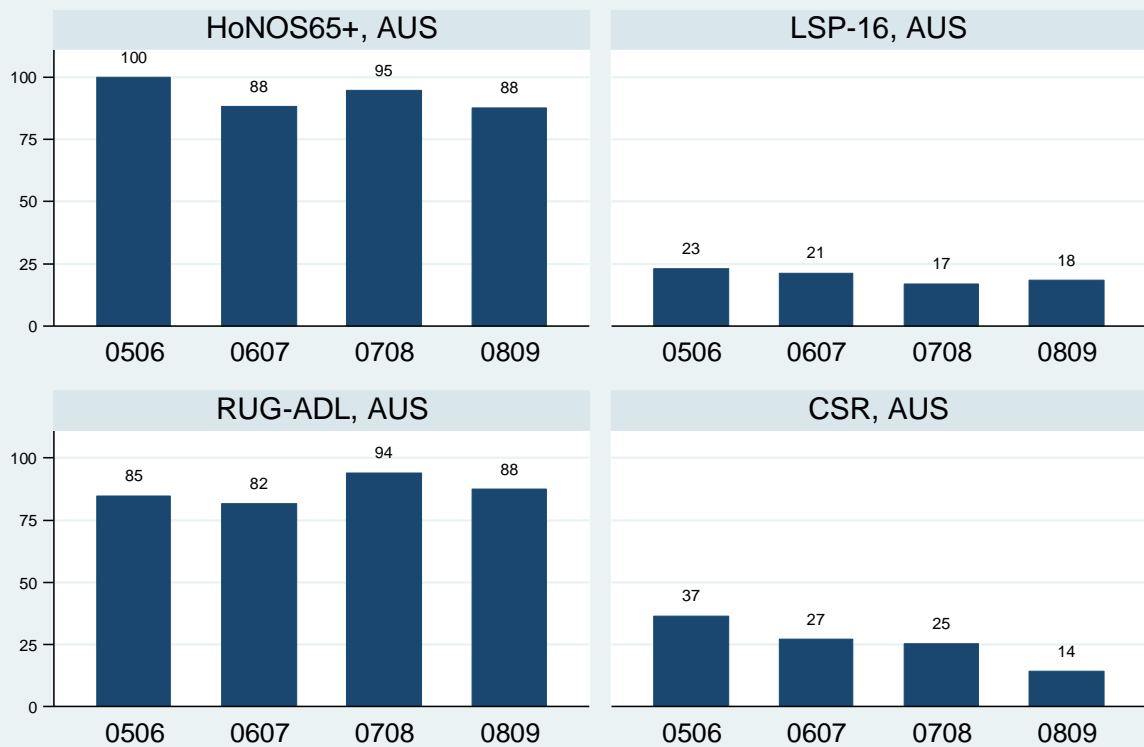
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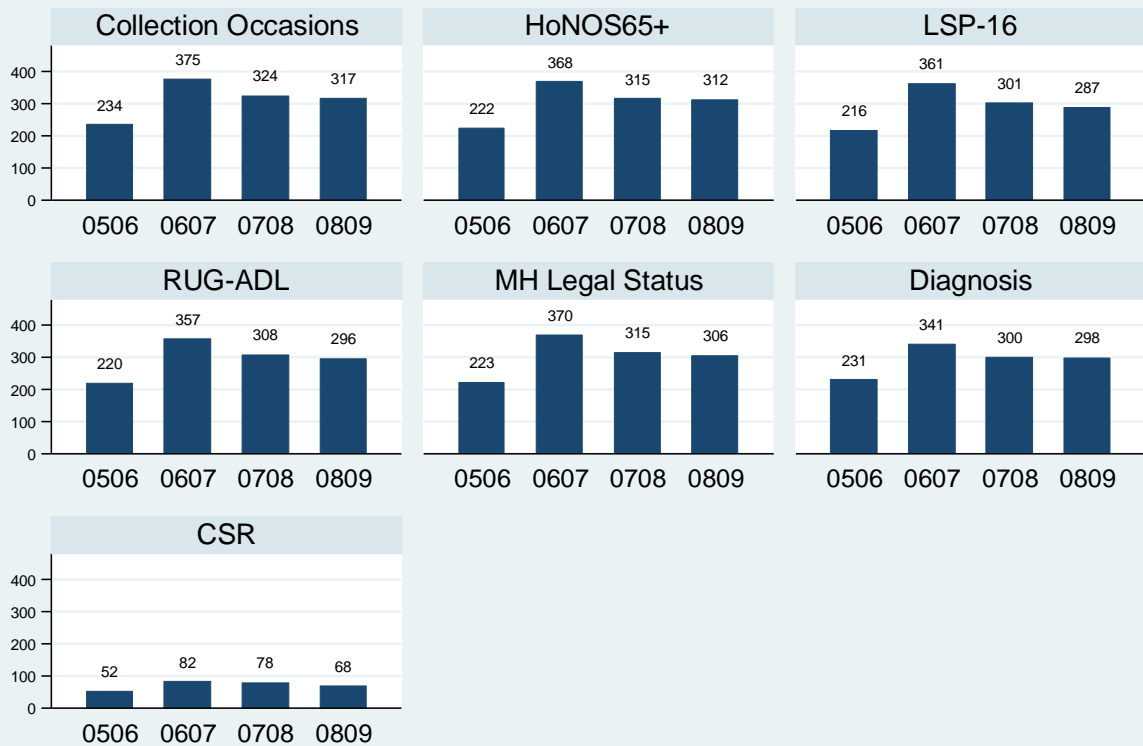
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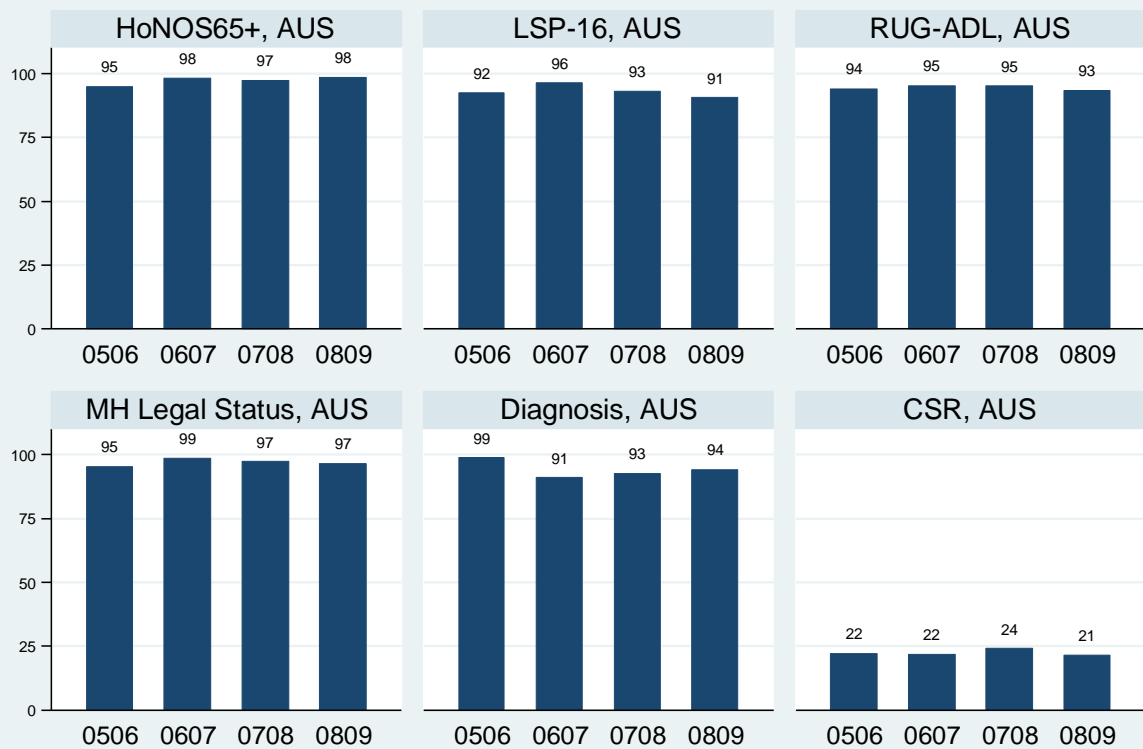
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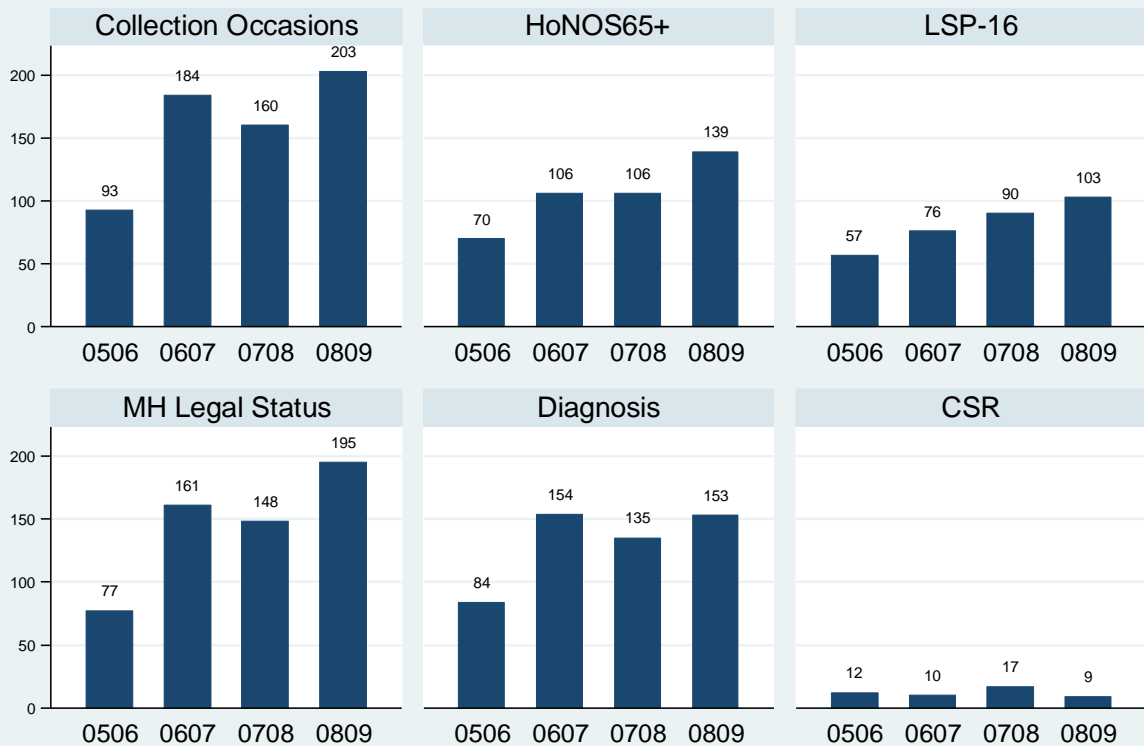
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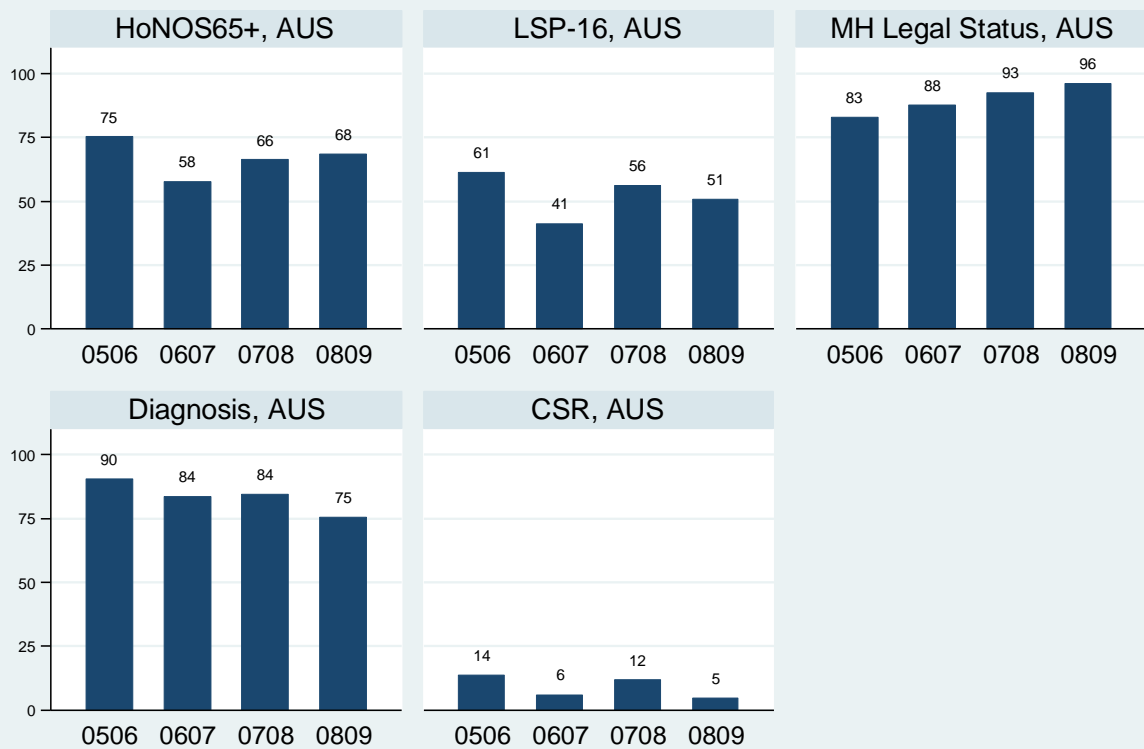
Older Persons - Residential - Discharge

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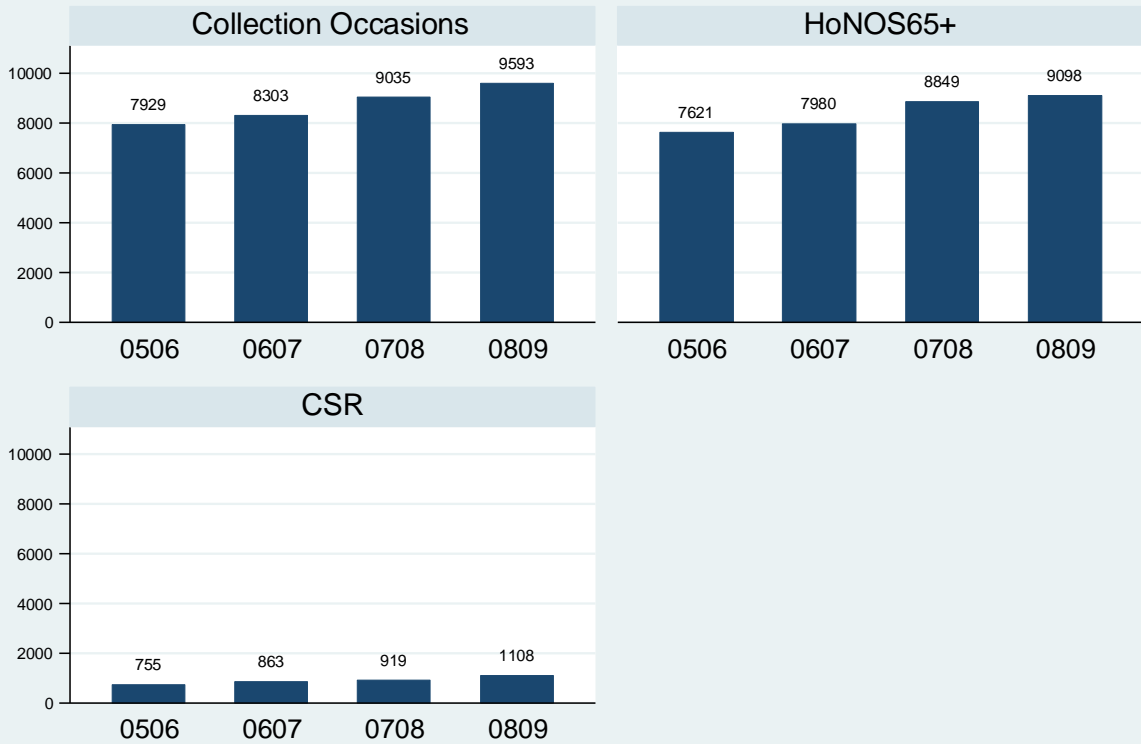
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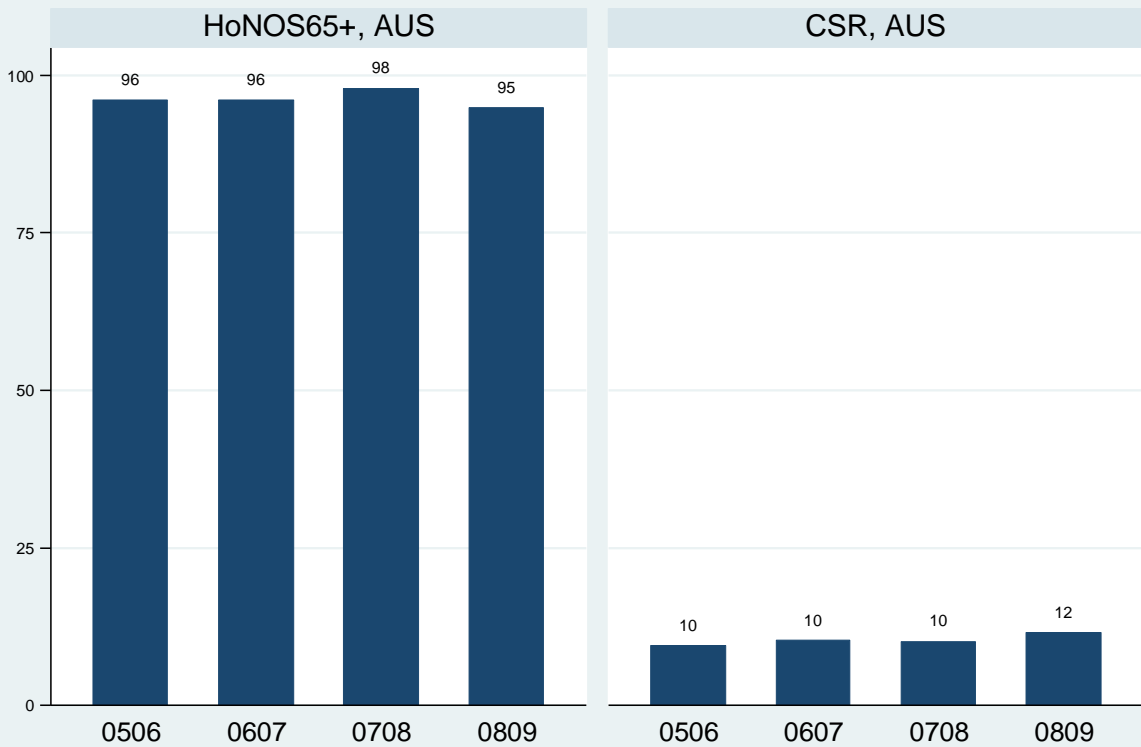
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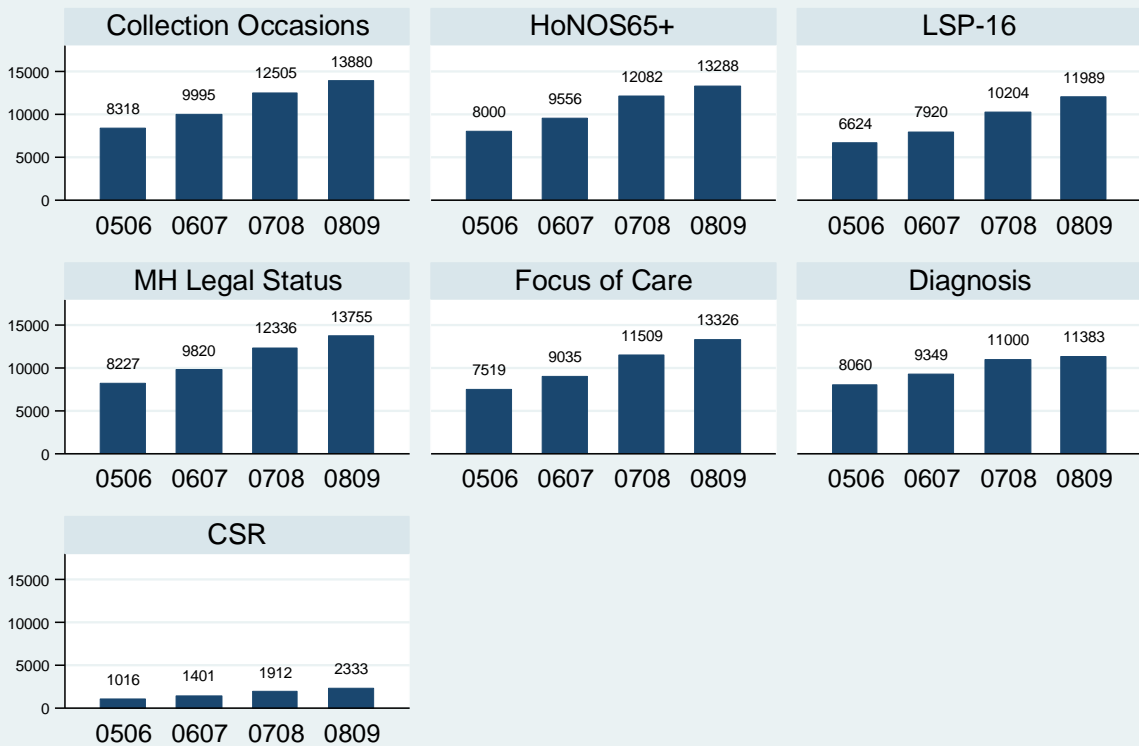
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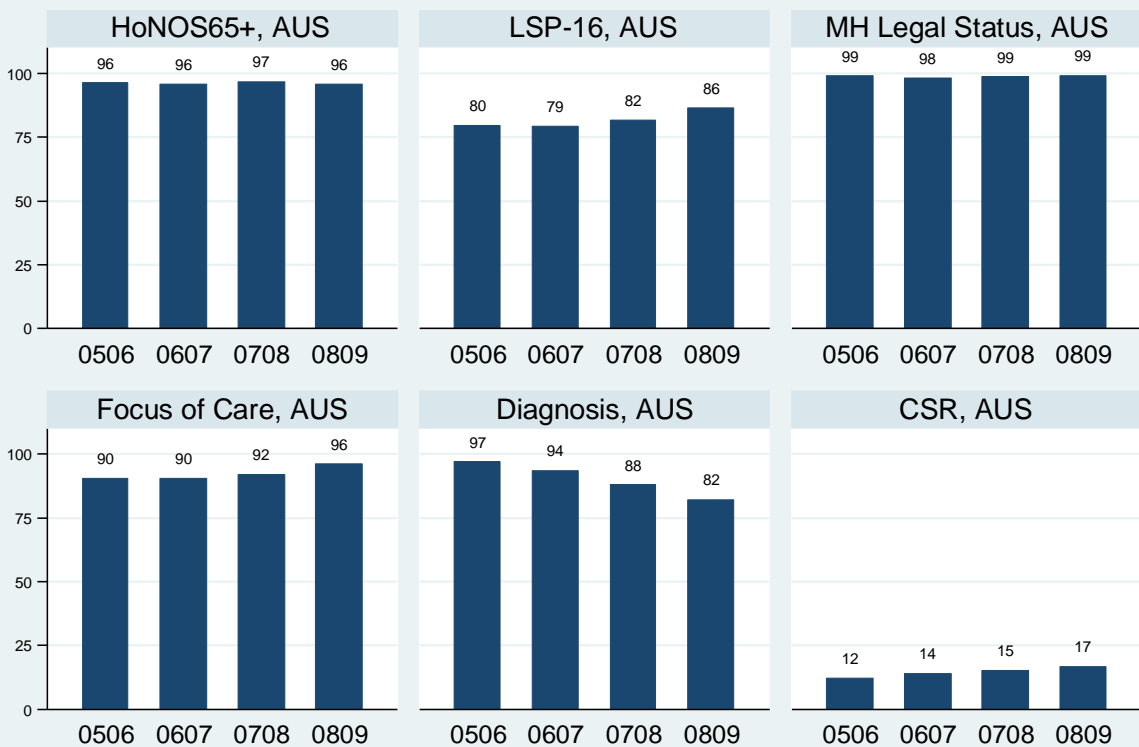
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AUS: Figure 3.3.2.V: Older Persons - Ambulatory - Review



Graphs by NOCC Clinical Measure - Data Extract - 12 April 2010

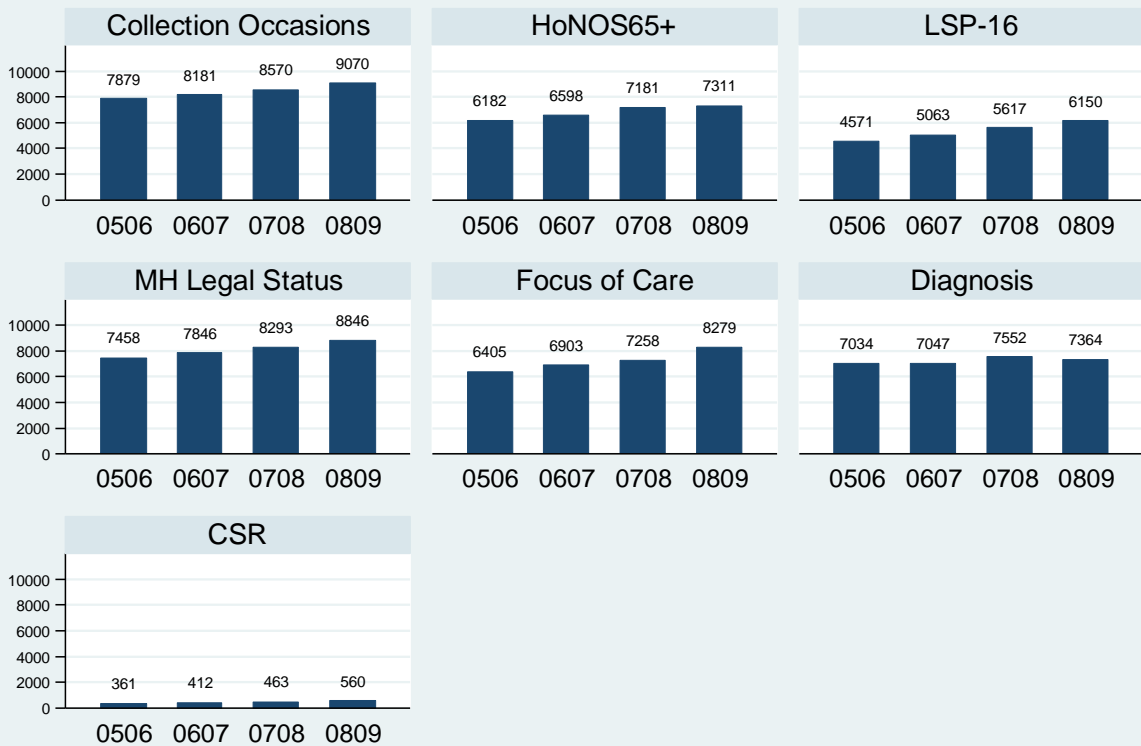
AUS: Figure 3.3.2.C: Older Persons - Ambulatory - Review



Graphs by NOCC Clinical Measure and Jurisdiction - Data Extract - 12 April 2010

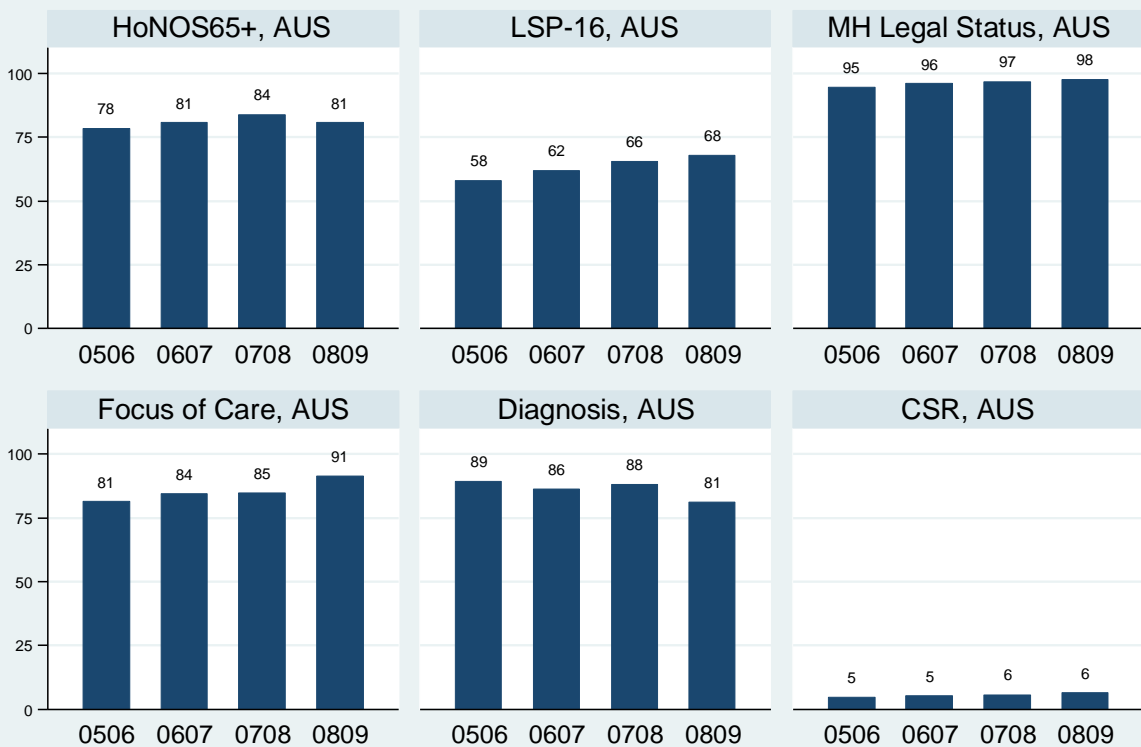
Older Persons - Ambulatory - Discharge

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



Graphs by NOCC Clinical Measure - Data Extract - 12 April 2010

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



Graphs by NOCC Clinical Measure and Jurisdiction - Data Extract - 12 April 2010

***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 7.1.3 of the *NOCC Technical Specification* summarises the protocol and is reproduced at Attachment 1. It is important to note that there has been variation of this national protocol in some jurisdictions.

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	π₁	
Episode of Care	ε₁	
<i>Explanatory Notes</i>		
θ₁	<u>Collection Occasion₁</u>	Admission
θ₂	<u>Collection Occasion₂</u>	Discharge
π₁	<u>Period of Care₁</u>	Any Admission > Any Discharge
ε₁	<u>Episode of Care₁</u>	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	-	
<i>Explanatory Notes</i>		
θ₁	<u>Collection Occasion₁</u>	Admission
θ₂	<u>Collection Occasion₂</u>	Admission

Figure 3: Representation of a valid NOCC sequence with 3 Collection Occasions

	A_1	R_2	D_3
Collection Occasion	<u>θ_1</u>	<u>θ_2</u>	<u>θ_3</u>
Period of Care	π_1		π_2
Episode of Care	ϵ_1		

Explanatory Notes

θ_1	<u>Collection Occasion</u> ₁	Admission
θ_2	<u>Collection Occasion</u> ₂	Review
θ_3	<u>Collection Occasion</u> ₃	Discharge
π_1	<u>Period of Care</u> ₁	Any Admission > Any Review
π_2	<u>Period of Care</u> ₂	Any Review > Any Discharge
ϵ_1	<u>Episode of Care</u> ₁	Any Admission > Any Discharge

Figure 4: Representation of an invalid NOCC sequence with 3 Collection Occasions

	R_1	A_2	D_3
Collection Occasion	<u>θ_1</u>	<u>θ_2</u>	<u>θ_3</u>
Period of Care	-	$? \pi_1$	
Episode of Care	-	$? \epsilon_1$	

Explanatory Notes

θ_1	<u>Collection Occasion</u> ₁	Review
θ_2	<u>Collection Occasion</u> ₂	Admission
θ_3	<u>Collection Occasion</u> ₃	Discharge
$? \pi_1$	<u>Period of Care</u> ₁	Deemed Invalid
$? \epsilon_1$	<u>Episode of Care</u> ₁	Deemed Invalid

Figure 5: Representation of a valid NOCC sequence with 3 Collection Occasions for an incomplete Episode of Mental Health Care

	A_1	R_2	R_3
Collection Occasion	<u>θ_1</u>	<u>θ_2</u>	<u>θ_3</u>
Period of Care	π_1		π_2
Episode of Care	ε_1		
<i>Explanatory Notes</i>			
θ_1	<u>Collection Occasion₁</u>	Admission	
θ_2	<u>Collection Occasion₂</u>	Review	
θ_3	<u>Collection Occasion₃</u>	Review	
π_1	<u>Period of Care₁</u>	Any Admission > Any Review	
π_2	<u>Period of Care₂</u>	Any Review > Any Review	
ε_1	<u>Episode of Care₁</u>	Any Admission > Any Review	

Figure 6: Representation of a valid NOCC sequence with 3 Collection Occasions for an incomplete Episode of Mental Health Care

	D_1	A_2	R_3
Collection Occasion	<u>θ_1</u>	<u>θ_2</u>	<u>θ_3</u>
Period of Care		π_1	
Episode of Care		ε_1	
<i>Explanatory Notes</i>			
θ_1	<u>Collection Occasion₁</u>	Discharge	
θ_2	<u>Collection Occasion₂</u>	Admission	
θ_3	<u>Collection Occasion₃</u>	Review	
π_1	<u>Period of Care₁</u>	Any Admission > Any Review	
ε_1	<u>Episode of Care₁</u>	Any Admission > Any Review	

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 2: 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.