AROC Ambulatory Report

January 2009 – December 2009

Australasian Faculty of Rehabilitation Medicine

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Why ambulatory benchmarking?

- Ambulatory setting is integral to provision of high quality rehabilitation across the sector

- Services have/are developing innovative models of service delivery that place less reliance on traditional inpatient care while continuing to offer quality patient outcomes

- It is important that benchmarking initiatives mirror service provision – thus AROC's extension to ambulatory data collection

- Benchmarking within the ambulatory setting will allow services to monitor comparative effectiveness of their model of ambulatory care against other models

- Stand alone ambulatory providers have not had opportunity to access national benchmarking previously

- Payer/funder focus has shifted to acknowledge relevance and importance of ambulatory rehabilitation services

- National Partnership Agreements require a commitment to participate in work with national data collection agencies to collect and evaluate data on subacute care

Definition of ambulatory rehabilitation

- Starts with a multi-disciplinary assessment

- Is multi-disciplinary, but all therapies may not be delivered concurrently

- Is goal oriented - includes goal setting and review

- The program of care is time limited

- Is delivered in an ambulatory setting, either centre or community based

- Ambulatory rehabilitation may occur as:
  - The continuation of an inpatient episode of rehabilitation
  - A rehabilitation program provided solely in an ambulatory setting

Data collection

- The ambulatory dataset (Version 1) is based on the AROC inpatient dataset, modified to include items that relate specifically to evaluating the efficacy of ambulatory rehabilitation programs
- The dataset consists of 38 items, and includes demographic, clinical and episode specific information
- Data is collected to reflect the program of rehabilitation, thus an 'episode' is defined by the initial and the final service contact
- The collection covers a range of diverse care models - centre based, same day admitted, coordinated outpatient, rehabilitation in the home, inreach/outreach, early discharge therapy, preventative management, etc
- The range of models is matched by equally diverse impairment groups; amputee, stroke, brain injury, orthopaedic, reconditioning
- The challenge in developing the data set was to include an outcome tool that could best address the diverse range of service models and impairment groups represented in ambulatory rehabilitation, with a minimum burden on resources.
- The over-arching outcome tool included in the dataset is the Australian Modified Lawton's Instrumental Activities of Daily Living (IADL) scale
- It is thought that over time, other impairment or discipline specific outcomes tools will be added to the dataset to provide more outcome specificity by cohort.

The Australian Modified Lawton's

- The Australian Modified Lawton's represents a sensitive measure of the outcome of ambulatory rehabilitation as it relates to instrumental tasks, such as a patient's ability to do their own shopping, cleaning, cooking, manage their finances, skills that demonstrate their independence in the wider context

- In general most participants in ambulatory care have already demonstrated a degree of functional independence, thus a straight ADL tool (such as the FIM), is not an appropriate outcome measure in this setting

- The Lawton's tool is quick and easy to administer, requires minimal training, and is not discipline or impairment specific

- The Lawton's is endorsed by AFRM as the over-arching ambulatory benchmarking outcome tool of choice

- It has demonstrated validity and reliability in measurement of outcomes
  Green J, Eagar K, Owen A, Gordon R and Quinsey K (2006). Towards a Measure of Function for Home and Community Care Services in Australia: Part II – Evaluation of the Screening Tool and Assessment Instruments. Australian Journal of Primary Health 12(1), 82-90

- The Lawton's is not suggested to replace any service or impairment specific outcome measures that services may already collect or are considering collecting, but to provide a platform from which to launch a national benchmarking program with the expectation of further development over time.

Interpretation of results

- This descriptive report includes analysis of data collected and submitted by participating ambulatory rehabilitation services during the 2009 calendar year.

- As this represents a small proportion of all ambulatory rehabilitation services and models of service delivery, care should be taken when interpreting the results.

- It is anticipated that as the collection and reporting of the AROC ambulatory clinical dataset increases, more detailed comparisons will be able to be made.

- For the purposes of this report all analysis is at the episode level and is reported as national data.

Definition of terms

Episode
   The program of ambulatory rehabilitation

Elapsed time
   The elapsed time describes the number of days from commencement to end of an ambulatory rehabilitation program. It is calculated as the episode end date minus the start date

Days Seen
   Days seen is the number of days within an episode of ambulatory rehabilitation on which an occasion of service has been provided

Occasions of Service (OOS)
   An occasion of service is any therapy session and /or therapist contact within an episode. A patient may have several occasions of service on a 'day seen' and these may be delivered by the same or different staff type. Total occasions of service reflects the total number of therapy sessions provided to the patient during those visits. For example:

   Mr Jones attends the program on Monday, Wednesday and Friday. On Monday he sees the physio and also attends hydrotherapy. On Wednesday he has a group exercise session, sees the OT and the speech pathologist. On Friday he sees the physio and attends hydrotherapy again. This program continues for 6 weeks. At week 7 his program is reviewed and he only needs to attend group exercise therapy and hydrotherapy twice a week until the program concludes at week 12.

- **The total number of days seen in this instance is (3 x 6)+ (2 x 6) = 30**
- **The total occasions of service in this instance is (7 x 6) + (2 x 6) = 54**

Definition of terms

Therapy type

Reflects the type of therapy the patient is receiving and is collected by staff type. Where a single staff type provides more than one therapy, e.g. hydrotherapy provided/supervised by a physiotherapist, the staff type selected should reflect the type of therapy session the patient is receiving.

ADL

Activities of daily living describe a person's level of functioning in basic physical activities such as bathing, dressing, transferring, toileting, continence, eating, and walking

IADL

Instrumental activities of daily living (also known as extended or domestic activities of daily living), describe tasks that enable a person to live independently in the community and include, but not are limited to, light housework, preparing meals, taking medications, shopping for groceries, using the telephone, and managing money

Lawton's score

The score recorded using the Australian Modified Lawton's Instrumental Activities of Daily Living (IADL) Scale at both the beginning and end of an ambulatory rehabilitation program

Valid Lawton's score

A valid Lawton's score requires all items within the scale to have a value assigned and be completed for both the episode begin and episode end assessments

Lawton's change

The calculated difference between the valid Lawton's score at the begin and the end of the ambulatory rehabilitation episode

Data exclusions

- Demographic and episode start information describes all episodes where information was reported

- An episode is considered "complete" for the purpose of calculating outcome statistics in this report when mode of episode end is discharge/case closure

- Outcome measures are based on completed episodes, as defined above, and may be further reduced by missing data

Distribution of episodes and facilities

	Public	Private	Total
Facilities			
NSW	1	4	**5**
Vic	0	4	**4**
Qld	0	2	**2**
SA	2	0	**2**
All Facilities	**3**	**10**	**13**
Episodes			
NSW	73	234	**307**
Vic	0	977	**977**
Qld	0	76	**76**
SA	714	0	**714**
All Episodes	**787**	**1,287**	**2,074**

Episode source
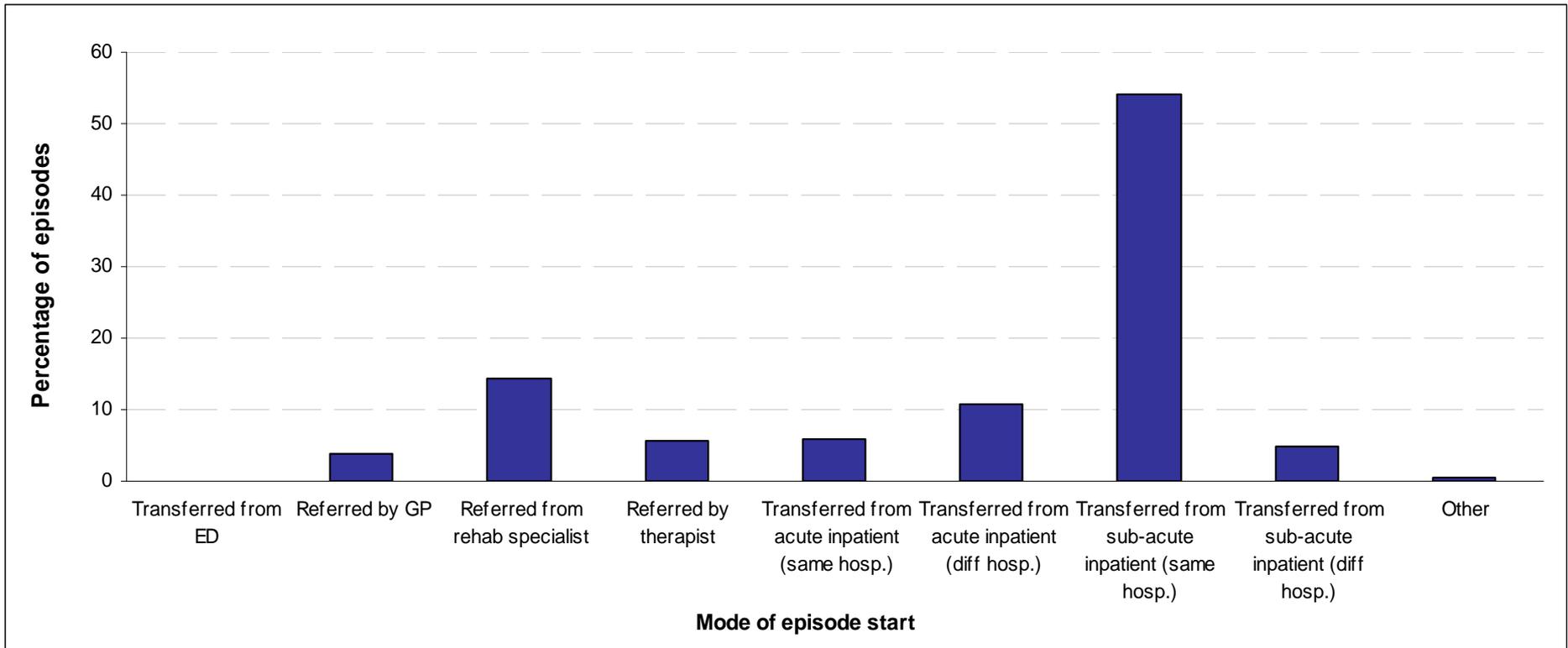
Episode source

Mode of Episode Begin	No.	%
Transferred from ED	2	0.1
Referred by GP	74	3.8
Referred from rehab specialist	282	14.5
Referred by therapist	110	5.6
Transferred from acute inpatient (same hosp.)	116	6.0
Transferred from acute inpatient (diff hosp.)	209	10.7
Transferred from sub-acute inpatient (same hosp.)	1,055	54.1
Transferred from sub-acute inpatient (diff hosp.)	93	4.8
Other	8	0.4
Missing	125	
Total	**2,074**	**100.0**

In the table above more than half the reported episodes began following inpatient subacute care, suggesting a continuation of rehabilitation from the inpatient setting. Approximately 25% were referred directly from the community, with a further 17% identified as referred from acute inpatient care.
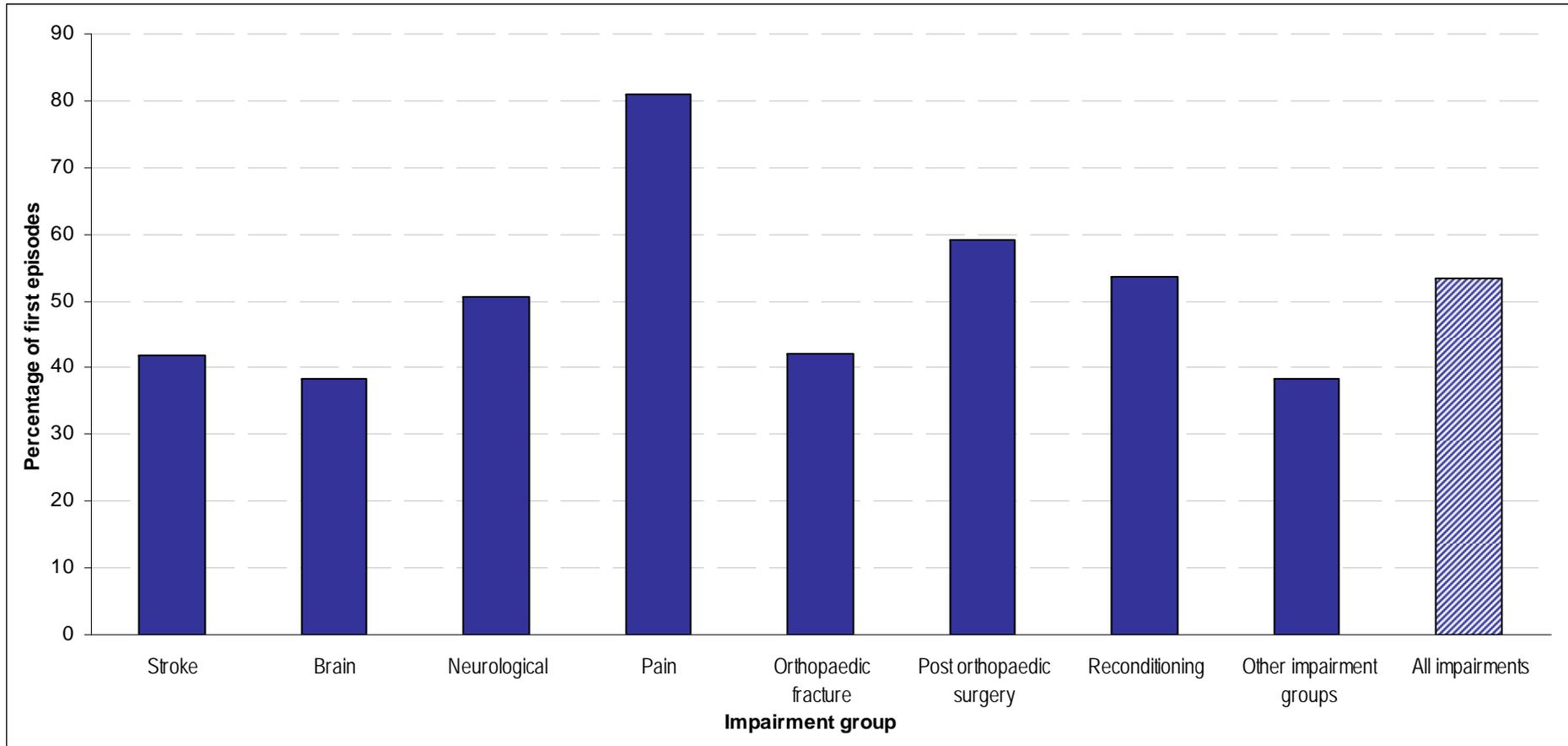
Episodes by impairment

Impairment	No.	%
Stroke	270	13.8
Brain	60	3.1
Neurological	97	5.0
Spinal Cord	11	0.6
Amputee	28	1.4
Arthritis	28	1.4
Pain	164	8.4
Orthopaedic Fracture	171	8.7
Post Orthopaedic Surgery	871	44.6
Orthopaedic Other	22	1.1
Cardiac	13	0.7
Pulmonary	4	0.2
Burns	6	0.3
Other Disabling Imp.	6	0.3
Multiple Trauma	7	0.4
Reconditioning	197	10.1
Missing	119	
Total	**2,074**	**100.0**

Episode type by impairment

| | Episode Type | | | | | | | | |
| Impairment | Same day admitted | | Outpatient | | Community Patient | | Missing | All Episode Types | |
	No.	%	No.	%	No.	%	No.	No.	%
Stroke	93	34.4	40	14.8	137	50.7	0	270	100.0
Brain	21	35.0	12	20.0	27	45.0	0	60	100.0
Neurological	37	38.1	28	28.9	32	33.0	0	97	100.0
Spinal cord	4	36.4	3	27.3	4	36.4	0	11	100.0
Amputee	2	7.1	2	7.1	24	85.7	0	28	100.0
Arthritis	4	14.3	24	85.7	0	0.0	0	28	100.0
Pain	22	13.4	140	85.4	2	1.2	0	164	100.0
Orthopaedic fracture	52	30.4	47	27.5	72	42.1	0	171	100.0
Post orthopaedic surgery	260	29.9	555	63.7	56	6.4	0	871	100.0
Orthopaedic other	4	18.2	15	68.2	3	13.6	0	22	100.0
Cardiac	7	53.8	3	23.1	3	23.1	0	13	100.0
Pulmonary	3	75.0	0	0.0	1	25.0	0	4	100.0
Burns	0	0.0	1	16.7	5	83.3	0	6	100.0
Other disabling imp.	0	0.0	3	50.0	3	50.0	0	6	100.0
Multiple trauma	2	28.6	0	0.0	5	71.4	0	7	100.0
Reconditioning	61	31.1	33	16.8	102	52.0	1	197	100.0
Missing	30		57		2		30	119	
All impairments	**602**	**29.5**	**963**	**47.1**	**478**	**23.4**	**31**	**2,074**	**100.0**

This table describes the distribution of impairments by ambulatory episode type. In the largest reported impairment group, post orthopaedic surgery, participating services deliver primarily outpatient based care. Reported stroke and reconditioning episodes mainly occur in the community setting.

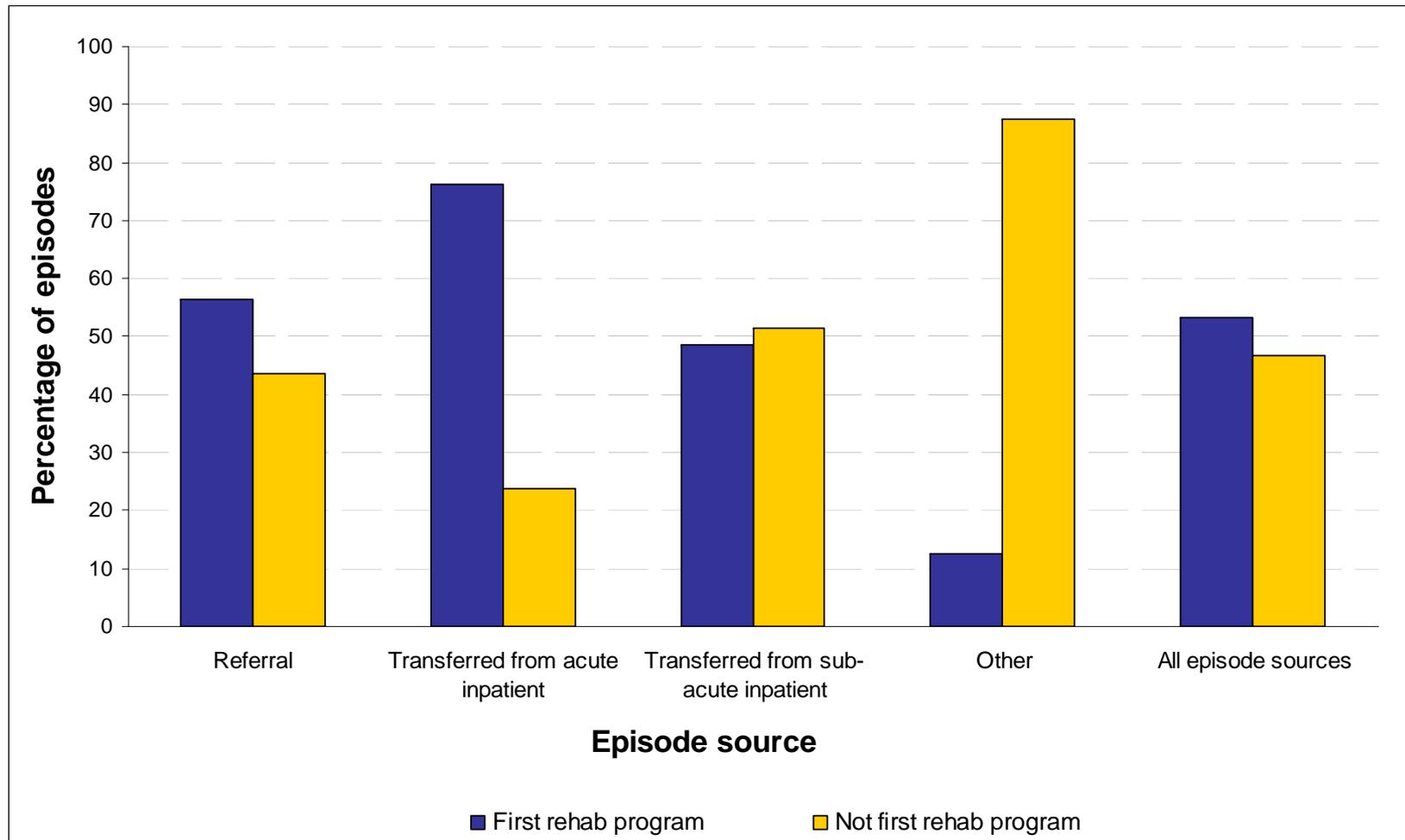# First episode of rehabilitation by impairment

First episode of rehabilitation by impairment

Impairment	%
Stroke	41.9
Brain	38.3
Neurological	50.5
Pain	81.0
Orthopaedic fracture	42.1
Post orthopaedic surgery	59.1
Reconditioning	53.6
Other impairment groups	38.4
All impairments	**53.4**

Interestingly, of the impairment groups with largest number of reported episodes, more than half indicate the ambulatory episode as the first rehabilitation for that impairment. The following slides describe those episodes identified as first rehabilitation against their reported episode source.

First episode of rehabilitation by episode source

First episode of rehabilitation by episode source

First rehab program	Episode source										
	Referral		Transferred from acute inpatient		Transferred from sub-acute		Other		Missing	Total	
	No.	%	No.	%	No.	%	No.	%	No.	No.	%
Yes	260	24.5	246	23.2	555	52.3	1	0.1	5	**1,067**	**100.0**
No	200	22.9	77	8.8	590	67.5	7	0.8	59	**933**	**100.0**
Missing	8		2		3		0		61	**74**	
All episodes	**468**	**24.0**	**325**	**16.7**	**1,148**	**58.9**	**8**	**0.4**	**125**	**2,074**	**100.0**

A little over 50% of reported episodes were identified as being first programs of rehabilitation for the impairment. Yet of those, more than half described patient's whose ambulatory episodes began following an episode of sub acute inpatient care. It would be logical to assume that most these inpatient episodes were for rehabilitation, rather than other sub acute care types e.g. palliative, and suggests that further explanation/education may be required on this item at the point of data collection.

# Episodes by age group
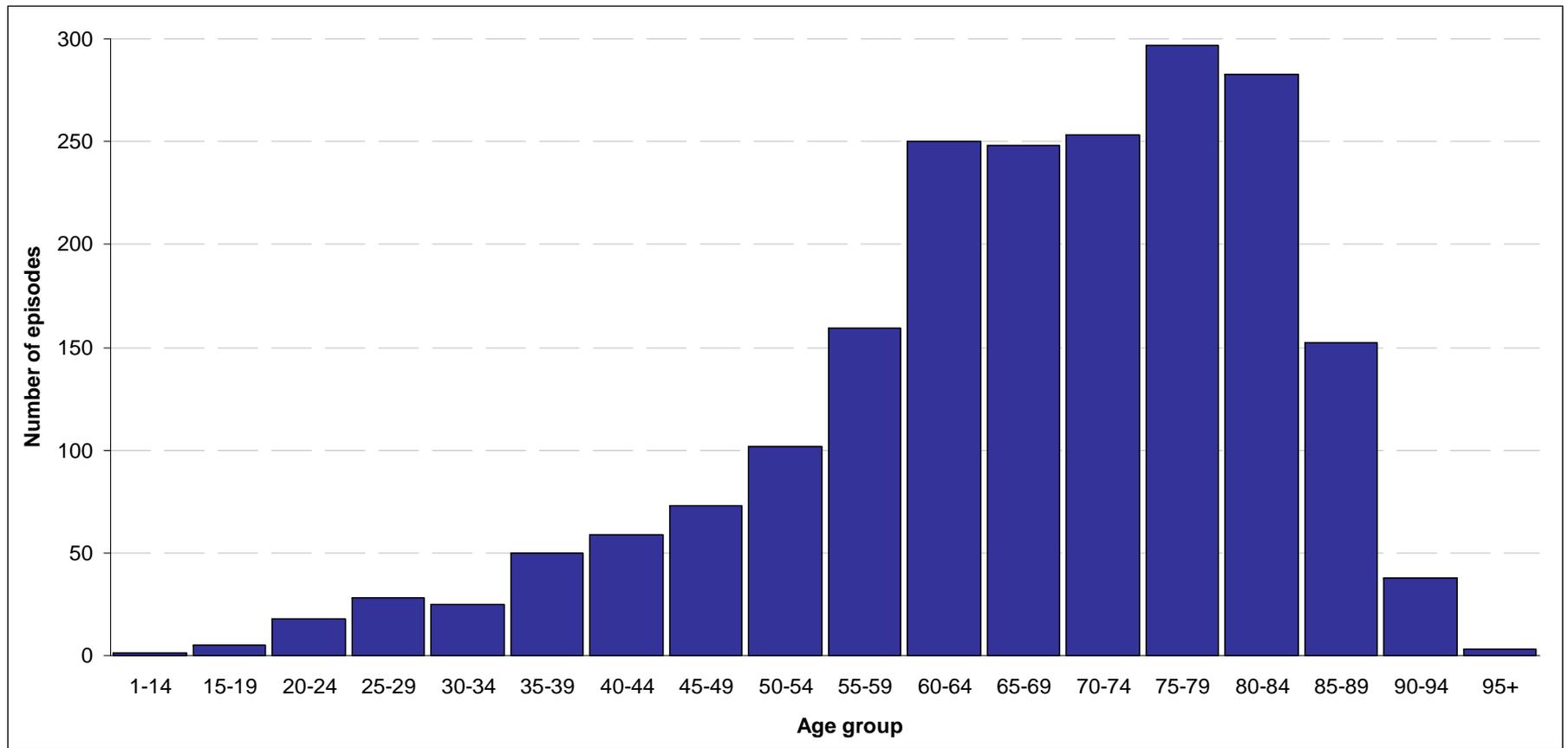
Episodes by age group

Age Group	No.	%	Cumulative %
1-14	1	0.0	0.0
15-19	5	0.2	0.3
20-24	18	0.9	1.2
25-29	28	1.4	2.5
30-34	25	1.2	3.8
35-39	50	2.4	6.2
40-44	59	2.9	9.1
45-49	73	3.6	12.7
50-54	102	5.0	17.7
55-59	159	7.8	25.4
60-64	250	12.2	37.7
65-69	248	12.1	49.8
70-74	253	12.4	62.2
75-79	297	14.5	76.7
80-84	283	13.8	90.6
85-89	152	7.4	98.0
90-94	38	1.9	99.9
95+	3	0.1	100.0
Missing	30		
All Ages	**2,074**	**100.0**	

Gender

Gender	No.	%
Male	876	42.2
Female	1,198	57.8
All episodes	**2,074**	**100.0**
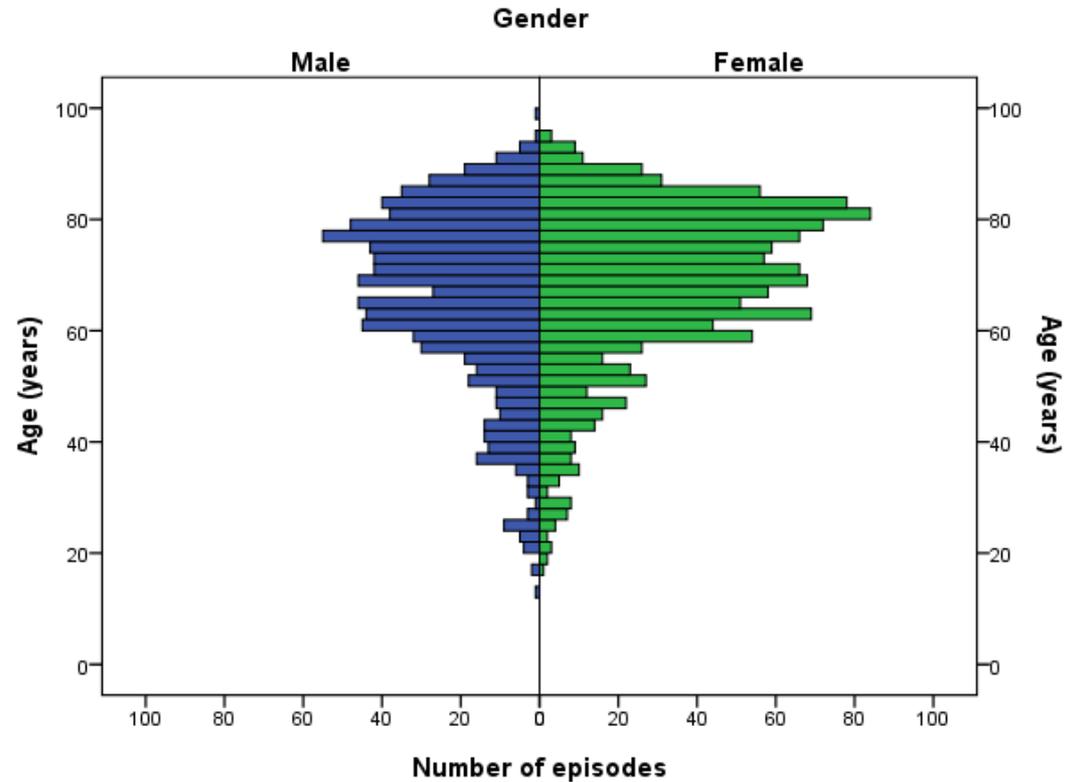
Age by impairment
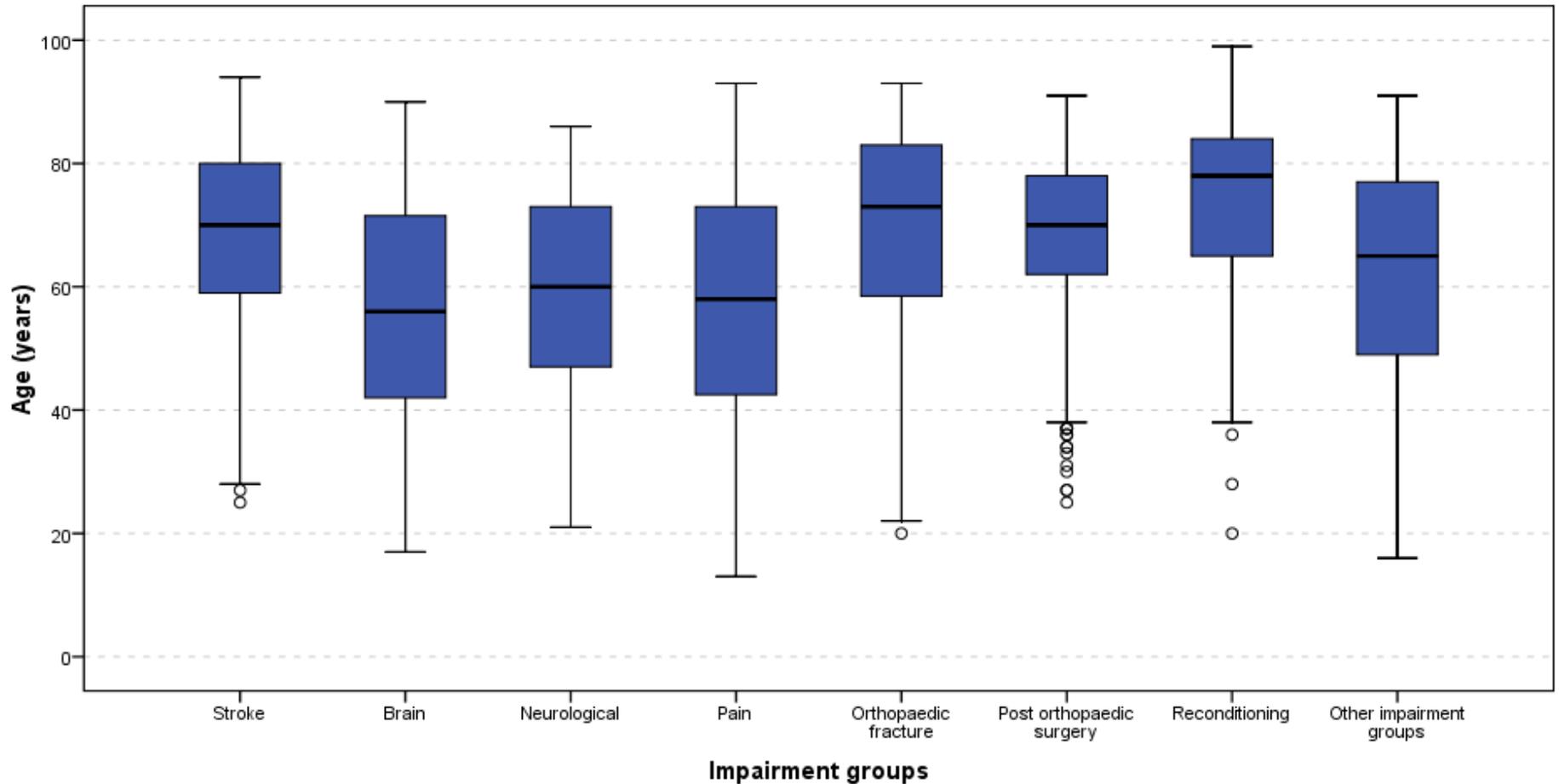
The previous slides showed that of all episodes reported more than half were aged greater than 65 years. This graph demonstrates the distribution of age against impairments and more clearly shows those impairments with a higher density of patients in this age group. For example in Reconditioning, the middle 50% of patients (indicated by the box) fall between 65 to 85 years, the median age (indicated by the line within the box) is approximately 78 with 25% aged between 78 – 84.

For more information on how to interpret this graph please refer to Appendix A 'Interpreting box plots'

Age by gender and impairment

Impairment	Male			Female			All episodes		
	No.	Mean	(95% CI)	No.	Mean	(95% CI)	No.	Mean	(95% CI)
Stroke	151	67.9	(65.7 - 70.1)	119	69.9	(67.3 - 72.6)	**270**	**68.8**	(67.1 - 70.5)
Brain	33	54.5	(47.9 - 61)	27	57.7	(51 - 64.5)	**60**	**56.0**	(51.3 - 60.6)
Neurological	36	63.7	(59.1 - 68.3)	61	57.0	(52.8 - 61.2)	**97**	**59.5**	(56.3 - 62.6)
Pain	68	54.3	(49.5 - 59.1)	96	59.3	(55.7 - 62.9)	**164**	**57.2**	(54.3 - 60.1)
Orthopaedic Fracture	54	62.8	(57.6 - 68)	117	72.1	(69.5 - 74.7)	**171**	**69.2**	(66.7 - 71.7)
Post Orthopaedic Surgery	316	68.6	(67.3 - 69.9)	555	69.4	(68.5 - 70.3)	**871**	**69.1**	(68.4 - 69.9)
Reconditioning	99	74.6	(72.2 - 77.1)	98	73.9	(71 - 76.9)	**197**	**74.3**	(72.4 - 76.2)
Other	65	57.4	(52.9 - 62)	60	66.2	(61.4 - 70.9)	**125**	**61.6**	(58.3 - 65)
Missing	54			65			**119**		
All impairments	**876**	66.2	(65.1 - 67.2)	**1198**	68.2	(67.3 - 69)	**2074**	67.3	(66.7 - 68)

Indigenous status

Indigenous status	No.	%
Aboriginal but not TSI	4	0.2
TSI but not Aboriginal	1	0.1
Both	0	0.0
Neither	1,976	99.7
Missing/Not stated	93	
All episodes	**2,074**	**100.0**

Employment status

Employment status	No.	%
Employed	195	11.2
Not employed	156	9.0
Not in labour force	1,383	79.8
Missing/not stated	340	
All episodes	**2,074**	**100.0**

Usual accommodation and level of support prior to episode

Accommodation and level of support	No.	%
Private residence	1,707	98.6
Alone with no support	*204*	*14.3*
Others with no support	*394*	*27.7*
Alone wth support	*210*	*14.8*
Others with support	*550*	*38.7*
External support	*65*	*4.6*
Missing/Not Stated	*284*	
Residential Aged Care (Low Level Care)	13	0.8
Residential Aged Care (High Level Care)	1	0.1
Community Group Home	4	0.2
Transitional	2	0.1
Other	5	0.3
Missing	342	
All episodes	**2,074**	**100.0**

This tables shows that of the episodes reported 98% of patients attending ambulatory rehabilitation lived in private accommodation prior to their impairment, with a little more than half indicating they received some type of support.

Accommodation during episode

Accommodation and level of support	No.	%
Pre Impairment accommodation	1,840	94.6
Interim accommodation (geographical issue)	19	1.0
Interim accommodation (increased support)	44	2.3
Other	43	2.2
Missing	128	
All episodes	**2,074**	**100.0**

Of the episodes reported, there were only a small number of patients who indicated a change of residence during the period of ambulatory rehabilitation for either increased support needs or access issues, less than 5%.

Change in level of support during episode

Private residence on admission only

No change in accommodation

Level of support prior	Level of support during						
	Alone with no support	Others with no support	Alone with support	Others with support	External support	Missing/Not stated	All episodes
Alone with no support	**96**	8	47	17	3	0	**171**
Others with no support	4	**182**	4	166	18	1	**375**
Alone with support	5	5	**174**	10	2	0	**196**
Others with support	5	29	2	**473**	11	1	**521**
External support	0	3	4	8	**49**	0	**64**
Missing/Not stated	19	153	5	7	1	86	**271**
All episodes	**129**	**380**	**236**	**681**	**84**	**88**	**1,598**
Alone with no support	**56.1%**	4.7%	27.5%	9.9%	1.8%		**100.0%**
Others with no support	1.1%	**48.7%**	1.1%	44.4%	4.8%		**100.0%**
Alone with support	2.6%	2.6%	**88.8%**	5.1%	1.0%		**100.0%**
Others with support	1.0%	5.6%	0.4%	**91.0%**	2.1%		**100.0%**
External support	0.0%	4.7%	6.3%	12.5%	**76.6%**		**100.0%**
All episodes	8.5%	25.2%	15.6%	45.1%	5.6%		**100.0%**

This table shows the change in level of support for patients living in private residence prior to admission to the ambulatory rehabilitation program. For patients who lived without support prior, around 40% required increased support during the episode. The table also shows that for patients already receiving support prior to commencing ambulatory rehabilitation there was little change in their support needs and in some cases is reported as having decreased.

Accommodation and level of support at episode end

Accommodation and level of support	No.	%
Private residence	1,639	96.2
Alone with no support	*148*	*11.2*
Others with no support	*322*	*24.5*
Alone wth support	*229*	*17.4*
Others with support	*530*	*40.3*
External support	*73*	*5.5*
Other	*14*	*1.1*
Missing/Not Stated	*323*	
Residential Aged Care (Low Level Care)	10	0.6
Residential Aged Care (High Level Care)	1	0.1
Community Group Home	4	0.2
Transitional	4	0.2
Other	46	2.7
Missing	370	
All episodes	**2,074**	**100.0**

Change in accommodation/level of support between episode begin/end

Australasian Rehabilitation Outcomes Centre

Private residence on admission only

	Discharge destination									
	Private residence							Non-Private residence	Missing/ Not stated	All episodes
Support Prior	Alone with no support	Others with no support	Alone with support	Others with support	External support	Other	Missing/ Not stated			
Alone with no	**100**	13	52	19	3	1	7	2	7	**204**
Others with no	10	**221**	6	108	6	2	27	4	10	**394**
Alone with support	19	1	**153**	9	5	2	5	15	1	**210**
Others with	13	82	8	**381**	16	7	9	24	10	**550**
External support	2	1	7	8	**40**	1	1	5	0	**65**
Other	0	0	0	0	0	**0**	0	0	0	**0**
Missing/Not stated	1	2	1	3	0	0	274	0	3	**284**
All episodes	**145**	**320**	**227**	**528**	**70**	**13**	**323**	50	**31**	**1,707**
Alone with no	**50.8%**	6.6%	26.4%	9.6%	1.5%	0.5%	3.6%	1.0%		**100.0%**
Others with no	2.6%	**57.6%**	1.6%	28.1%	1.6%	0.5%	7.0%	1.0%		**100.0%**
Alone with support	9.1%	0.5%	**73.2%**	4.3%	2.4%	1.0%	2.4%	7.2%		**100.0%**
Others with	2.4%	15.2%	1.5%	**70.6%**	3.0%	1.3%	1.7%	4.4%		**100.0%**
External support	3.1%	1.5%	10.8%	12.3%	**61.5%**	1.5%	1.5%	7.7%		**100.0%**
Other	0.0%	0.0%	0.0%	0.0%	0.0%	**0.0%**	0.0%	0.0%		**0.0%**
Missing/Not stated										
All episodes	**8.7%**	**19.1%**	**13.5%**	**31.5%**	**4.2%**	**0.8%**	**19.3%**	**3.0%**		**100.0%**

The change in level of support and accommodation at episode end is consistent with what was reported during the episode. Less than 3% of episodes ended with a change of residence. 25 – 30% indicated increased level of support for those previously without support and there was a strong trend in those who started with some type of support, to a decreased requirement for support following ambulatory rehabilitation.

Staff type providing therapy
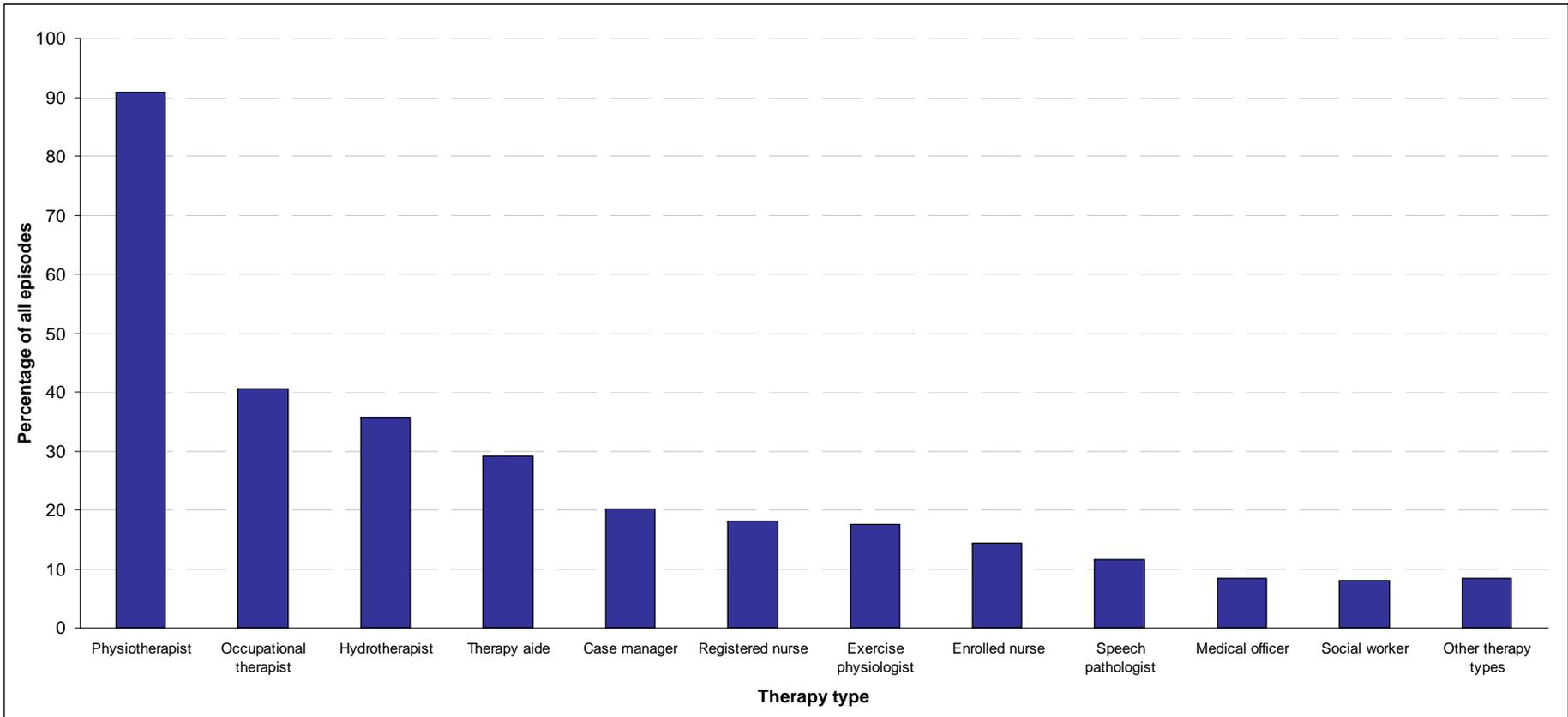
Therapy type by impairment
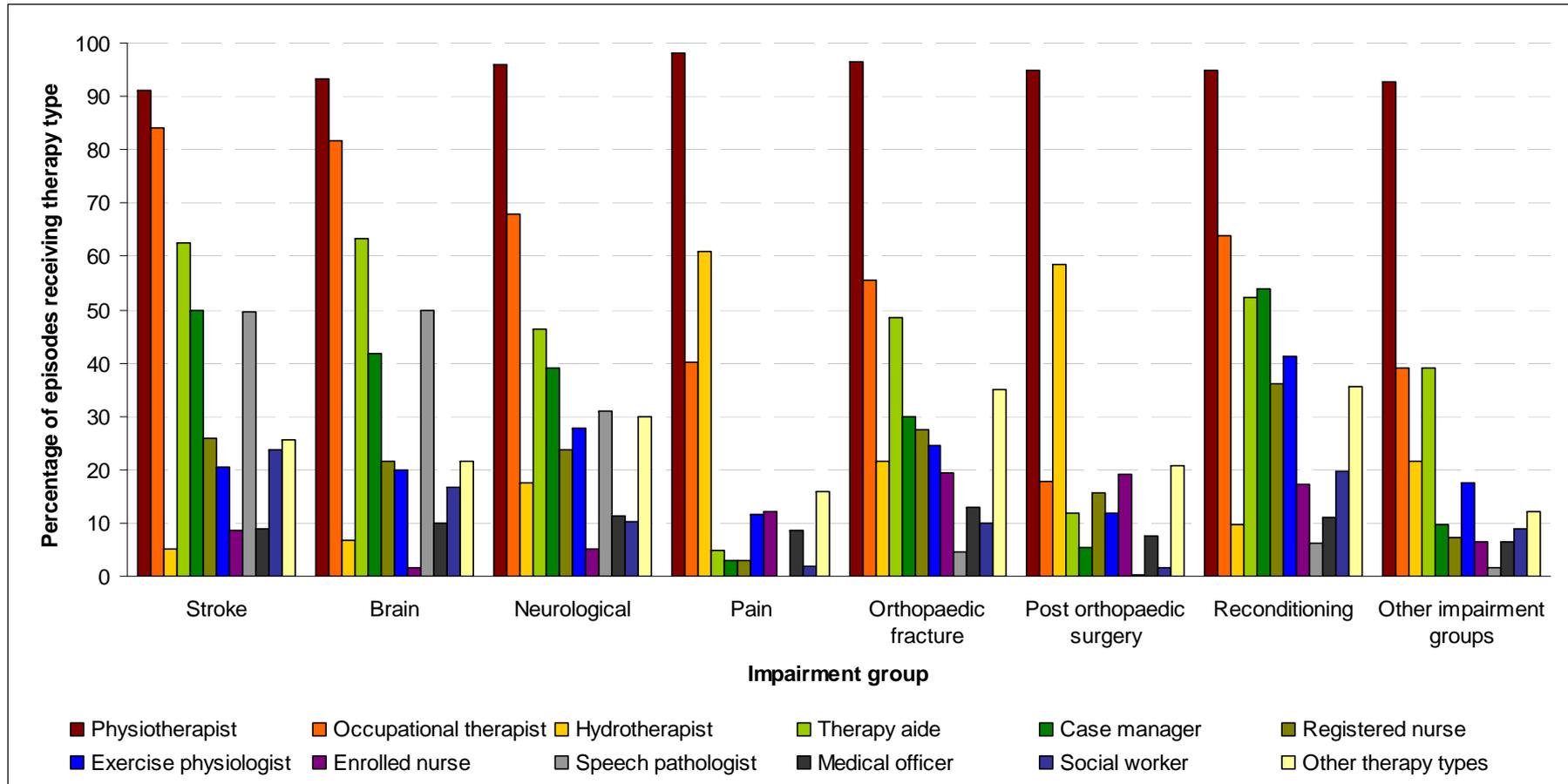
Time since onset of impairment
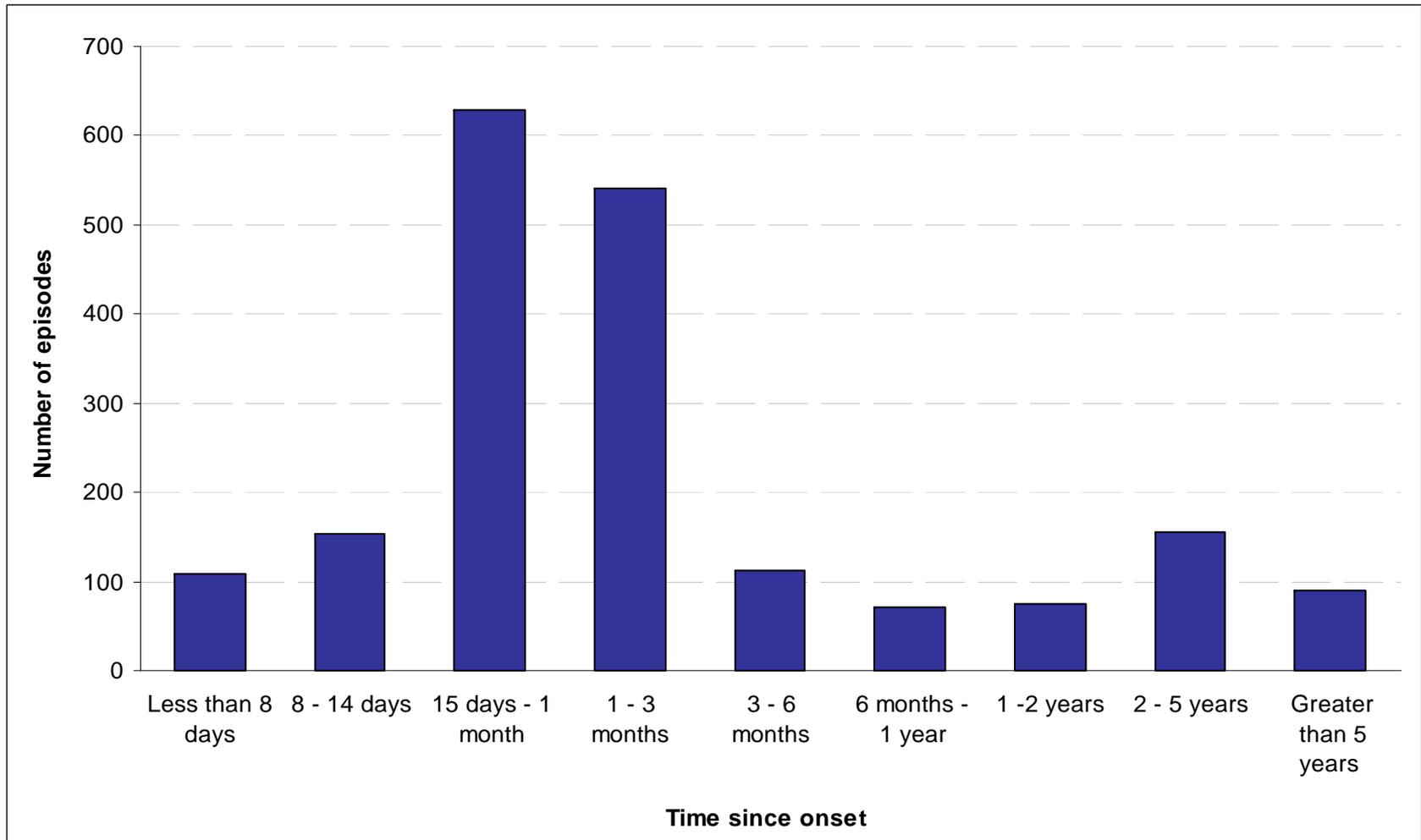
Time since onset

Onset Time	No.	%
Less than 8 days	108	5.6
8 - 14 days	154	8.0
15 days - 1 month	628	32.5
1 - 3 months	541	28.0
3 - 6 months	112	5.8
6 months - 1 year	72	3.7
1 -2 years	75	3.9
2 - 5 years	156	8.1
Greater than 5 years	89	4.6
Missing/unknown	139	
Total	**2,074**	**100.0**

Around 75% of all episodes in this dataset commenced an ambulatory rehabilitation program within 3 months of impairment onset. 60% were within the 15 days to 3 month range.

Completed episodes by impairment

Impairment	Total Episodes	Complete	Incomplete	% Complete
Stroke	270	233	37	86.3
Brain	60	56	4	93.3
Neurological	97	89	8	91.8
Spinal Cord	11	11	0	100.0
Amputee	28	26	2	92.9
Arthritis	28	27	1	96.4
Pain	164	156	8	95.1
Orthopaedic fracture	171	145	26	84.8
Post orthopaedic surgery	871	829	42	95.2
Orthopaedic other	22	21	1	95.5
Cardiac	13	11	2	84.6
Pulmonary	4	3	1	75.0
Burns	6	6	0	100.0
Other disabling imp.	6	6	0	100.0
Mutliple trauma	7	7	0	100.0
Reconditioning	197	153	44	77.7
Missing	119	109	10	91.6
All impairments	**2,074**	**1,888**	**186**	**91.0**

A completed episode is one with a mode of episode end code A) discharge/case closure

Elapsed days
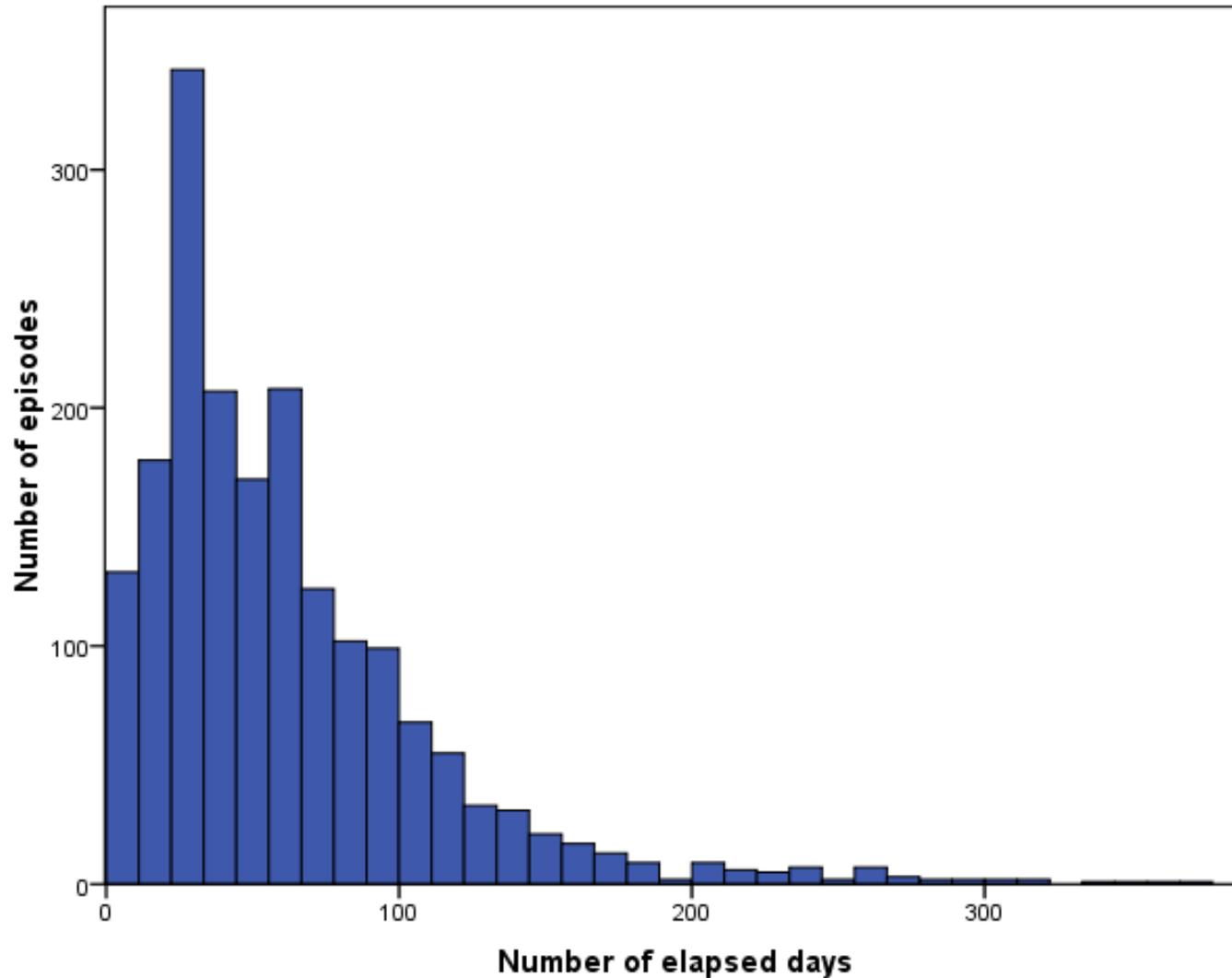
Average elapsed days by impairment
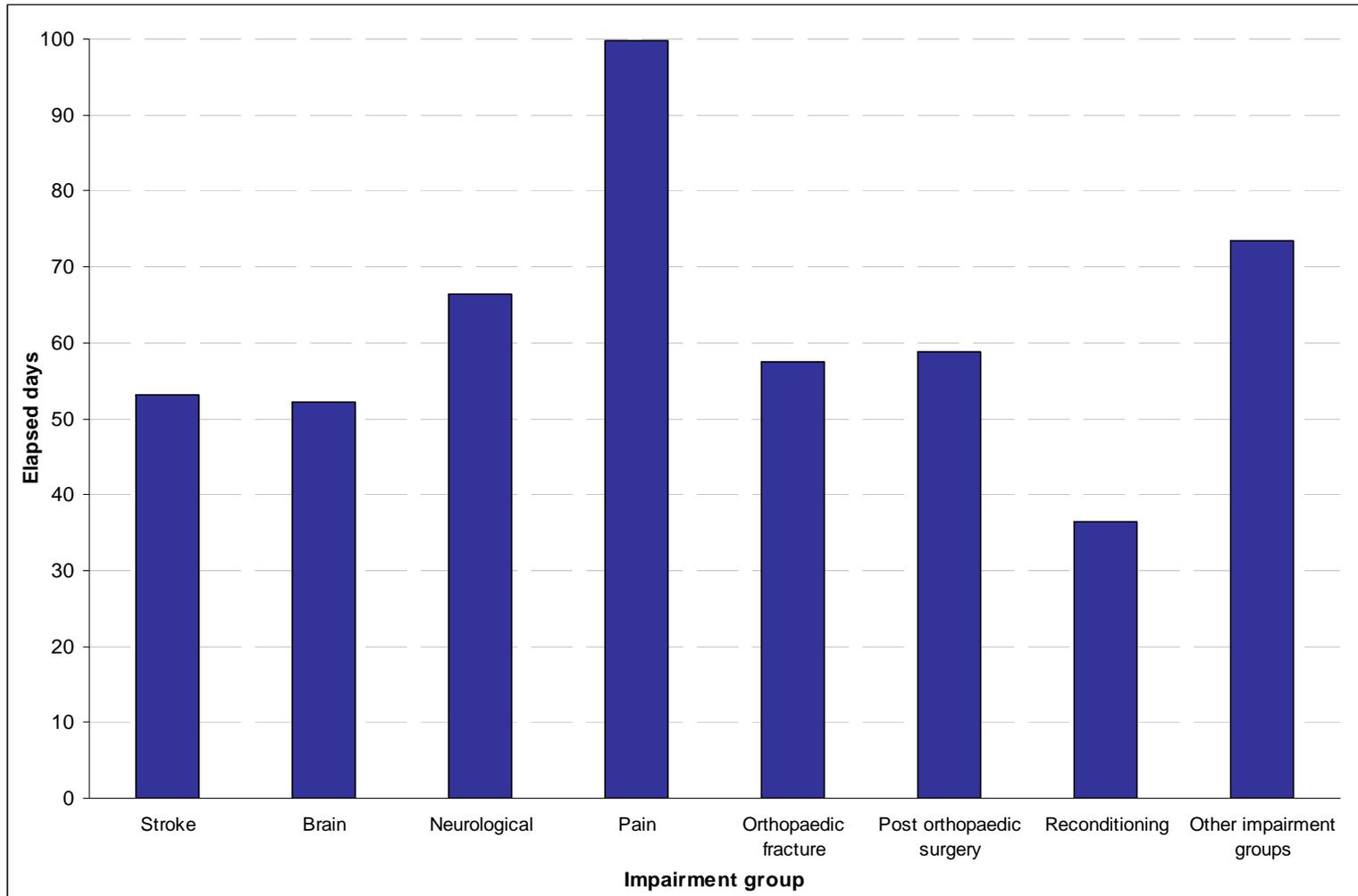
Elapsed days by impairment

Impairment	Episodes	Mean days elapsed	(95% CI)
Stroke	233	53.2	(47 - 59.4)
Brain	56	52.2	(43.6 - 60.9)
Neurological	89	66.4	(55.3 - 77.5)
Pain	156	99.8	(87.8 - 111.8)
Orthopaedic fracture	145	57.6	(49.6 - 65.6)
Post orthopaedic surgery	829	58.9	(56.2 - 61.6)
Reconditioning	153	36.4	(31.8 - 41.1)
Other impairment groups	118	73.5	(65.1 - 81.9)
Missing	109		
All impairments	**1,888**	**61.2**	**(58.9 - 63.5)**

Elapsed days describes the total number of days from program start to end. Length of stay, as used in an inpatient setting, is not an appropriate measure in the ambulatory setting as therapy does not occur on all days during a program. However it is useful to record the elapsed time along with the number of days of therapy (days seen), to improve understanding of the relationship between delivery of therapy and outcomes.

Elapsed days by impairment
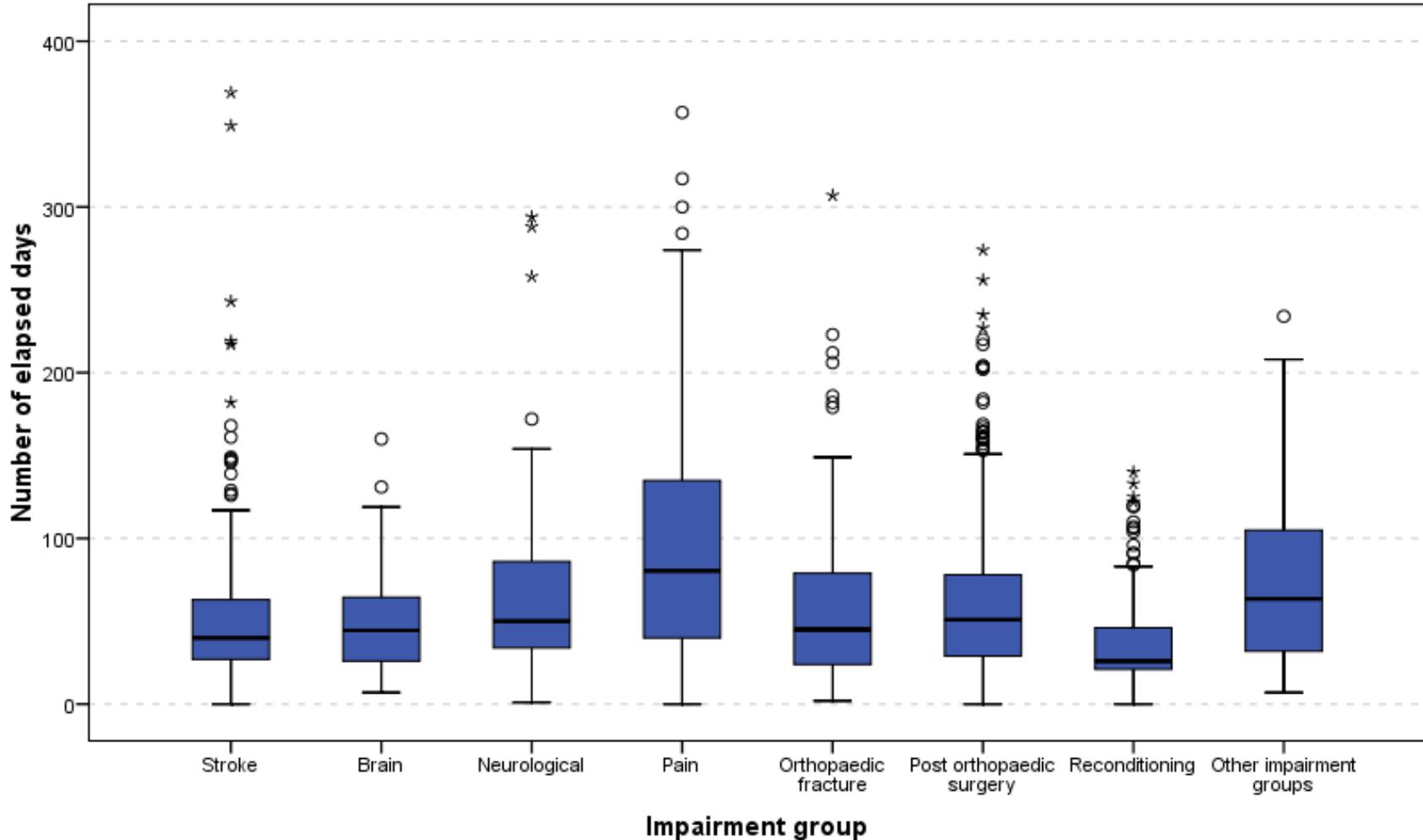
Days seen as a proportion of elapsed days by impairment group
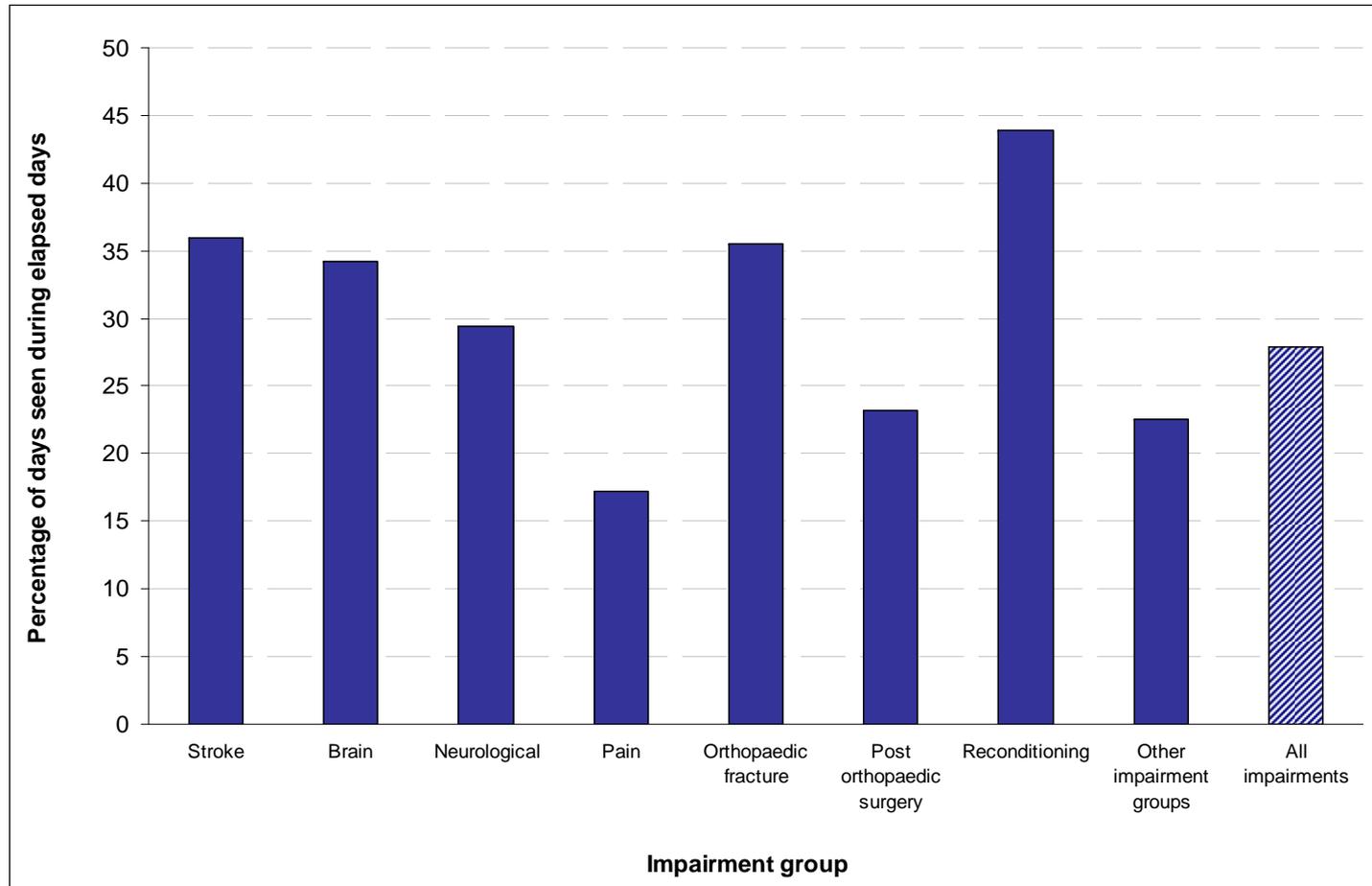
Days seen as a proportion of elapsed days by impairment group

Impairment	% of days seen during elapsed days
Stroke	35.9
Brain	34.2
Neurological	29.4
Pain	17.2
Orthopaedic fracture	35.5
Post orthopaedic surgery	23.2
Reconditioning	43.9
Other impairment groups	22.6
All impairments	**27.9**

This table describes as a percentage, average days seen during average episode elapsed days, by impairment group. For example, from the data received, patients in the stroke and reconditioning groups are on average seen more frequently during an episode than those in the pain group.

Total average occasions of service (OOS) by impairment
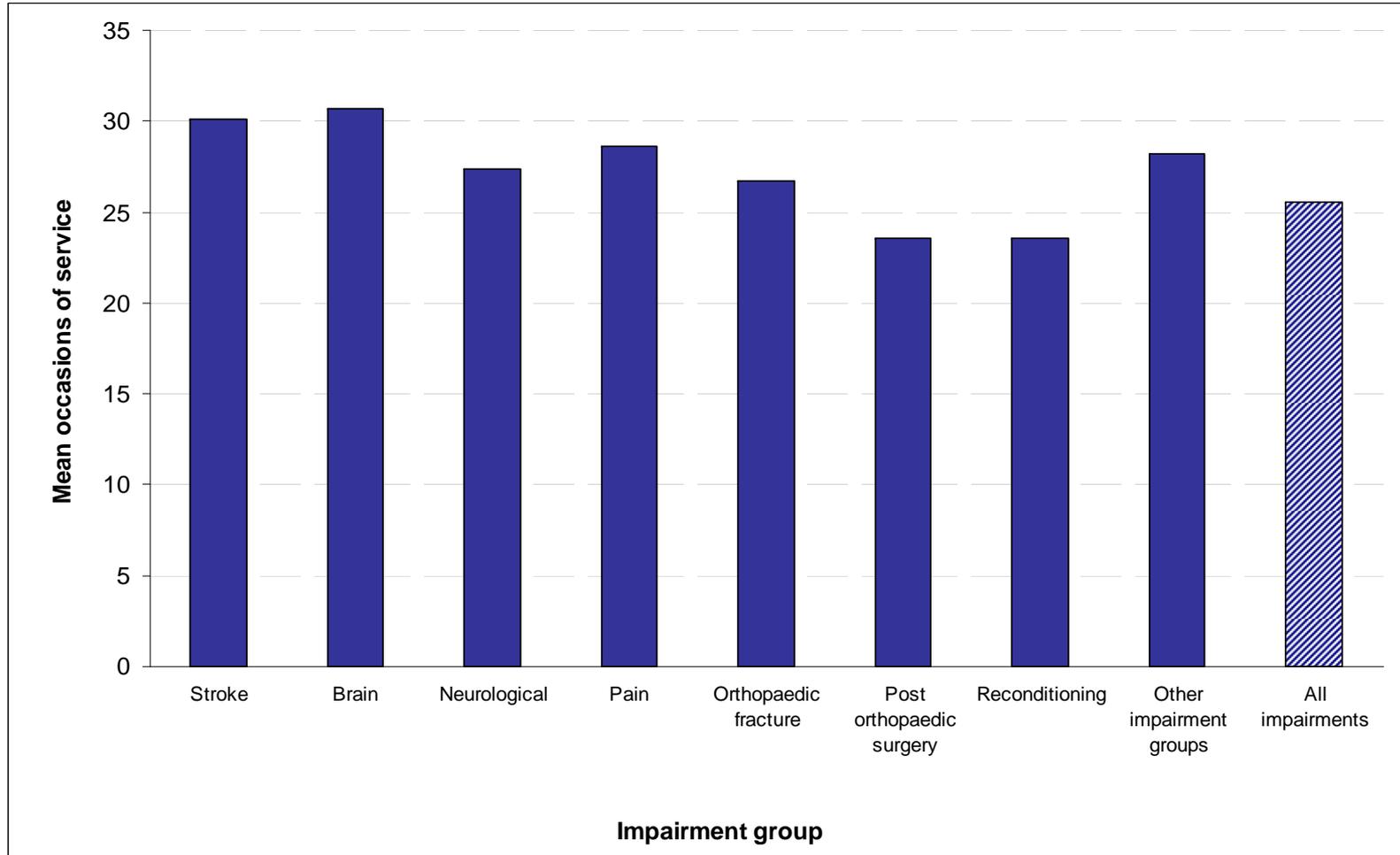
Total average occasions of service (OOS) by impairment

Impairment	Mean OOS	(95% CI)
Stroke	30.1	(27.3 - 32.9)
Brain	30.7	(24.9 - 36.4)
Neurological	27.4	(23.7 - 31.1)
Pain	28.6	(24.7 - 32.5)
Orthopaedic fracture	26.7	(24.2 - 29.3)
Post orthopaedic surgery	23.6	(22.4 - 24.7)
Reconditioning	23.6	(21 - 26.2)
Other impairment groups	28.2	(24.1 - 32.4)
All impairments	**25.5**	**(21.8 - 29.2)**

Total days seen by total OOS
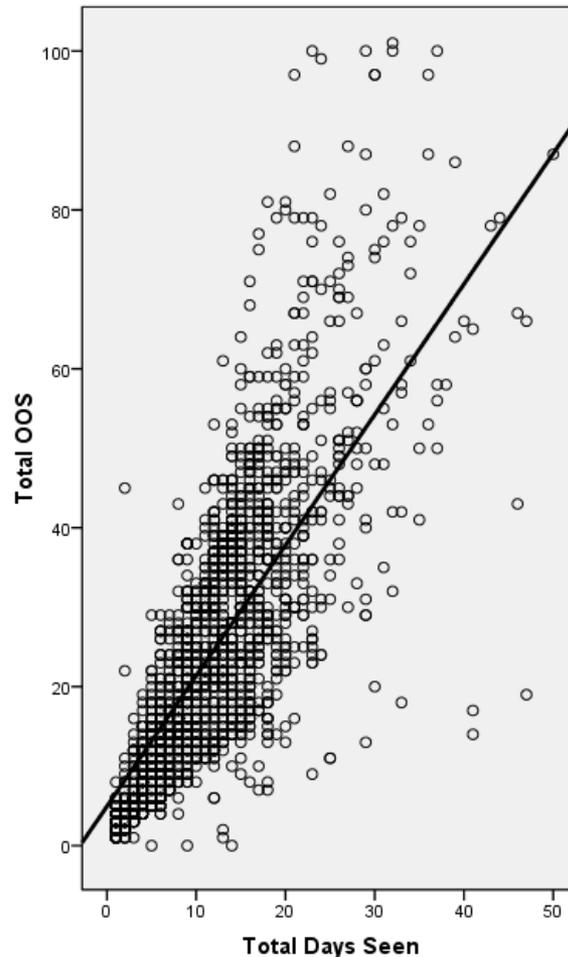
By plotting each individual episode this graph demonstrates the relationship between total occasions of service and the number of days on which therapy was delivered. Although not the case for all episodes, the slope of the line suggests an average of two OOS for each day seen for most episodes.

Average OOS per day by impairment and episode type

	Episode Type			
Impairment Group	**Same Day Admitted**	**Outpatient**	**Community Patient**	**All Episodes**
Stroke	2.75	1.82	1.64	2.04
Brain	2.81	2.09	1.58	2.09
Neurological	2.32	1.99	1.53	1.99
Pain	2.76	2.43	1.51	2.43
Orthopaedic Fracture	2.55	2.11	1.52	1.98
Post Orthopaedic Surgery	2.26	2.17	1.38	2.13
Reconditioning	2.76	1.94	1.51	1.95
Other	2.48	1.99	1.52	1.82
All Impairments	**2.49**	**2.17**	**1.54**	**2.08**

It appears that community patients, on average, receive less OOS per day than outpatients, who receive less than same day admitted patients.

Distribution of beginning and end total Lawton's score
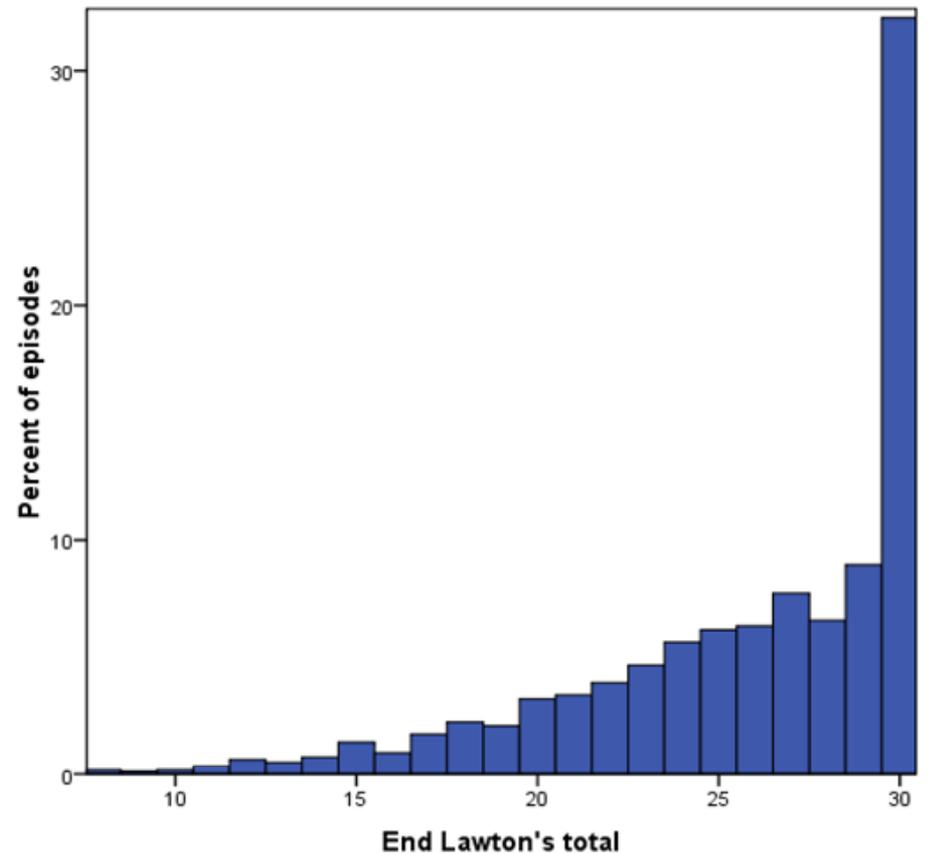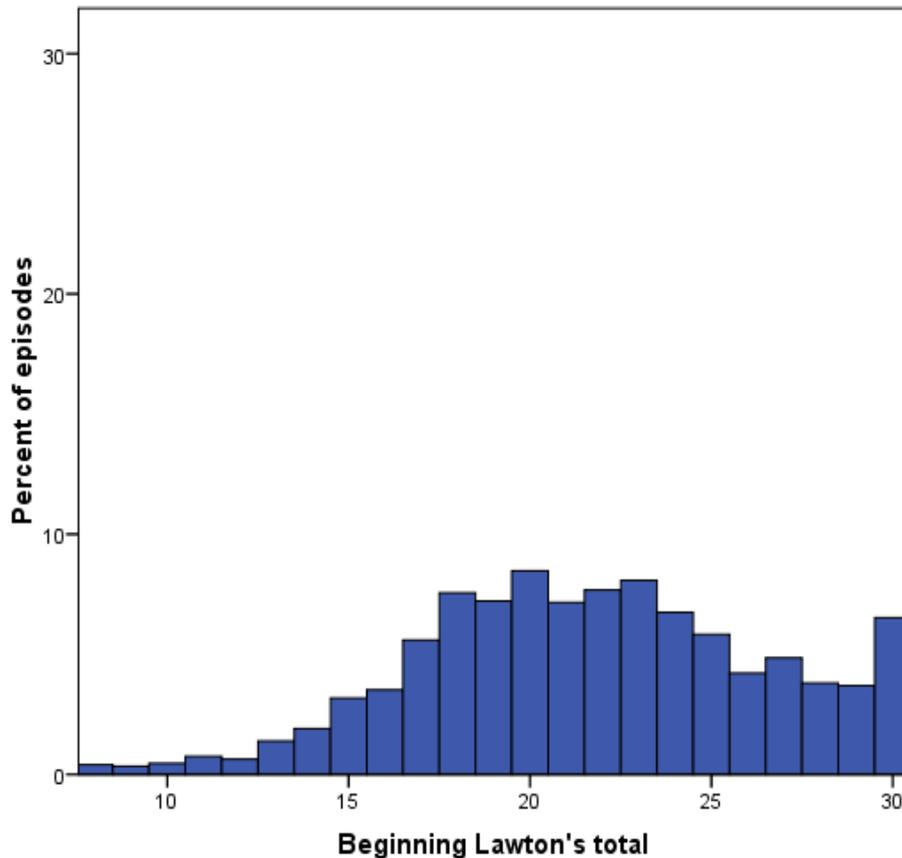
Proportion of episodes beginning with maximum Lawton's score of 30
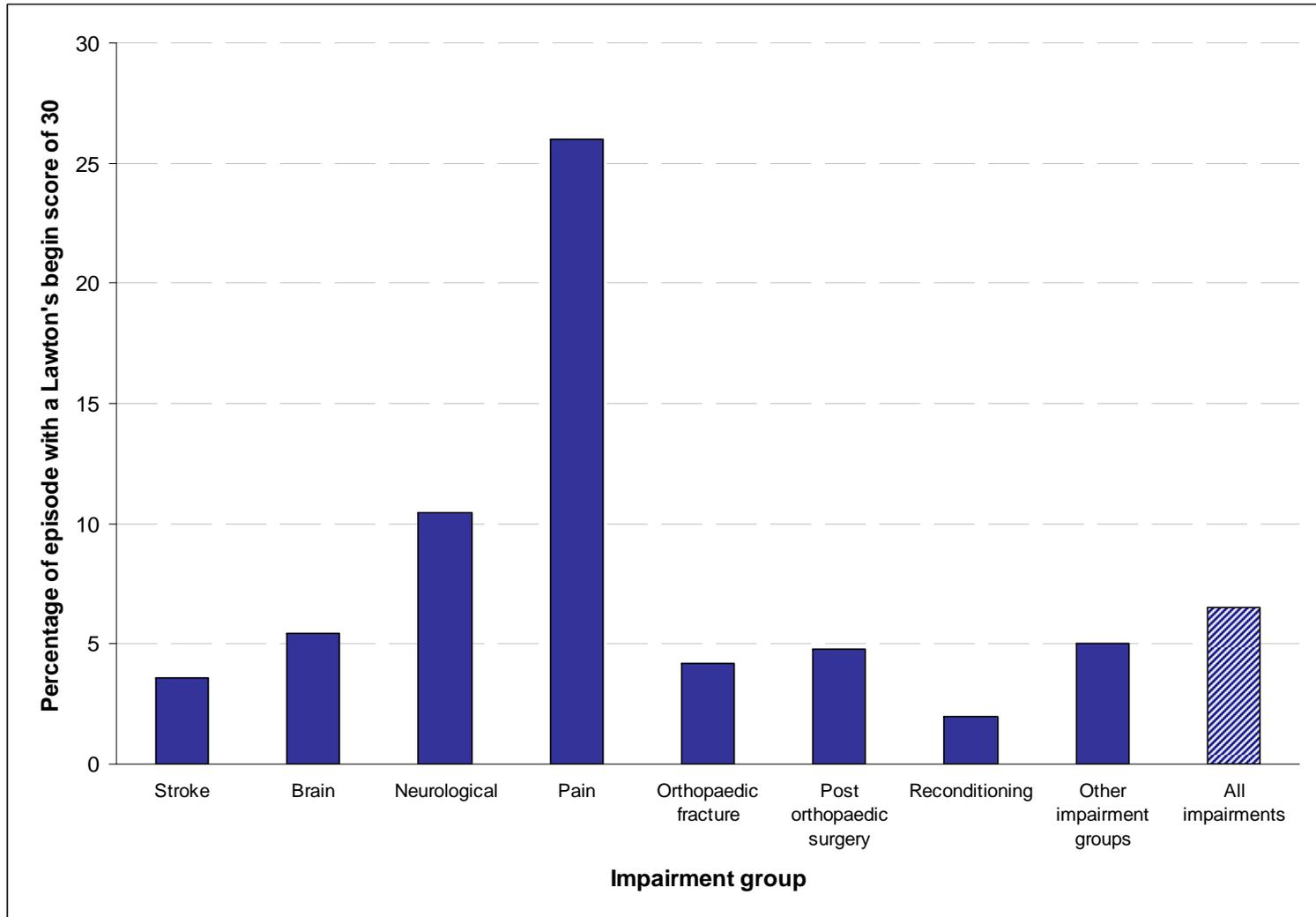
Proportion of episodes with no Lawton's change
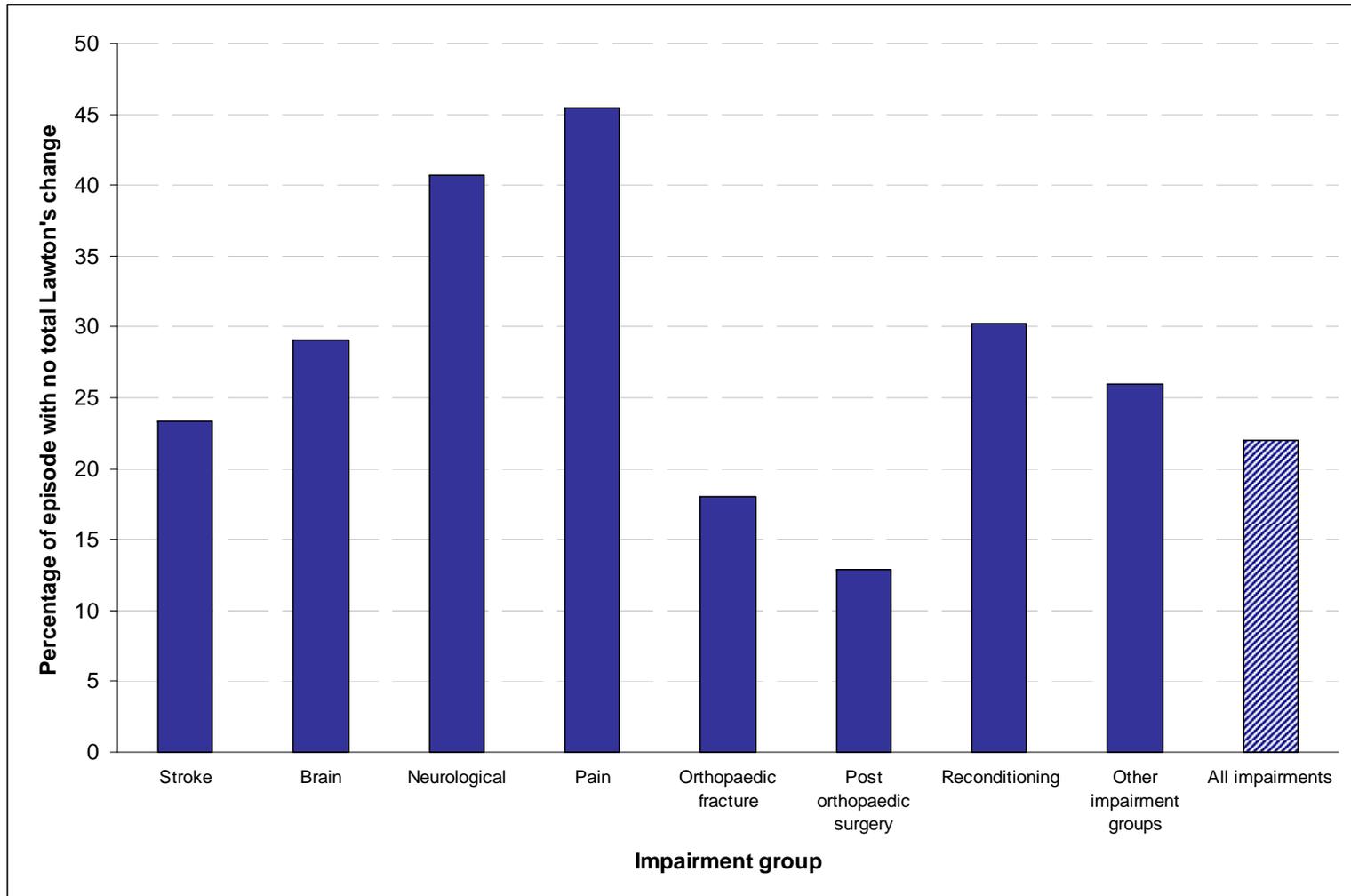
Distribution of Lawton's score change
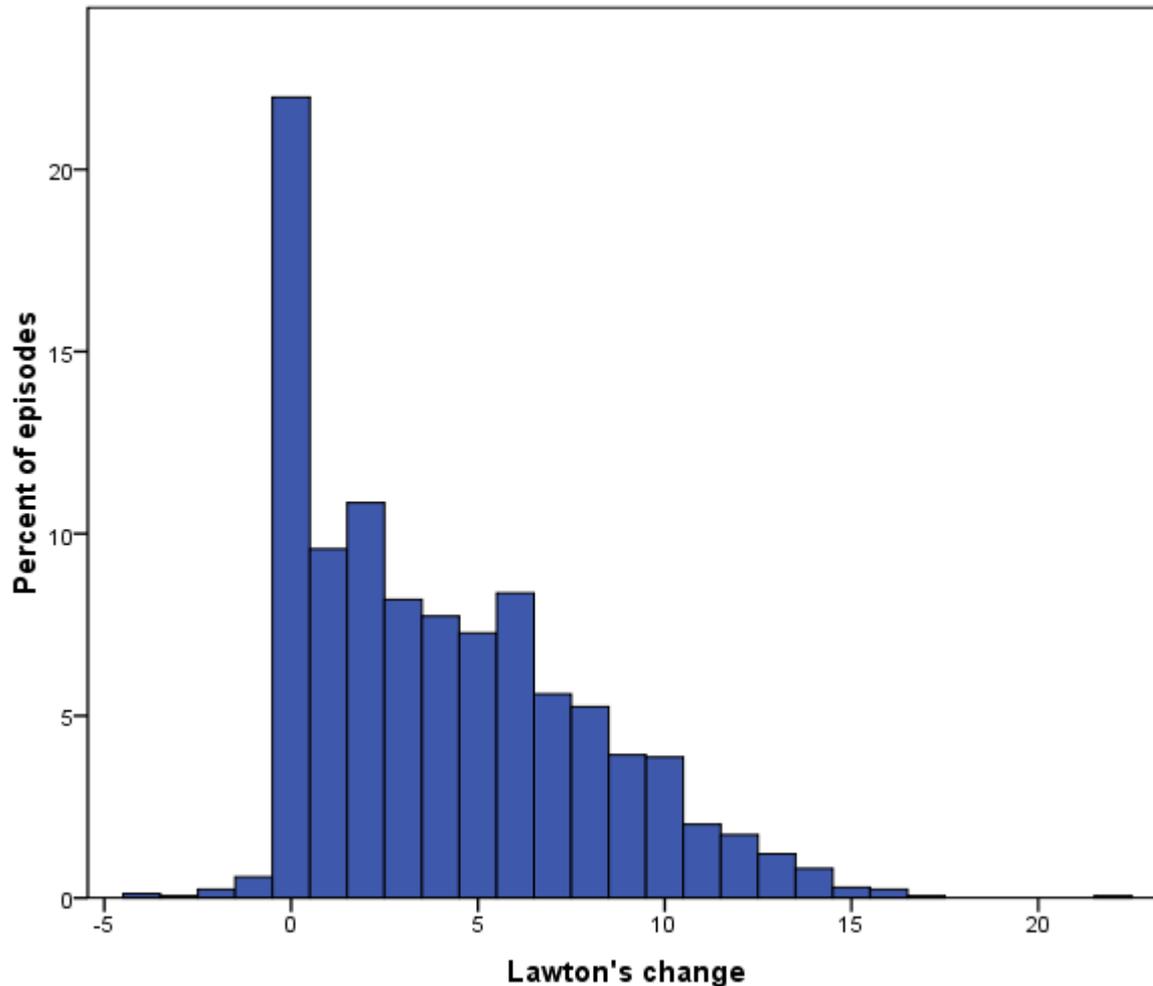
Beginning total Lawton's score by impairment
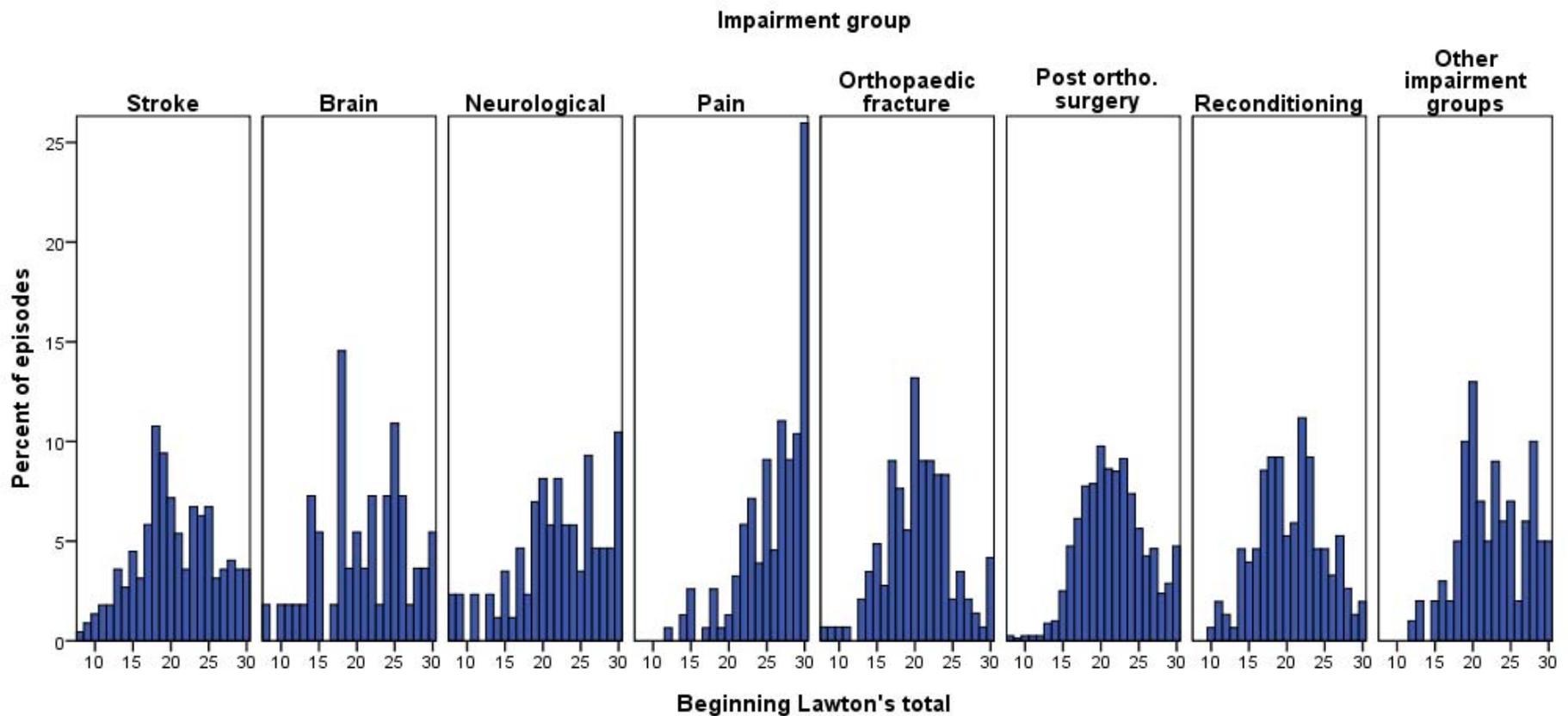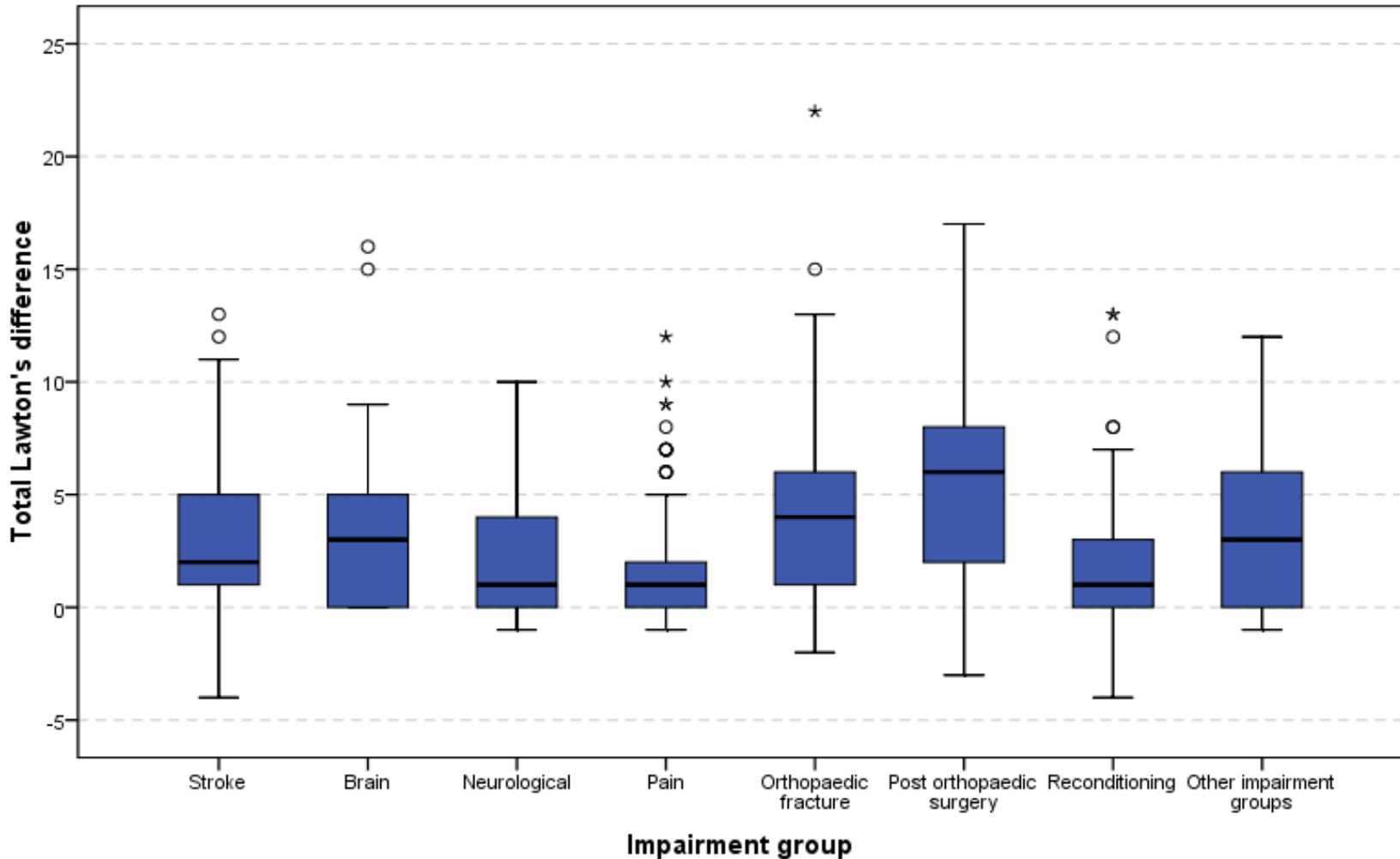
End total Lawton's score by impairment
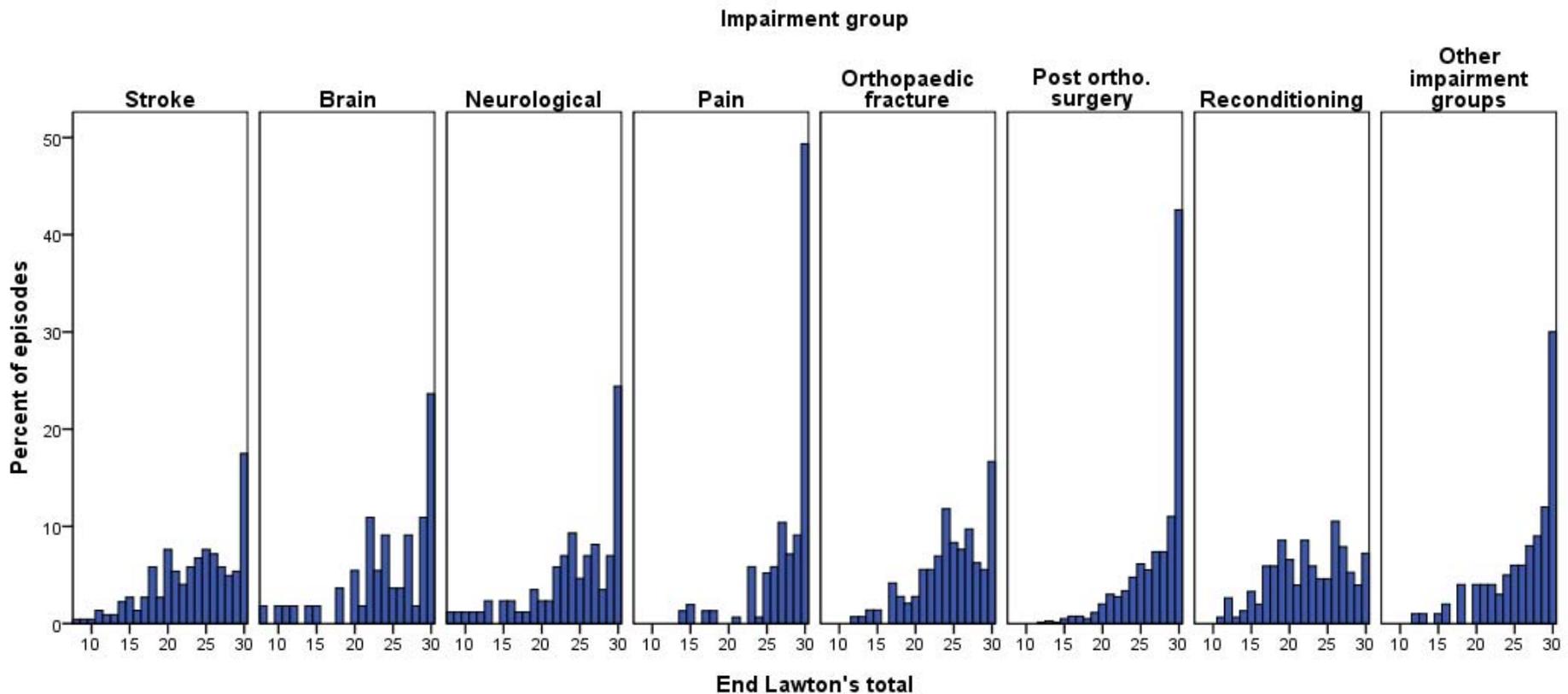
Average Lawton's score change by impairment
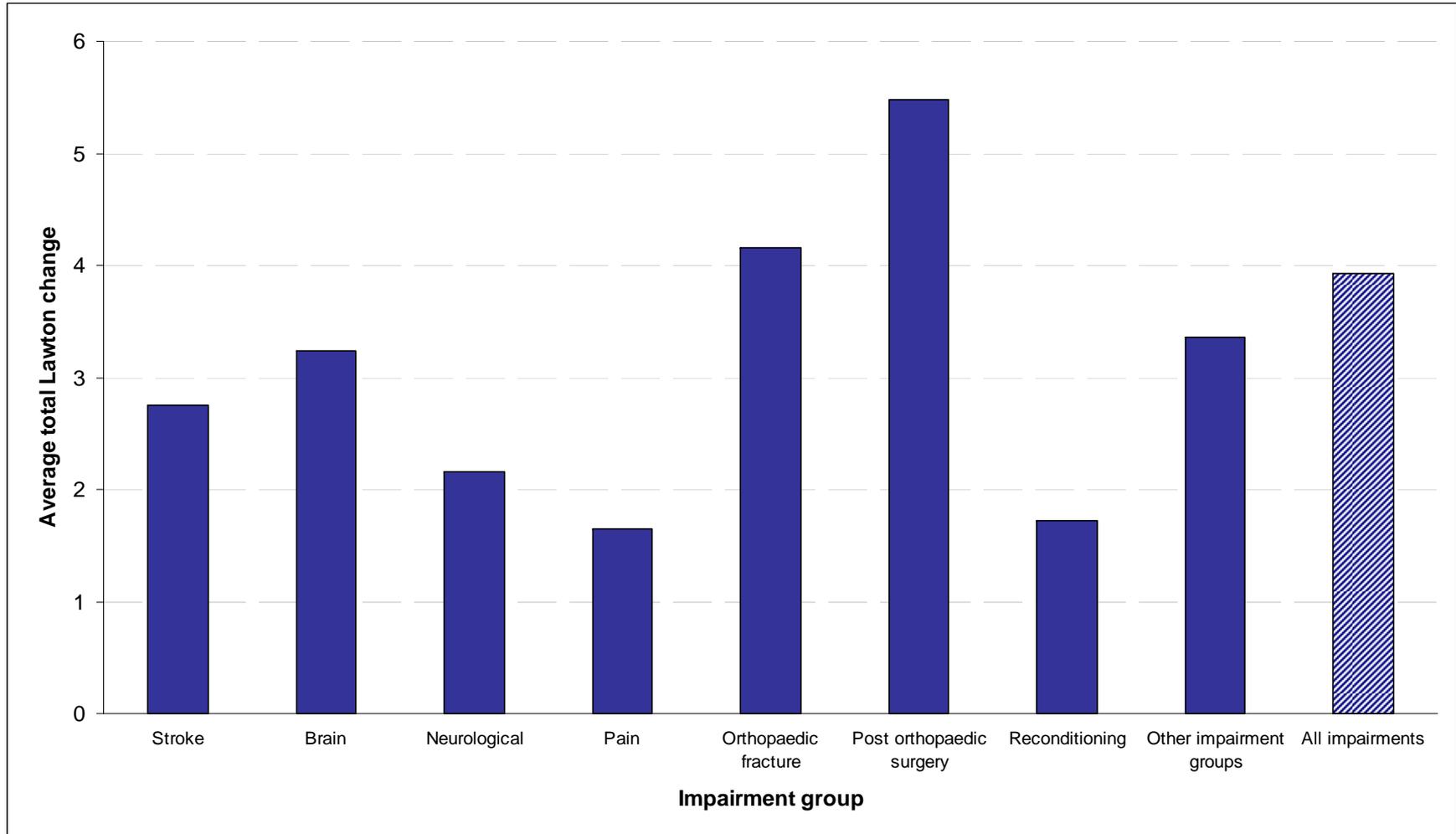
Average Lawton's score change by impairment

Impairment group	Average total Lawton's score change	(95% CI)
Stroke	2.8	(2.4 - 3.1)
Brain	3.2	(2.3 - 4.2)
Neurological	2.2	(1.6 - 2.7)
Pain	1.7	(1.3 - 2)
Orthopaedic fracture	4.2	(3.5 - 4.8)
Post orthopaedic surgery	5.5	(5.2 - 5.8)
Reconditioning	1.7	(1.3 - 2.2)
Other impairment groups	3.4	(2.7 - 4)
All impairments	**3.9**	**(3.8 - 4.1)**

Lawton's score change by impairment

# Change in Lawton's item score by impairment
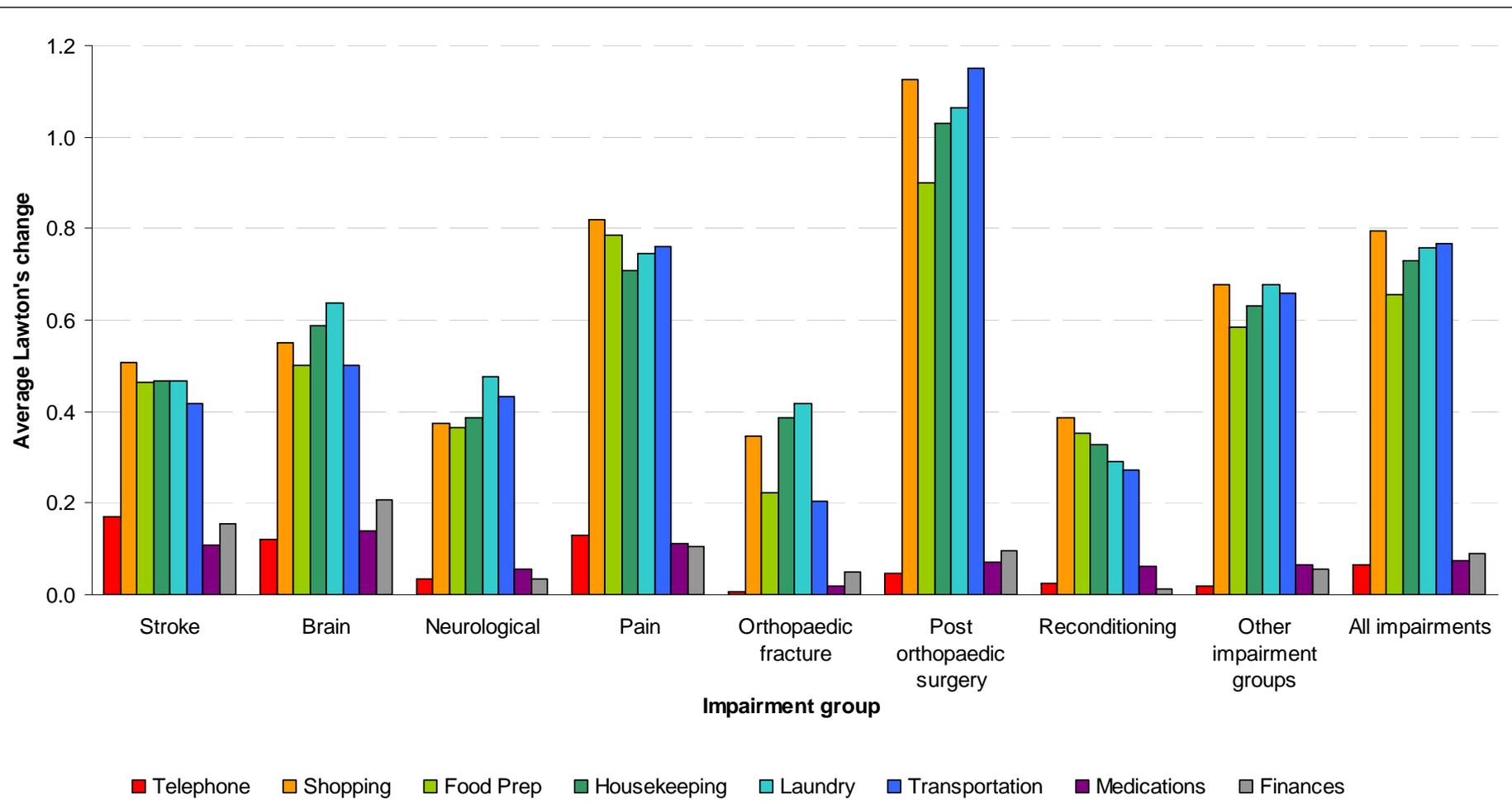
Beginning and end Lawton's total
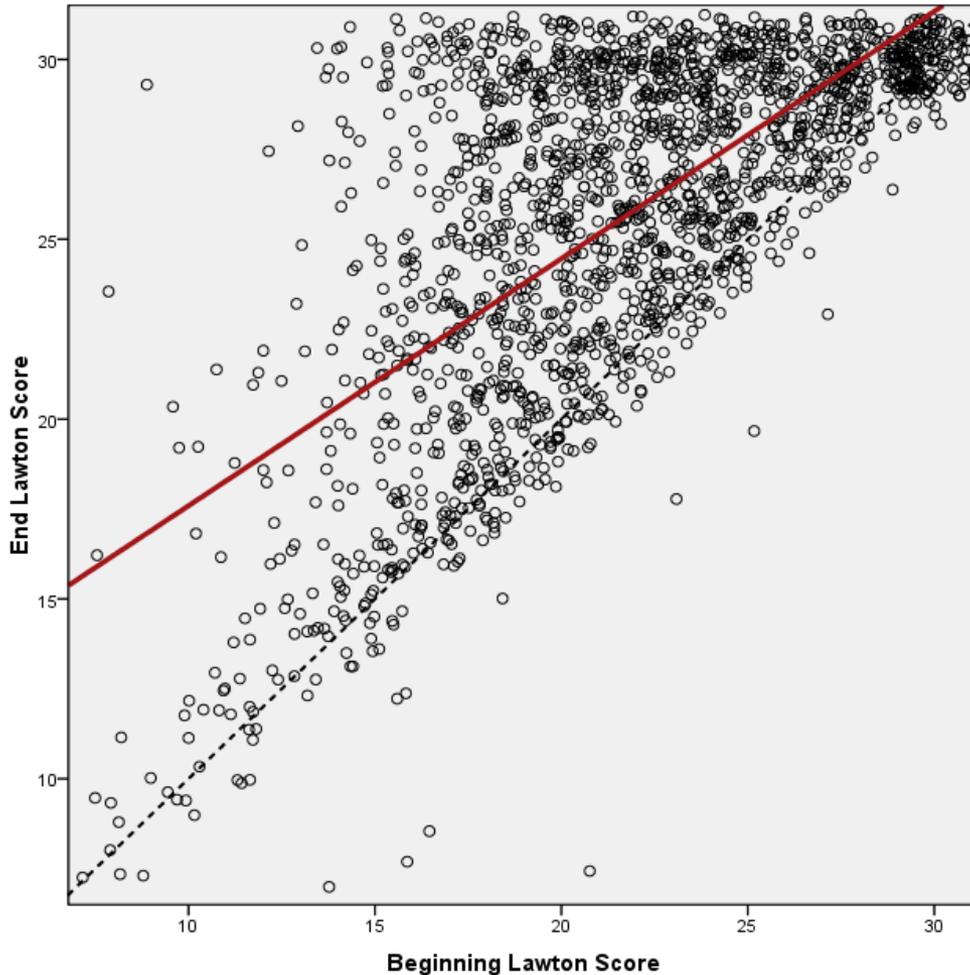
This graph shows the relationship between Lawton's start and end scores.
The dotted line indicates 'no change' and the red line indicates the 'average change' for the data reported.
The more horizontal the line the more change overall
The following page displays this by individual impairment group.

Note: The data points have been jittered due to overlapping.

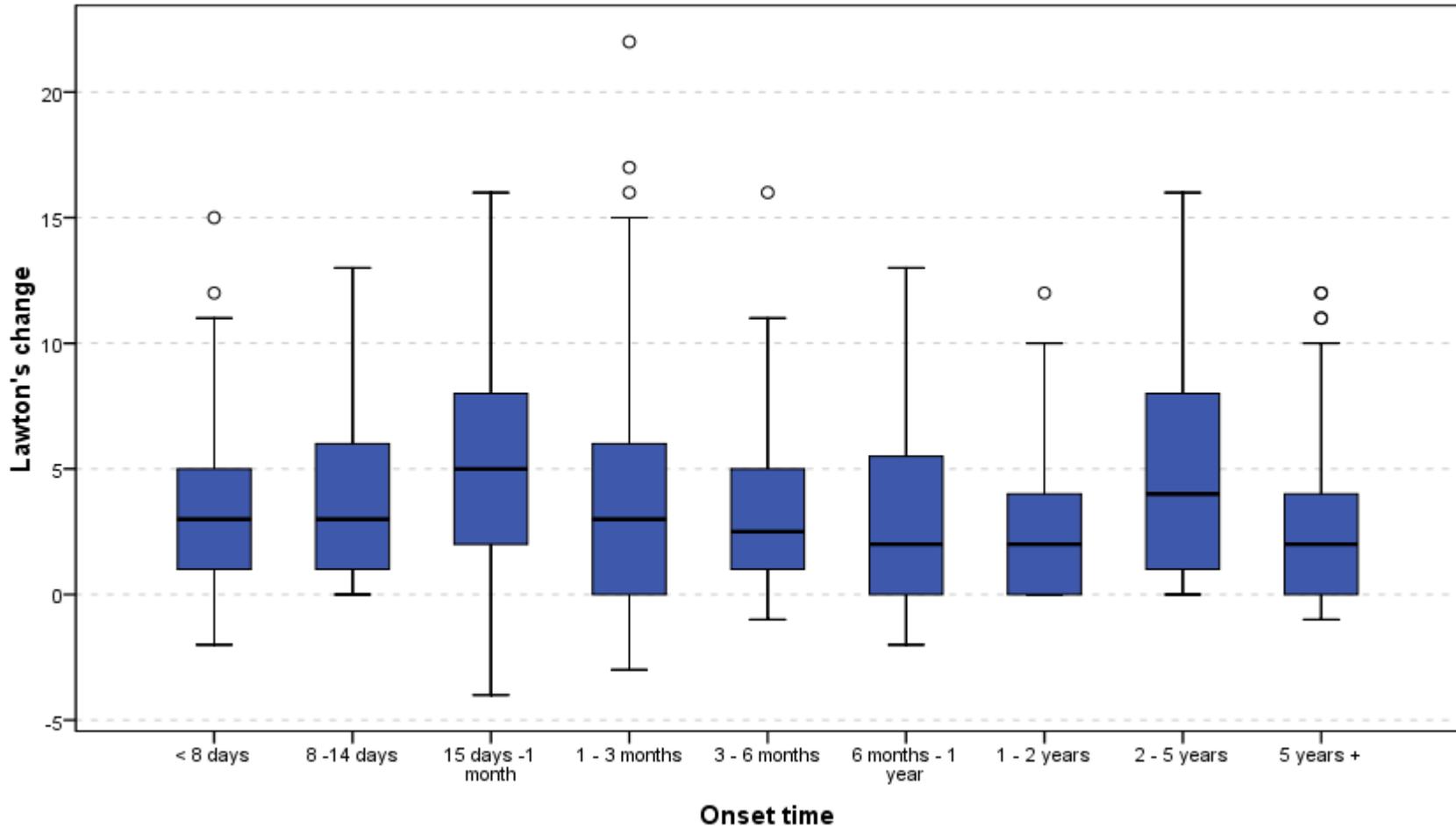# Beginning and end Lawton's total by impairment
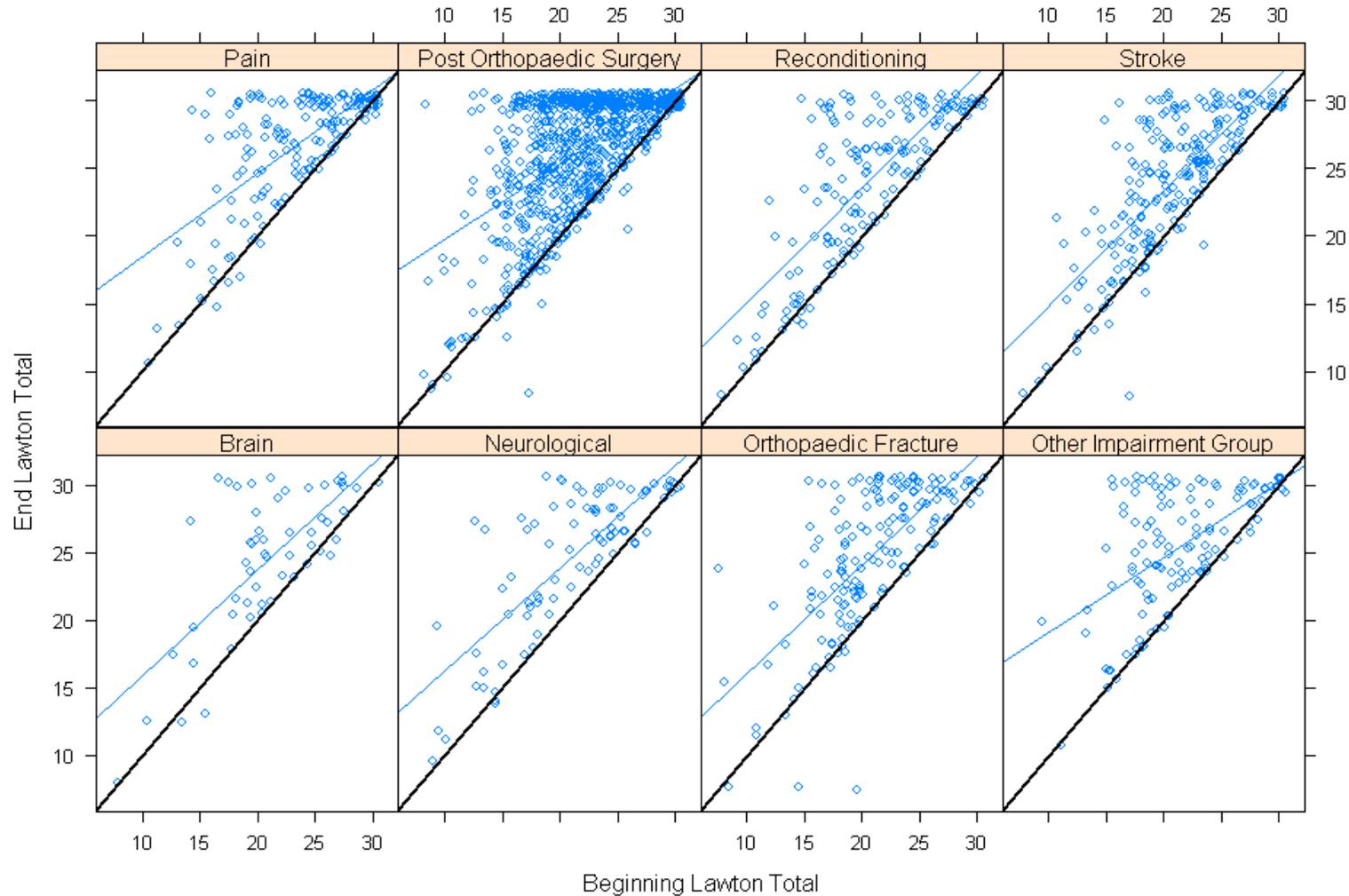
Q. Is the magnitude of Lawton's score change driven by occasions of service?
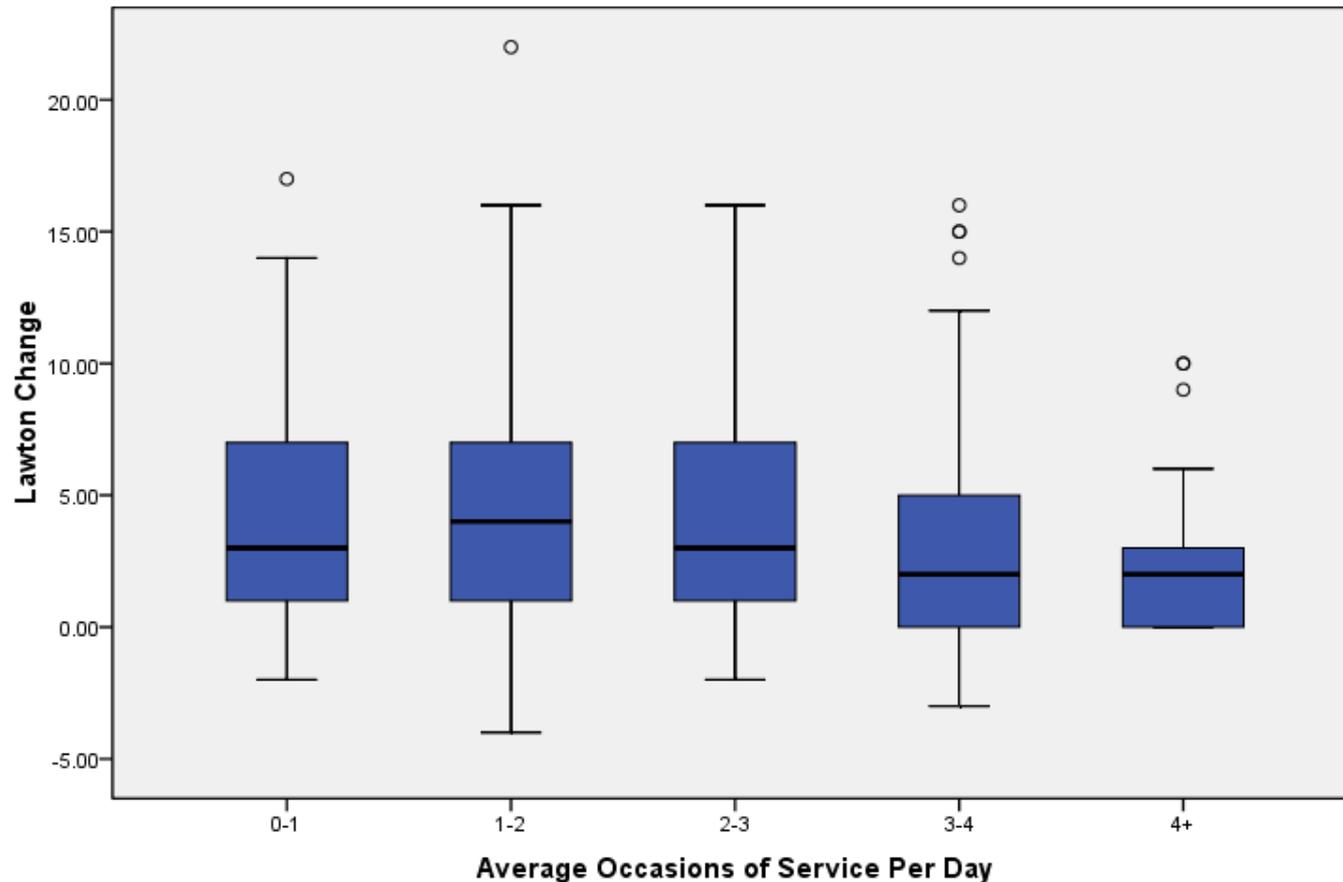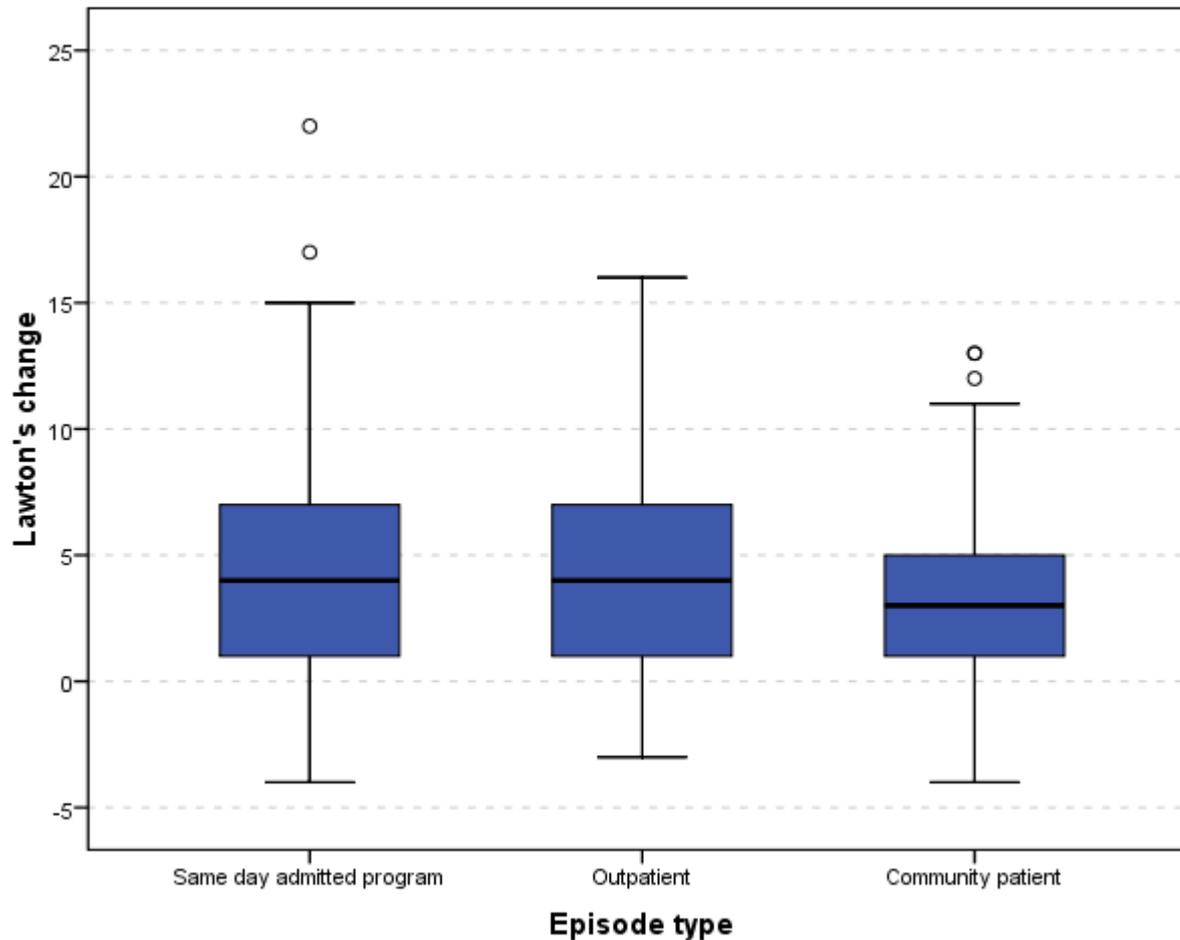

Given the current volume of data the answer is inconclusive.

Lawton's score change by onset time

Lawton's score change by episode type

Appendix A: Interpreting box plots

Box Plots

Box plots, or box-and-whisker plots, provide insight into the distribution of observations within a data set by dividing it into four sections The box indicates the spread of the central 50% of the data; the median is denoted by a horizontal line through the box. The portion of the box above the median line denotes the 50th-75th percentile range. Likewise, the portion of the box below the median denotes the 25th-50th percentile range. If all data lie within 1.5 times the interquartile range (75th percentile minus the 25th percentile) from either end of the central box, the whiskers represent the full range of the data. If not, the whiskers extend to 1.5 times the interquartile range and more extreme data are plotted as points.
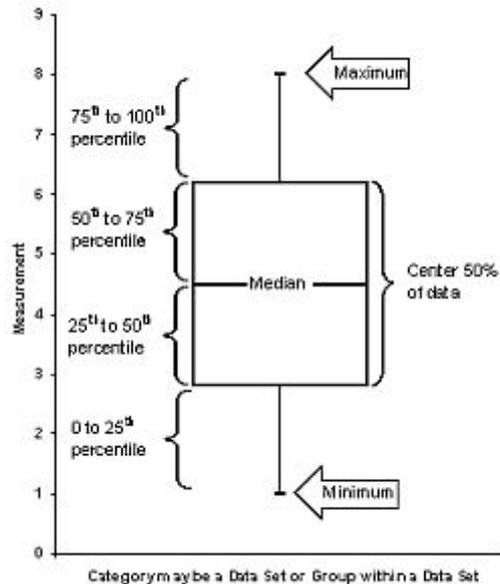
Appendix B– AROC impairment codes V2

STROKE
1.1 Left body involvement (right brain)
1.2 Right body involvement (left brain)
1.3 Bilateral involvement
1.4 No paresis
1.9 Other stroke

BRAIN DYSFUNCTION
Non-Traumatic:
2.11 Sub-arachnoid haemorrhage
2.12 Anoxic brain damage
2.13 Other non-traumatic brain dysfunction
Traumatic:
2.21 Open injury
2.22 Closed injury

NEUROLOGICAL CONDITIONS
3.1 Multiple sclerosis
3.2 Parkinsonism
3.3 Polyneuropathy
3.4 Guillian-Barre
3.5 Cerebral palsy
3.8 Neuromuscular disorders
    (include motor neurone disease)
3.9 Other neurologic disorders

SPINAL CORD DYSFUNCTION
Non-Traumatic:
4.111   Paraplegia, incomplete
4.112   Paraplegia, complete
4.1211 Quadriplegia incomplete C1-4
4.1212 Quadriplegia incomplete C5-8
4.1221 Quadriplegia complete C1-4
4.1222 Quadriplegia complete C5-8
4.13   Other non-traumatic SCI
Traumatic:
4.211   Paraplegia, incomplete
4.212   Paraplegia, complete
4.2211 Quadriplegia incomplete C1-4
4.2212 Quadriplegia incomplete C5-8
4.2221 Quadriplegia complete C1-4
4.2222 Quadriplegia complete C5-8
4.23   Other traumatic SCI

AMPUTATION OF LIMB
5.1 Single upper amputation above the elbow
5.2 Single upper amputation below the elbow
5.3 Single lower amputation above the knee
    (includes through the knee)
5.4 Single lower amputation below the knee
5.5 Double lower amputation above the knee
    (includes through the knee)
5.6 Double lower amputation above/below the knee
5.7 Double lower amputation below the knee
5.8 Partial foot amputation (includes single/double)
5.9 Other Amputation

ARTHRITIS
6.1 Rheumatoid Arthritis
6.2 Osteoarthritis
6.9 Other Arthritis

AROC impairment codes V2….continued

PAIN SYNDROMES

7.1 Neck pain

7.2 Back pain

7.3 Extremity pain

7.4 Headache (includes migraine)

7.5 Multi-site pain

7.9 Other pain (includes abdominal/chest wall)

ORTHOPAEDIC CONDITIONS

Fracture: (includes dislocation, excludes neurological involvement)

8.111 Fracture of hip, unilateral (include #NOF)

8.112 Fracture of hip, bilateral (include #NOF)

8.12   Fracture of shaft of femur (excludes femur involving knee joint)

8.13   Fracture of pelvis

8.141 Fracture of knee (includes patella, femur involving knee joint, tibia or fibula involving knee joint)

8.142 Fracture of lower leg, ankle, foot

8.15   Fracture of upper limb (includes hand, fingers, wrist, forearm, arm shoulder)

8.16   Fracture of spine (excludes where the major disorder is pain)

8.17   Fracture of multiple sites (multiple bones of same lower limb, both lower limbs, lower with upper limb, lower limb with rib or sternum. Excludes with brain injury or with spinal cord injury)

8.19   Other orthopaedic fracture (includes jaw, face, rib, orbit or sites not elsewhere classified)

ORTHOPAEDIC CONDITIONS cont'd

Post orthopaedic surgery:

8.211 Unilateral hip replacement

8.212 Bilateral hip replacement

8.221 Unilateral knee replacement

8.222 Bilateral knee replacement

8.231 Knee & hip replacement same side

8.232 Knee & hip replacement different sides

8.24   Shoulder replacement or repair

8.25   Post spinal surgery (includes nerve root injury, laminectomy, spinal fusion, discectomy. Excludes spinal cord injury or caudaequina)

8.26   Other orthopaedic surgery

AROC impairment codes V2….continued

CARDIAC
9.1 Following recent onset of new cardiac impairment (AMI, heart transplant, cardiac surgery)
9.2 Chronic cardiac insufficiency
9.3 Heart & heart/lung transplant

PULMONARY
10.1 Chronic obstructive pulmonary disease
10.2 Lung transplant
10.9 Other pulmonary

BURNS
11 Burns

CONGENITAL DEFORMITIES
12.1 Spina Bifida
12.9 Other congenital deformities

OTHER DISABLING IMPAIRMENTS
13.1 Lymphoedema
13.2 Other disabling impairments
(cases that cannot be classified into a specific group. This classification should rarely be used)

MAJOR MULTIPLE TRAUMA
14.1 Brain + spinal cord injury
14.2 Brain + multiple fracture/amputation
14.3 Spinal cord + multiple fracture/amputation
14.9 Other multiple trauma

DEVELOPMENTAL DISABILITIES
(includes patients who have significant intellectual disabilities, excludes cerebral palsy)
15.1 Developmental Disabilities

RE-CONDITIONING/RESTORATIVE
(excludes primary cardiac insufficiency & primary pulmonary insufficiency)
16.1 Re-conditioning following surgery
16.2 Re-conditioning following medical illness
16.3 Cancer rehab (where patient is de-conditioned as a result of their cancer or treatment for their cancer)

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  - Members of the Scientific and Clinical Advisory Committee of the Australasian Rehabilitation Outcomes Centre.
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