

Discharge Planning Using Outcome Measure Information in CAMHS - The Emerging Picture

Vaike Vohma and Marg Jones



WA CAMHS Services 2005-2009

An Overview

27 July 2010

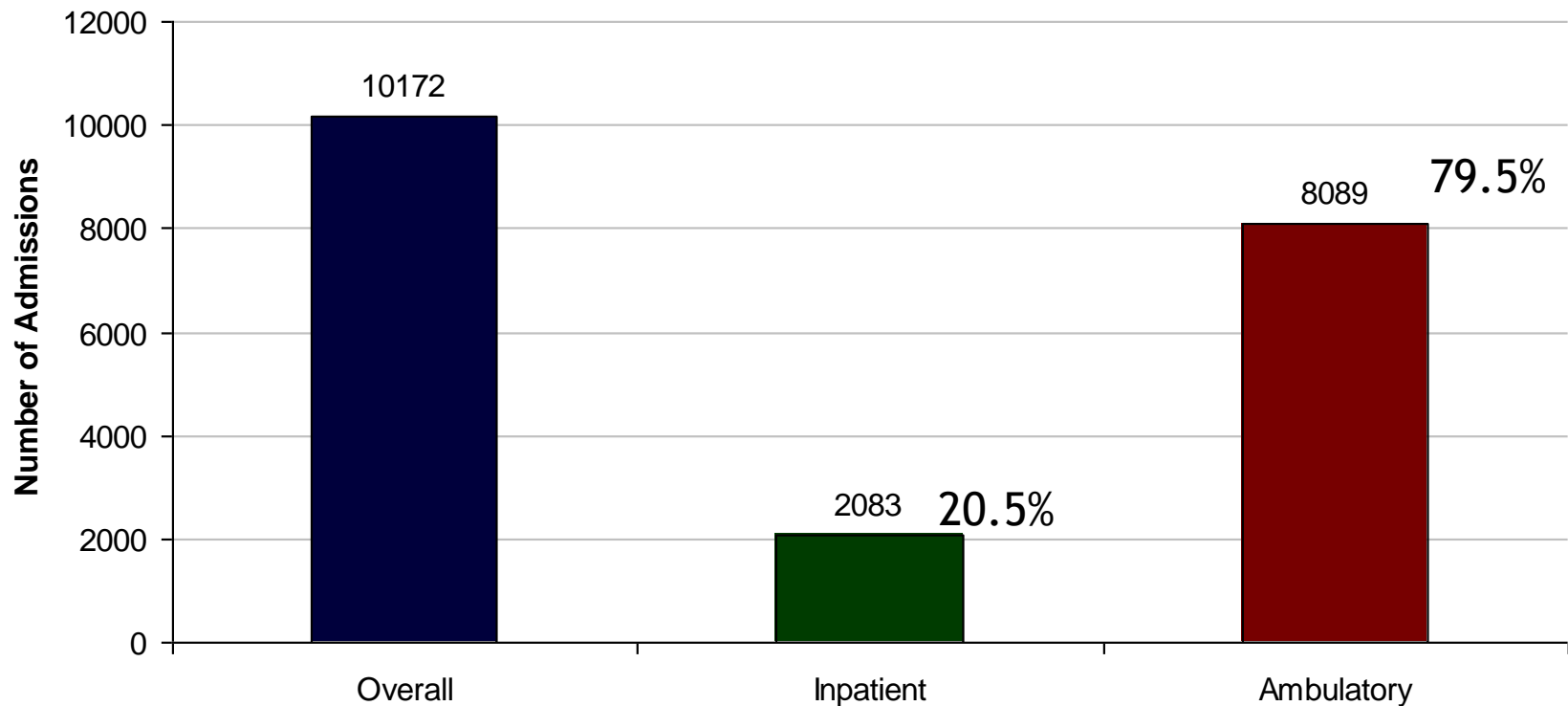
Slide 2



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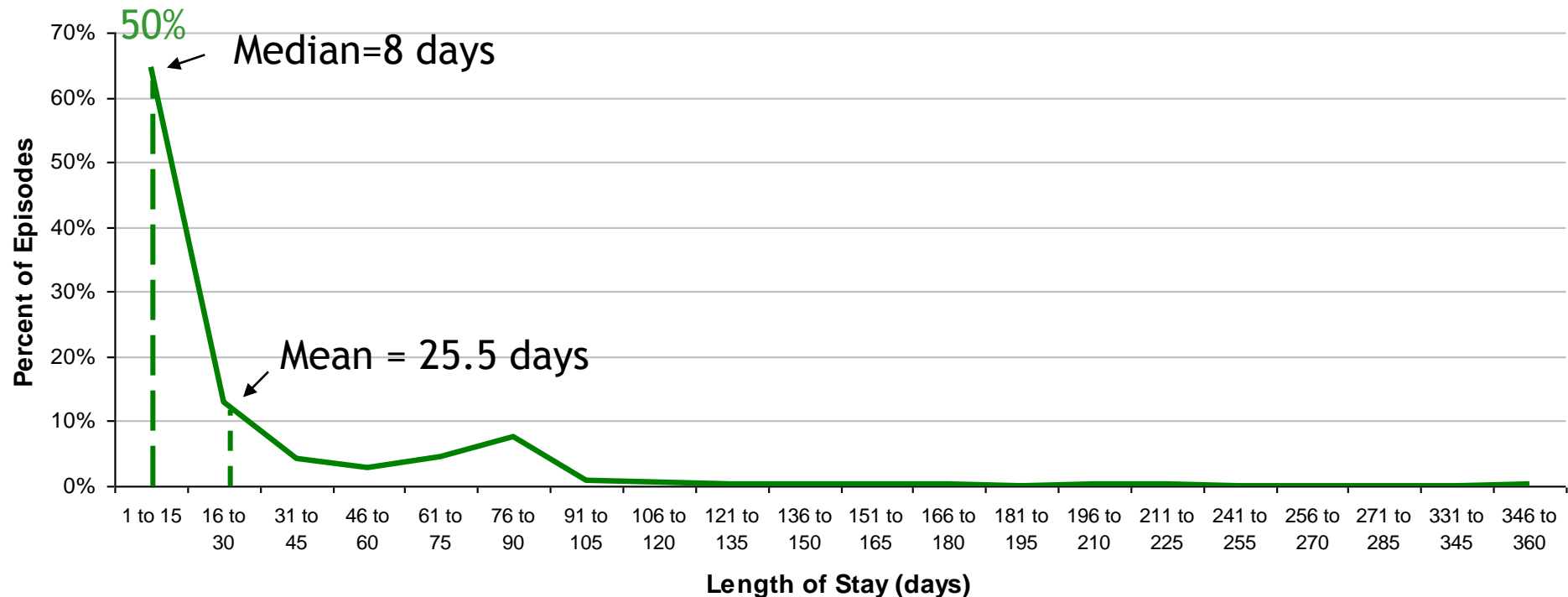
Inpatient/Outpatient Outcome Measure Activated Activity

WA CAMHS Total Number of NOCC Activated Admissions: Overall, Inpatient and Outpatient 2005-2009



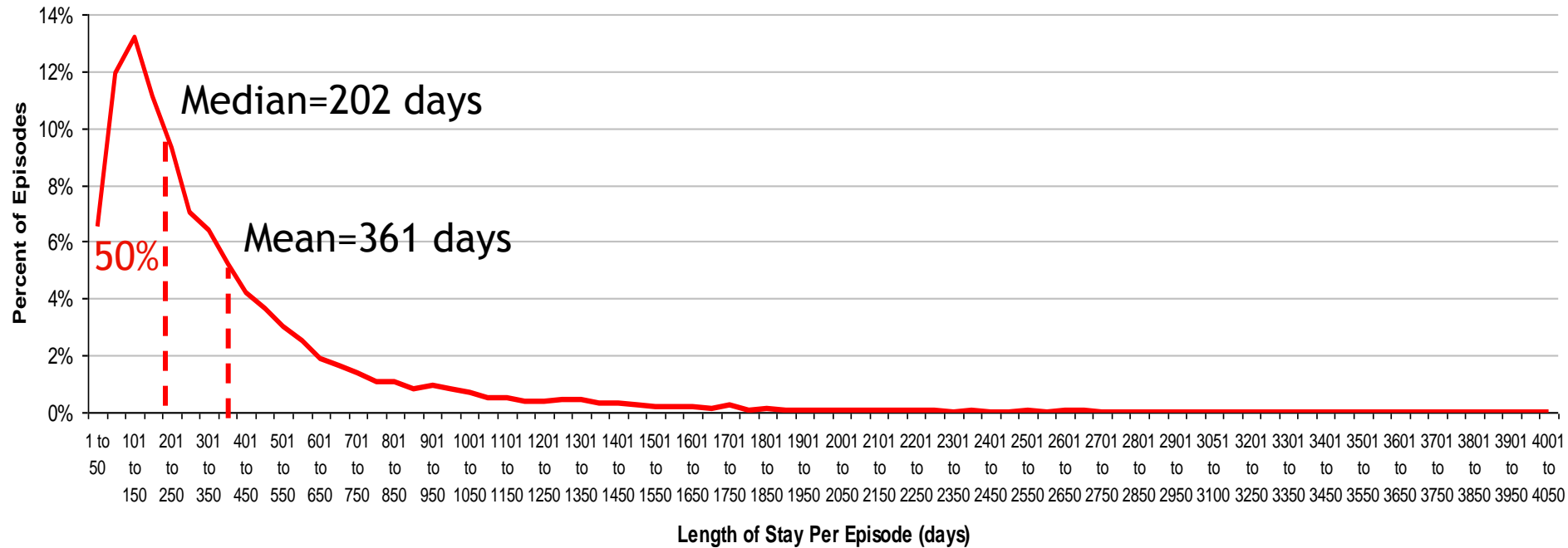
WA CAMHS Length of Stay 2005-2009: Inpatient

WA CAMHS Length of Stay 2005-2009: Inpatient Services Only



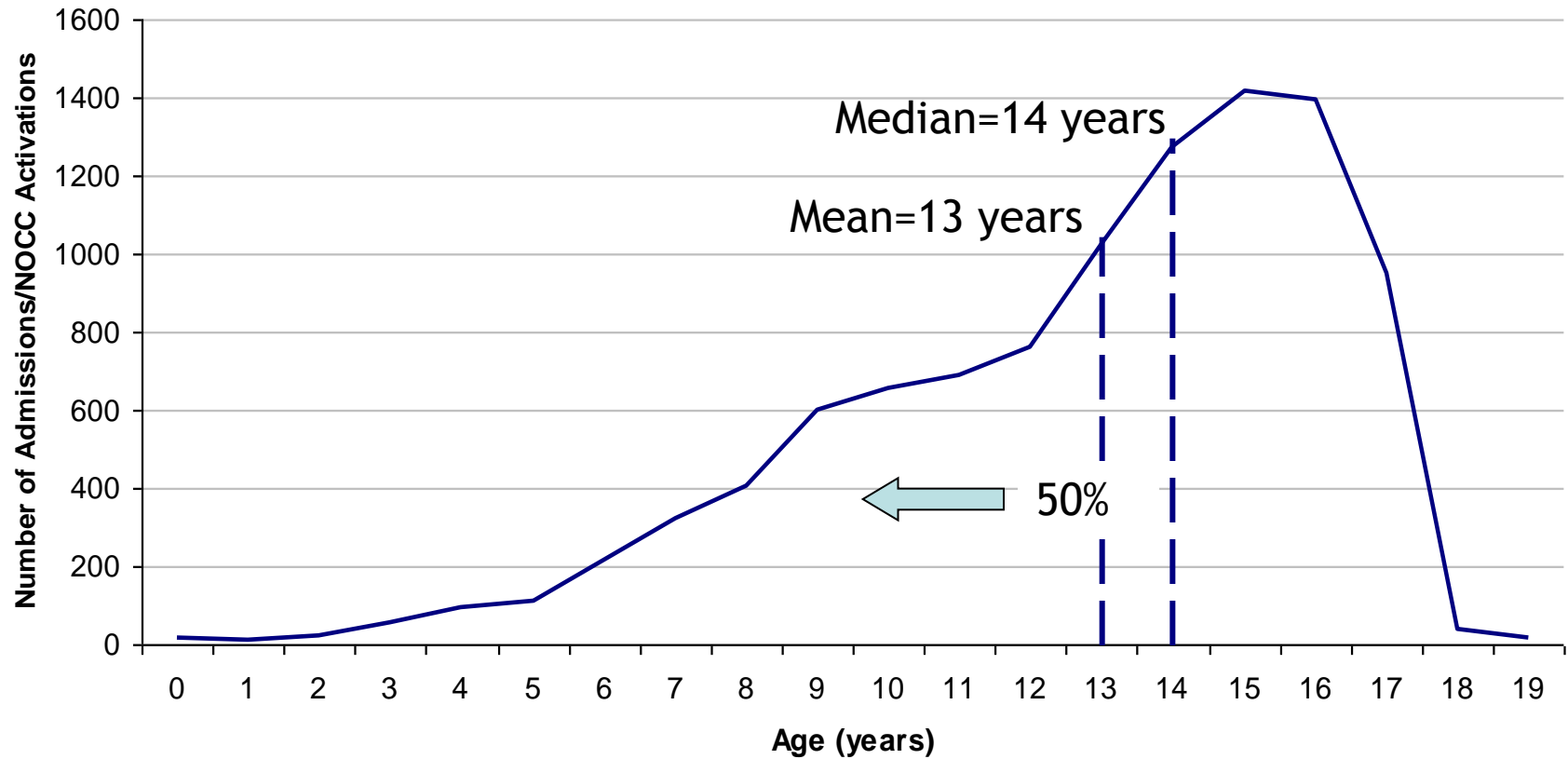
WA CAMHS Length of Stay 2005-2009: Ambulatory

WA CAMHS Length of Stay 2005-2009: Ambulatory Services Only



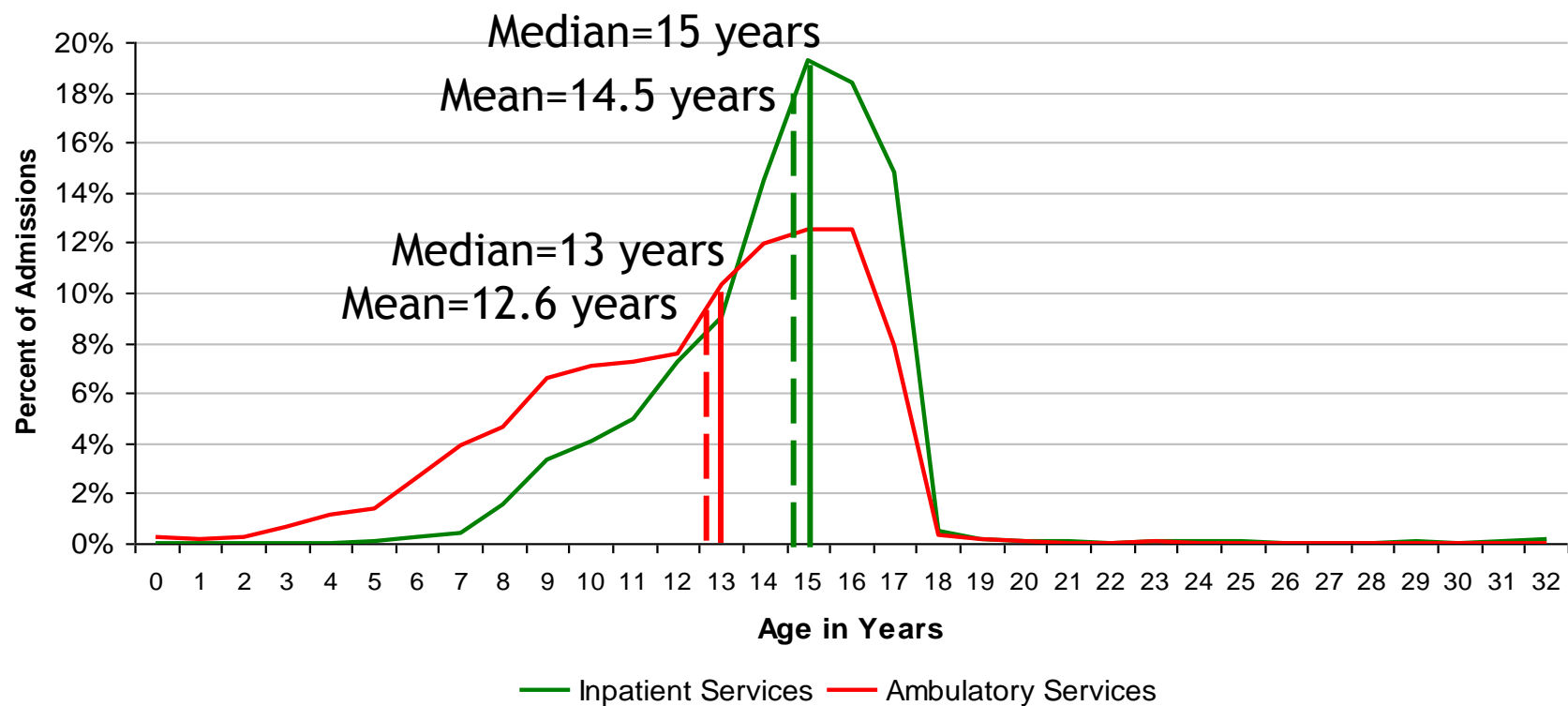
Age at Admission

WA CAMHS Overall Age at Admission/Activation 2005-2009



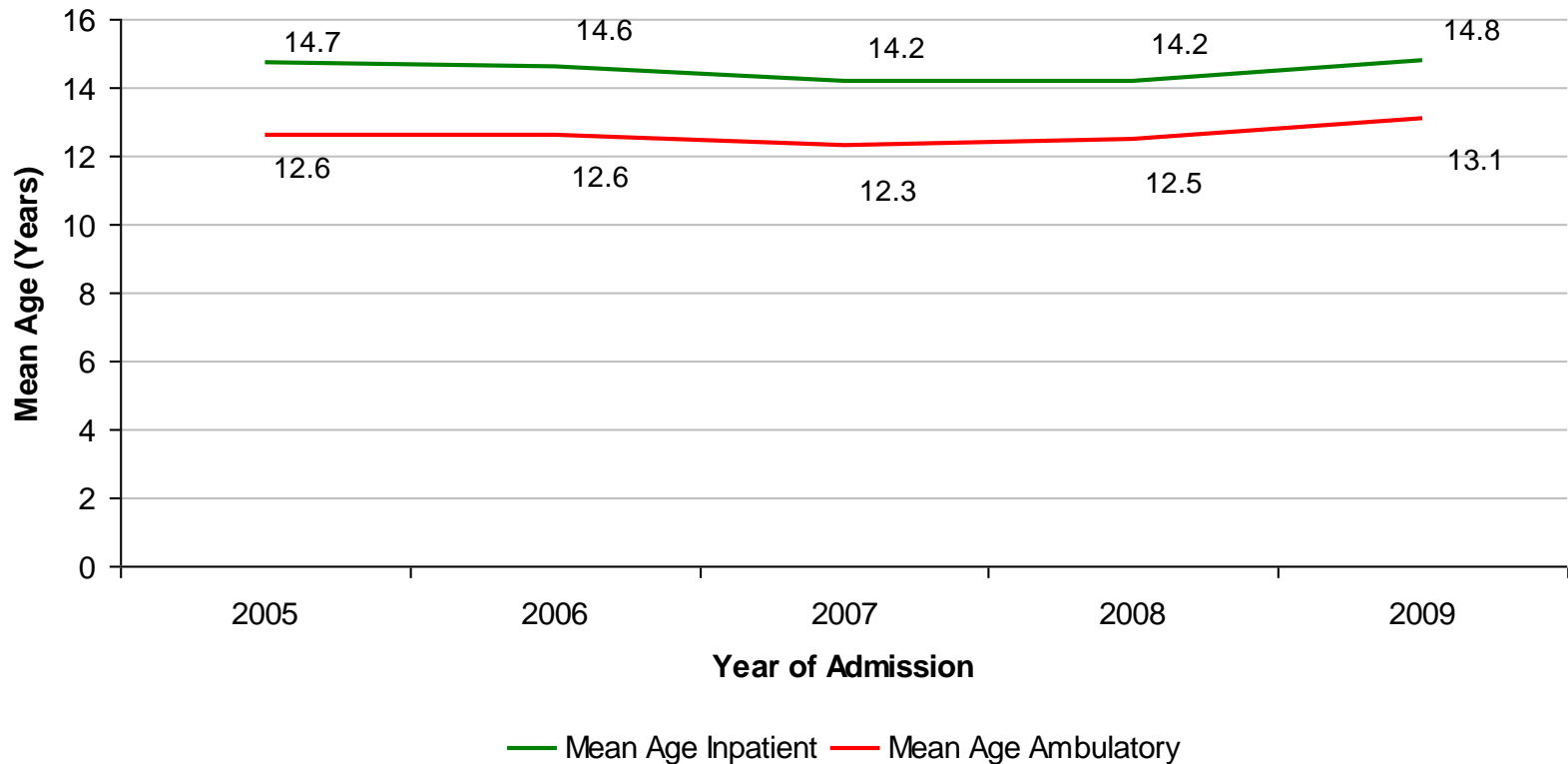
Age at Admission – Inpatient and Ambulatory

Percent Admitted at Each Age - Inpatient and Ambulatory Services
2005-2009



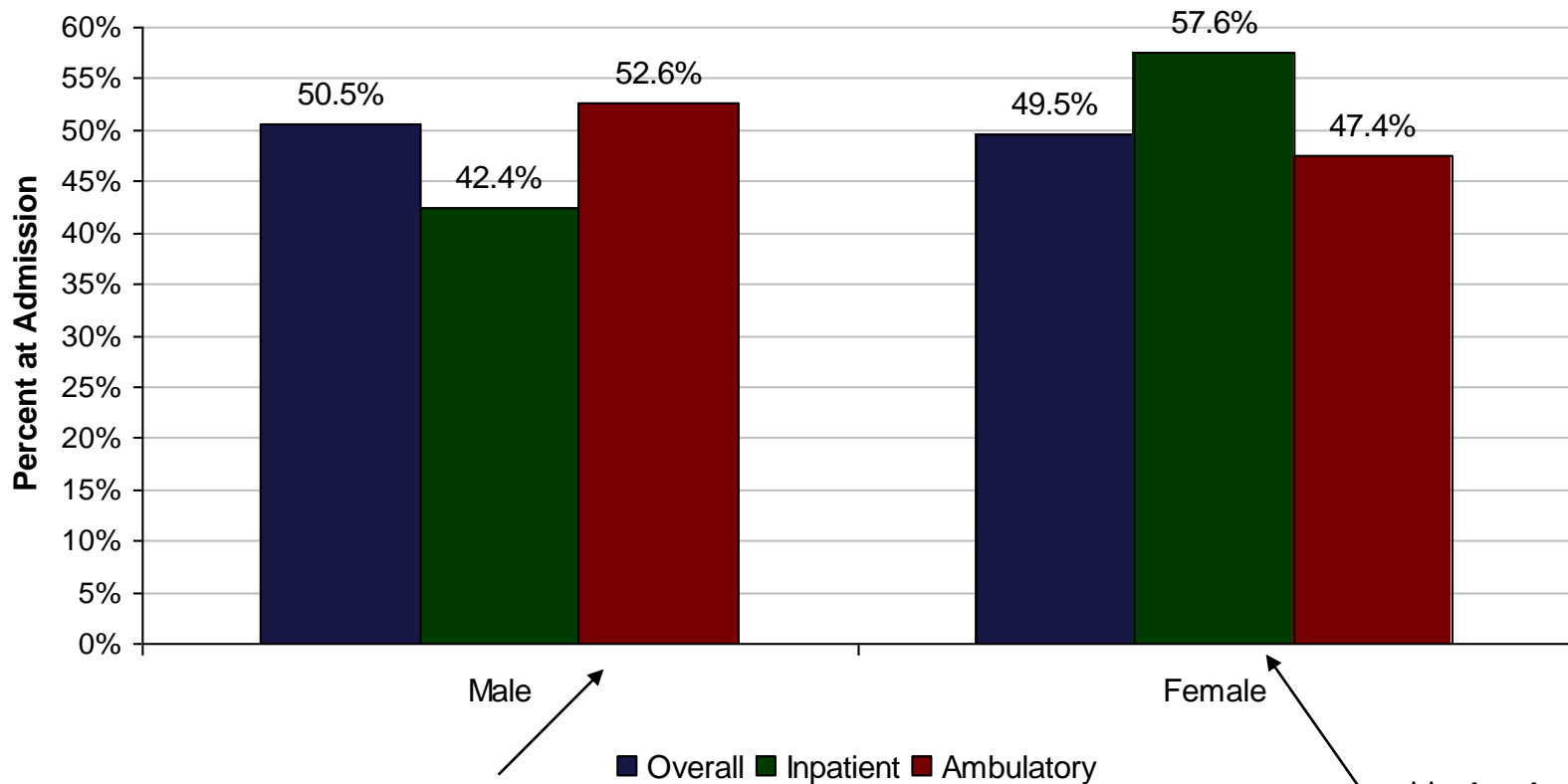
Mean Age of Admission Over Time

WA CAMHS Inpatient and Ambulatory Mean Age at Admission: 2005-2009



WA CAMHS Gender 2005-2009

WA CAMHS Gender 2005-2009 - Inpatient vs Ambulatory



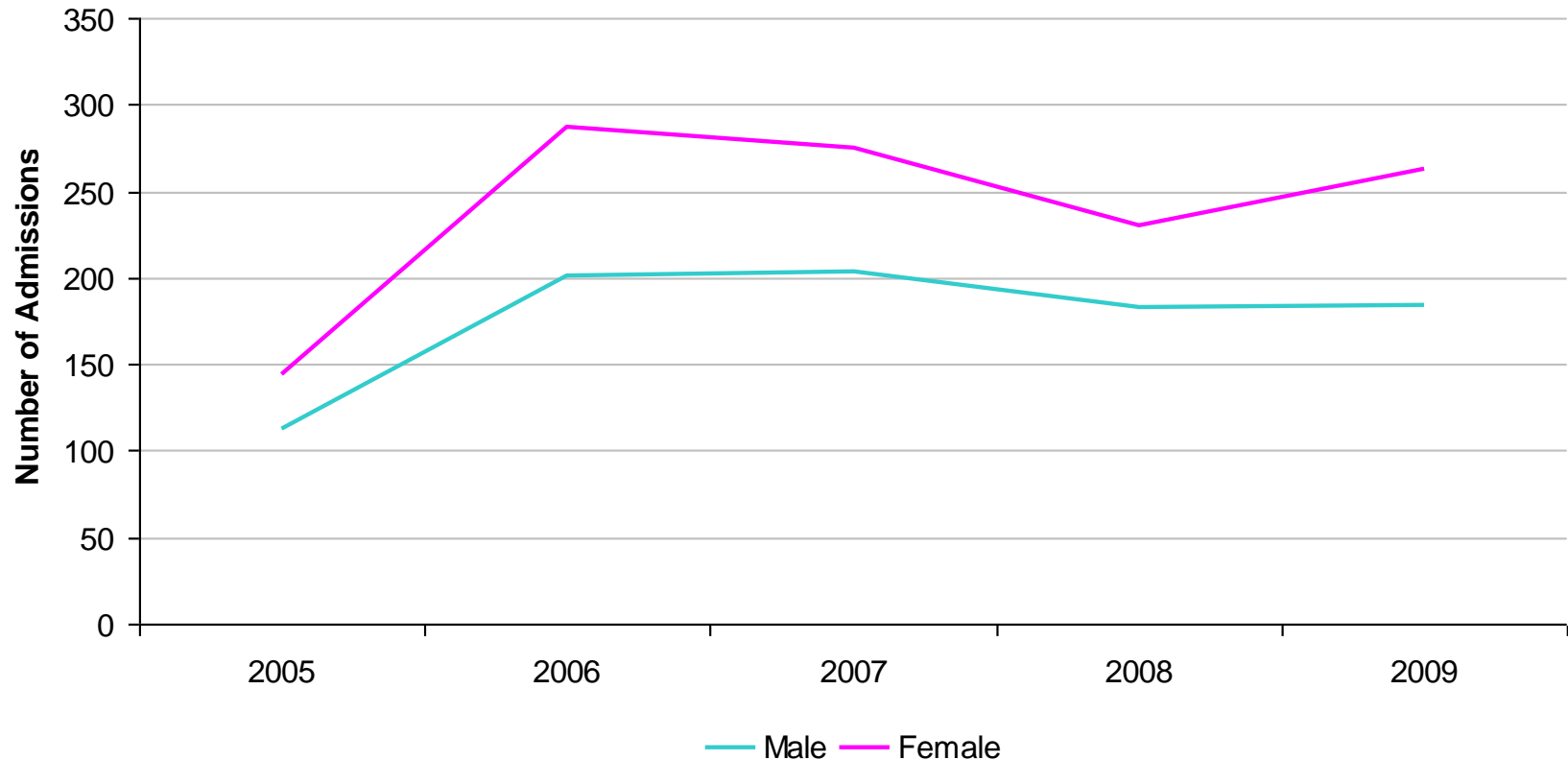
Majority boys

Majority girls



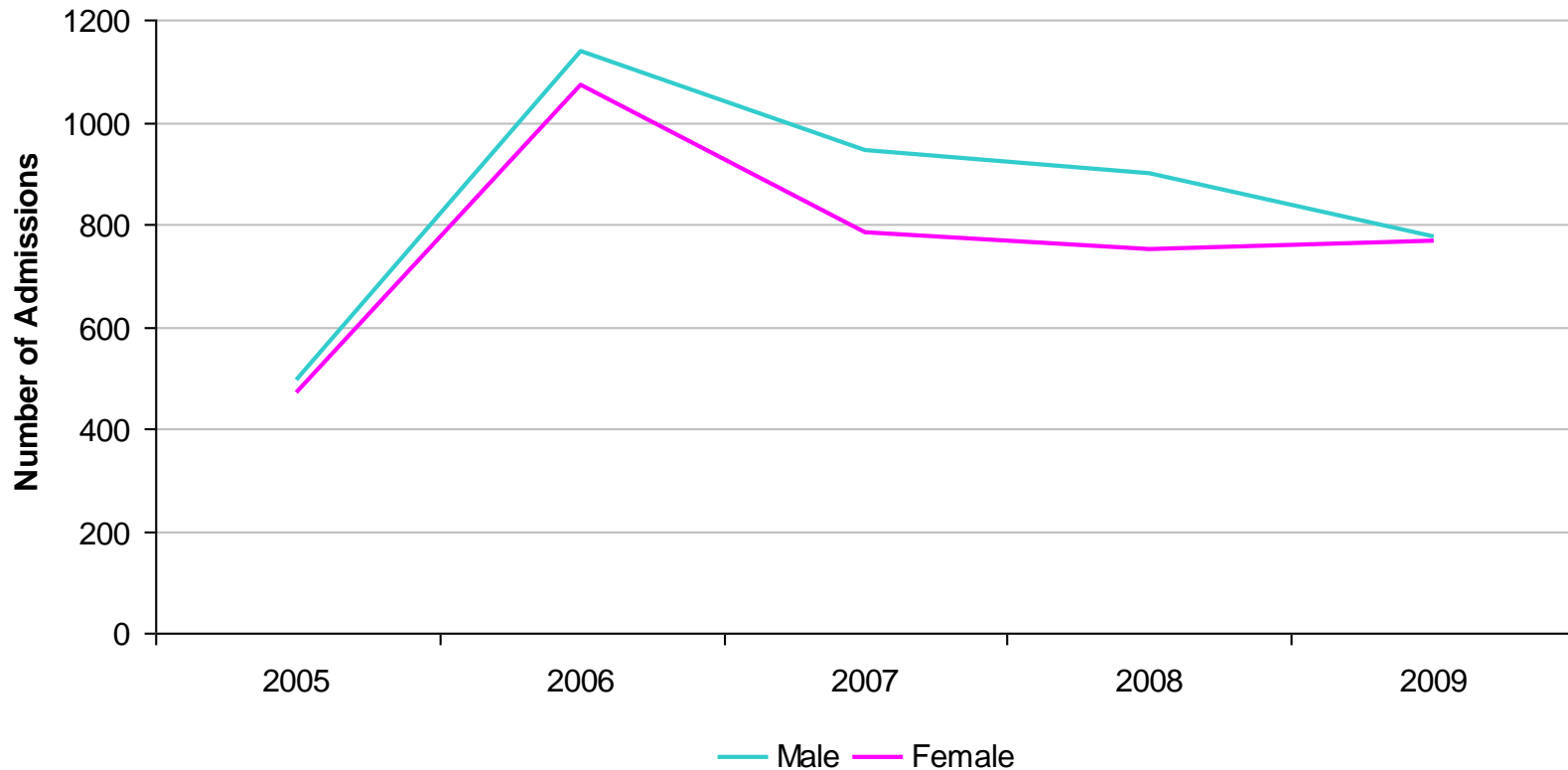
Gender by Year – Inpatient Only

WA CAMHS Inpatient Services: Gender 2005-2009 by Year



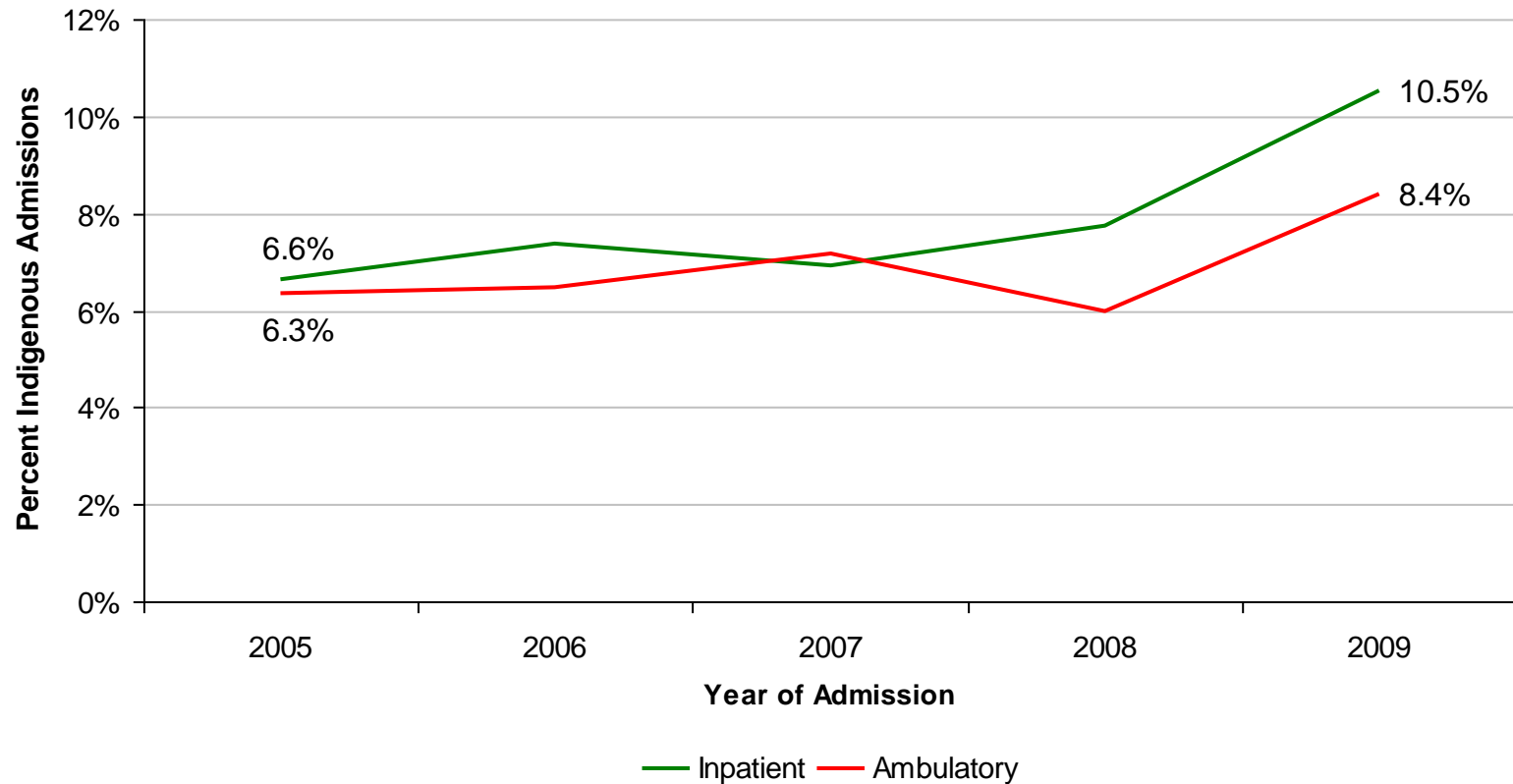
Gender by Year – Ambulatory Only

WA CAMHS Ambulatory Services: Gender 2005-2009 by Year

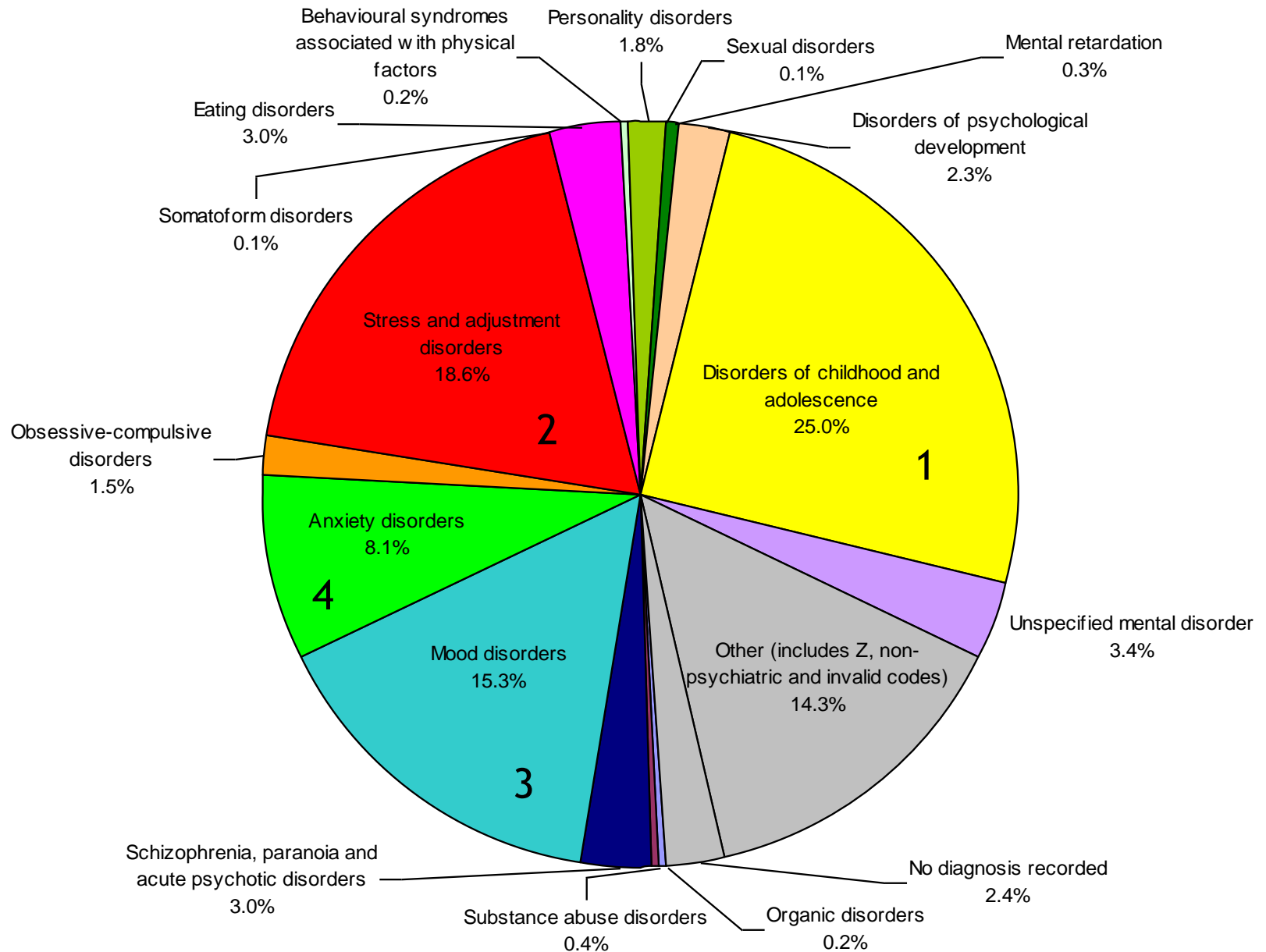


Indigenous Admissions 2005-2009

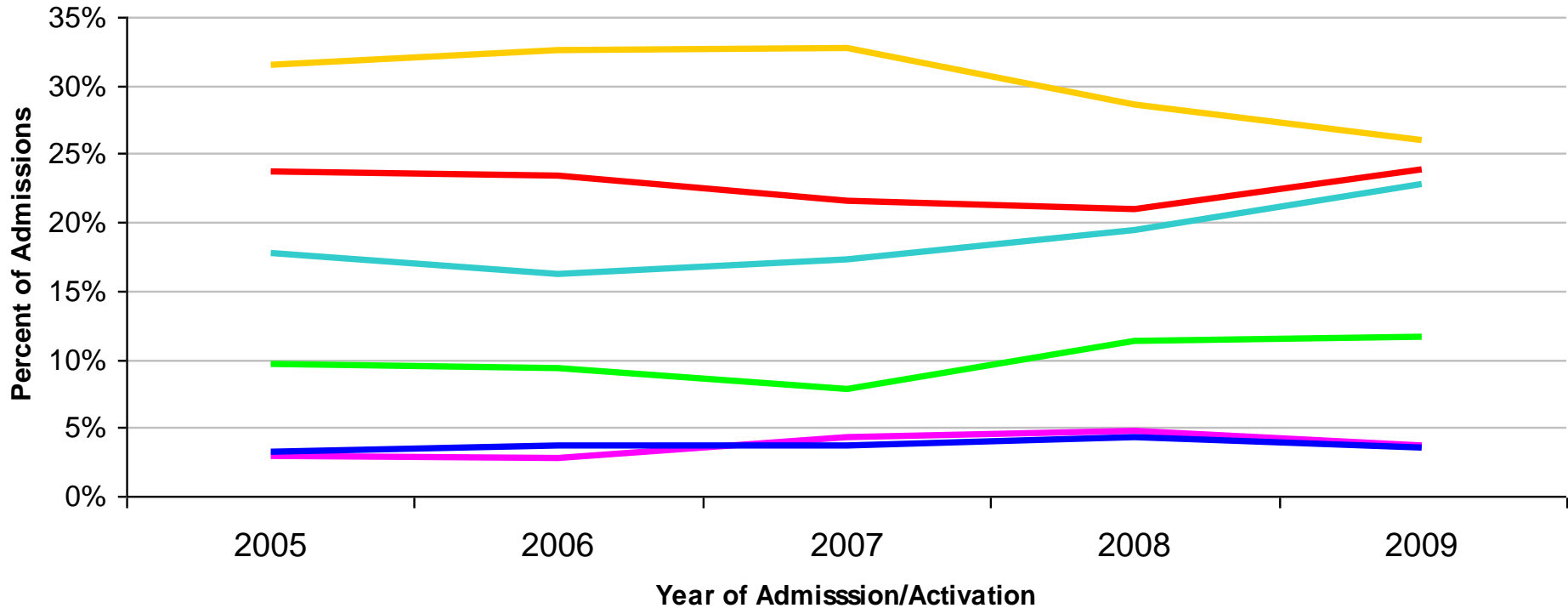
WA CAMHS Inpatient and Ambulatory Percent Indigenous Admissions: 2005-2009



WA CAMHS Diagnoses at Admission 2005-2009



WA CAMHS Diagnoses at Admission 2005-2009 (Excluding 'other' and 'uspecified')



— Disorders of childhood and adolescence

— Stress and adjustment disorders

— Mood disorders

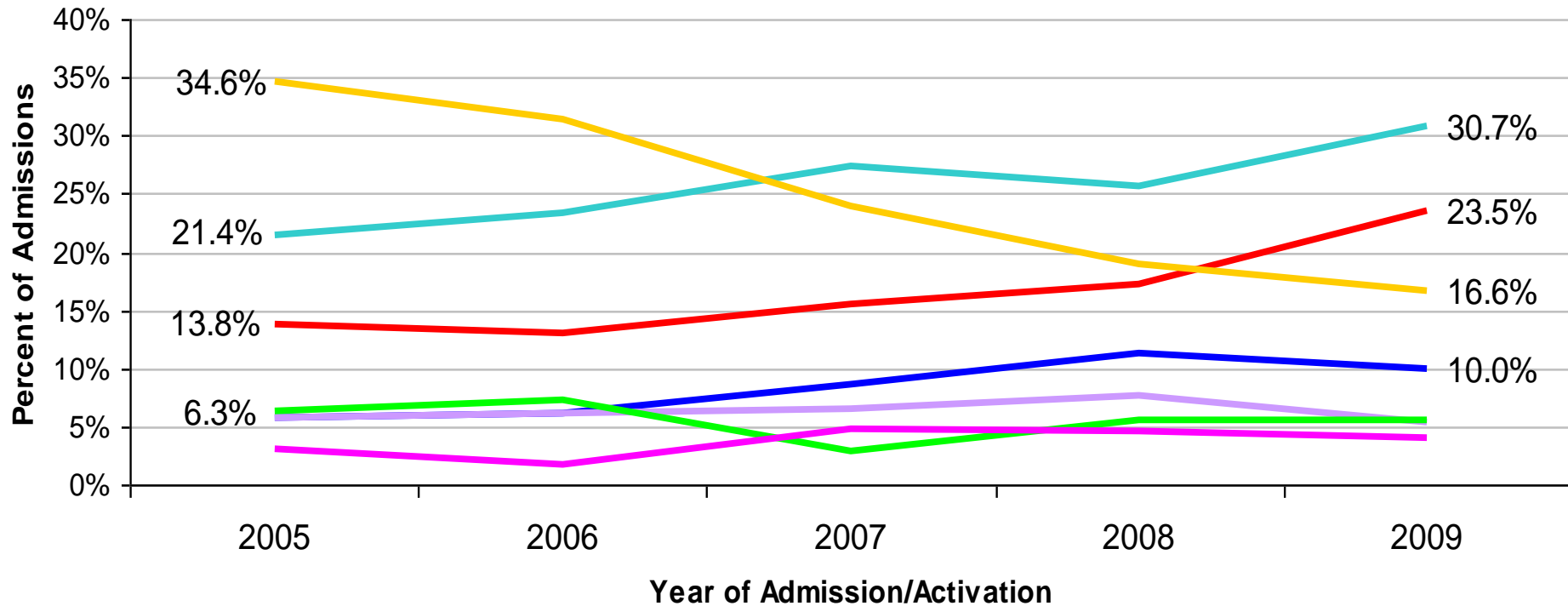
— Anxiety disorders

— Eating disorders

— Schizophrenia, paranoia and acute psychotic disorders



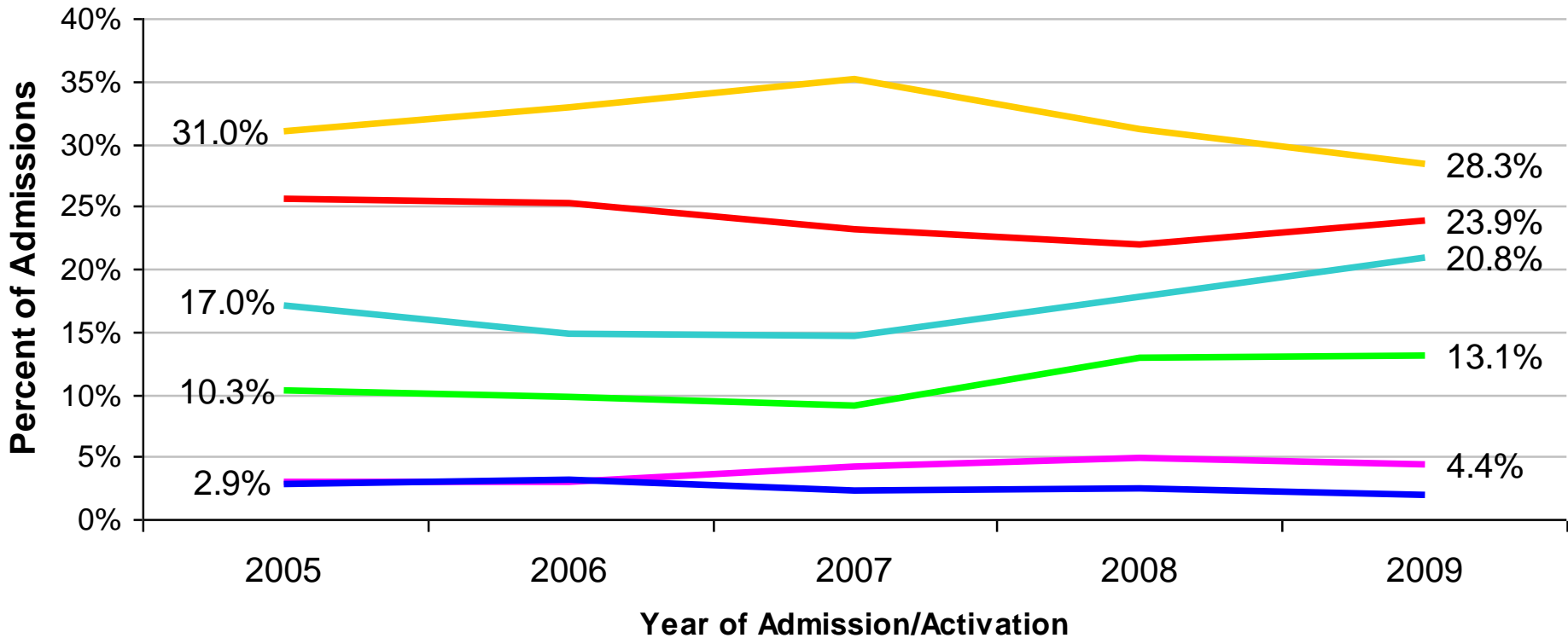
WA CAMHS Diagnoses at Admission 2005-2009: Inpatient Only (Excluding 'other' and 'unspecified')



- Mood disorders
- Stress and adjustment disorders
- Disorders of childhood and adolescence
- Schizophrenia, paranoia and acute psychotic disorders
- Personality disorders
- Anxiety disorders
- Eating disorders



WA CAMHS Diagnoses at Admission 2005-2009: Ambulatory Only (Excluding 'other' and 'unspecified')



Disorders of childhood and adolescence

Mood disorders

Eating disorders

Stress and adjustment disorders

Anxiety disorders

Schizophrenia, paranoia and acute psychotic disorders

Possible Predictors for Length of Stay

What can we use to predict length of stay at admission for ambulatory services?

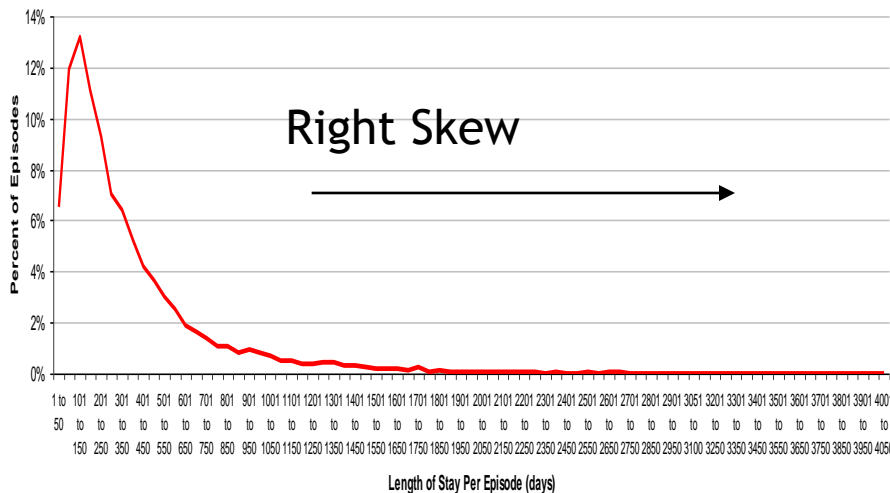
1. Gender
2. Diagnosis at Admission
3. Severity at Admission (HoNOSCA)
4. Total Difficulties at Admission (SDQ)
5. Case Complexity at Admission (FIHS, CGAS)
6. Frequency of Occasions of Service
7. Service program child is admitted to

Treatment Effect would influence LOS as well, but cannot be measured at admission

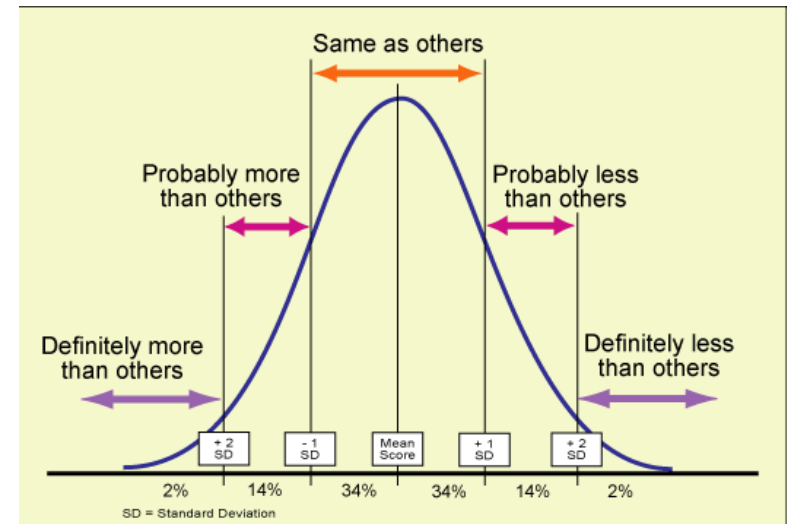


Stop - Caveat! (the fine print...)

The p-values that are shown from here on assume the sampling distribution is normally distributed, however as we saw earlier, the sampling distribution for length of stay does not look like an ordinary bell curve, but is instead skewed largely to the right. This sort of data is called time-to-event data and we usually use survival analysis techniques to analyse it. I have however found it being approximated by usual linear techniques in the literature and what follows is not meant to be a final predictive model for length of stay, but an exploration of the possible variables we might incorporate into such a model. So I have not found the use of more complex survival analysis techniques necessary at this stage.



Normal Curve

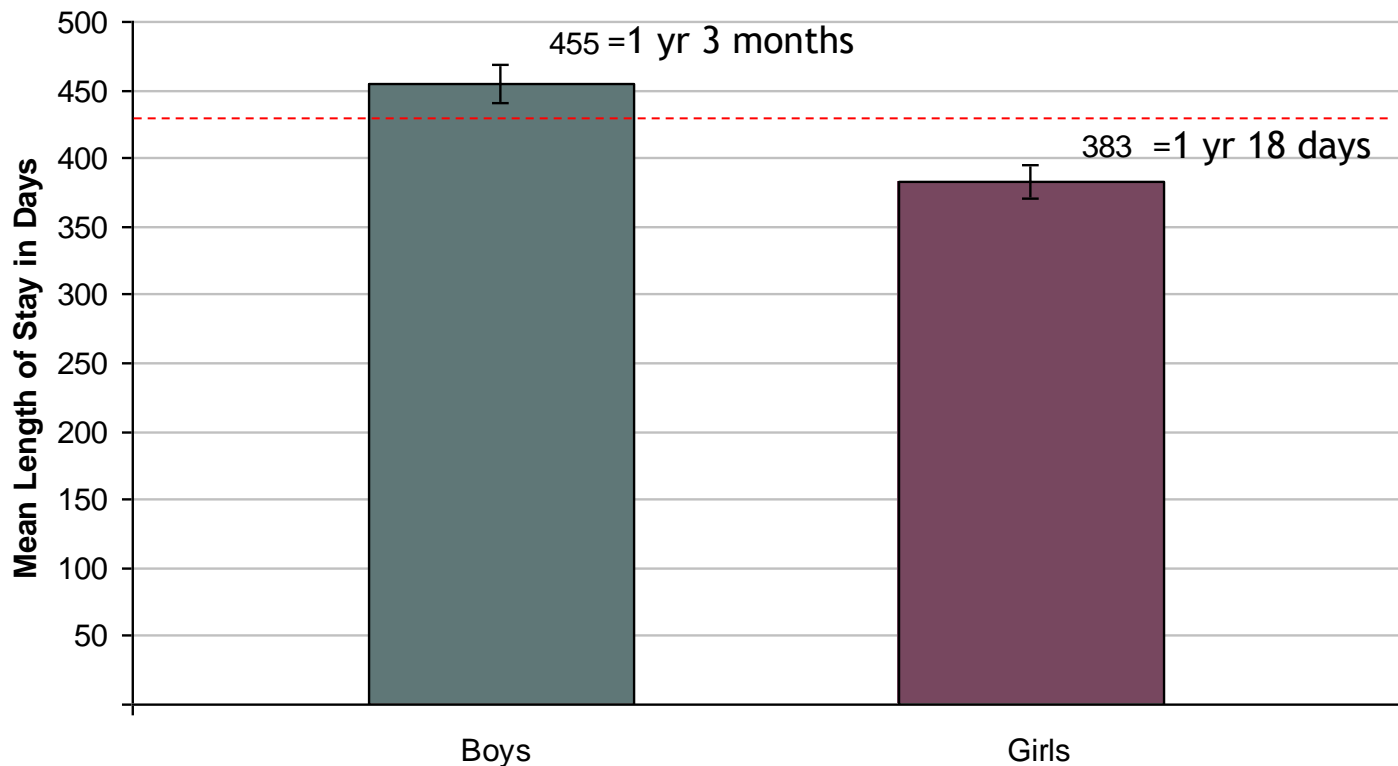


1. Gender



WA CAMHS Ambulatory 2005-2009: Gender and Length of Stay

WA CAMHS Ambulatory 2005-2009 - LOS and Gender



T-test

$p < 0.001$

% variance
explained = .9%

Get 72 days more if a boy!



2. Primary Diagnosis at Admission



ANOVA

$p < 0.001$

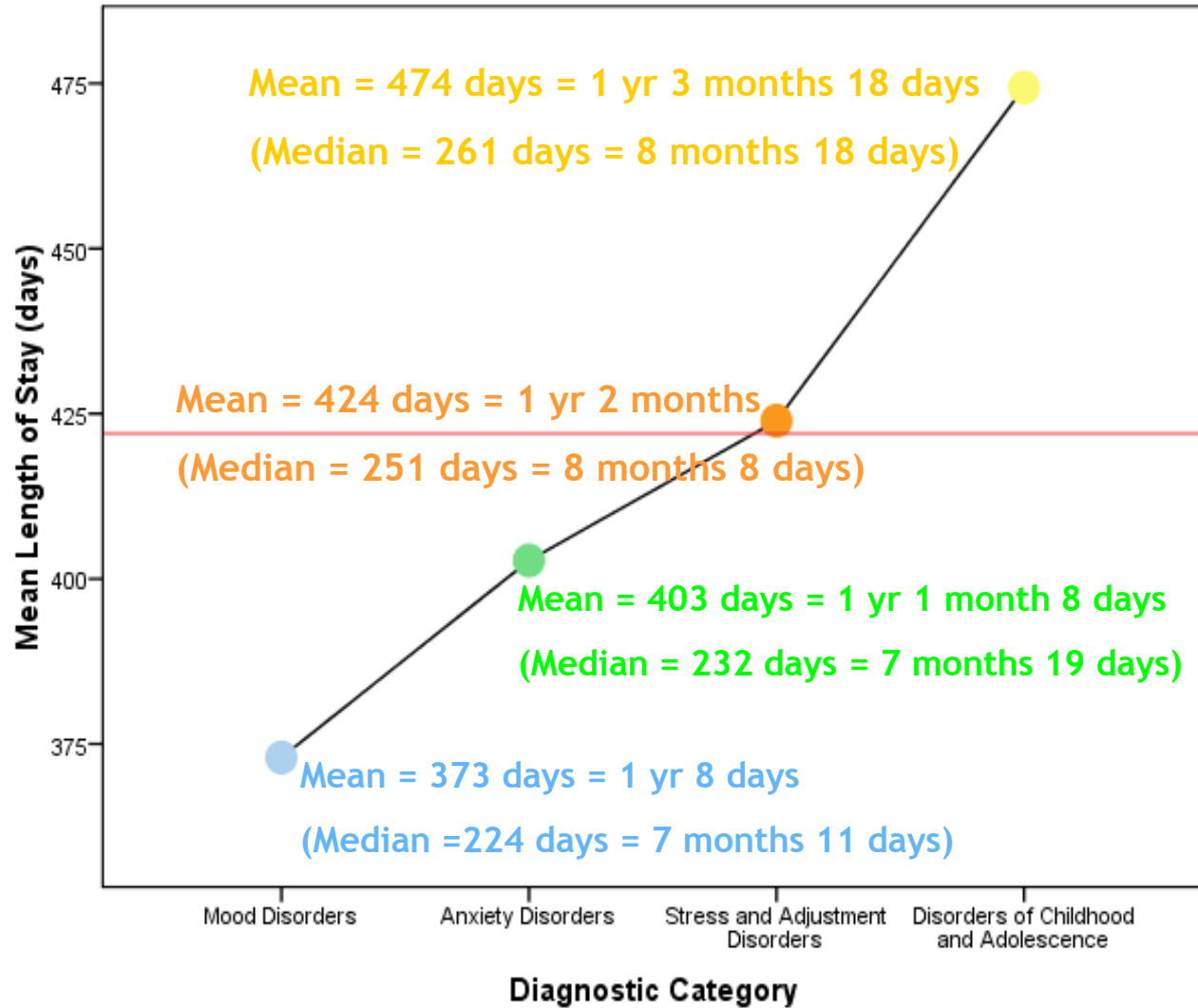
% variation explained = 3.3%

Disorders of Childhood and Adolescence are significantly higher than the other three groups.

Stress and adjustment was significantly different to mood disorders but not anxiety disorders.

Anxiety disorders was not significantly different to either of stress and adjustment and mood disorders.

Mean Length of Stay by Diagnosis - WA CAMHS Ambulatory Services 2005-2009



3. Severity at Admission (HoNOSCA)

Severity is derived from the first 13 items of complete HoNOSCA's.

Severity Levels

Sub-clinical: Each item is scored 1 or 0

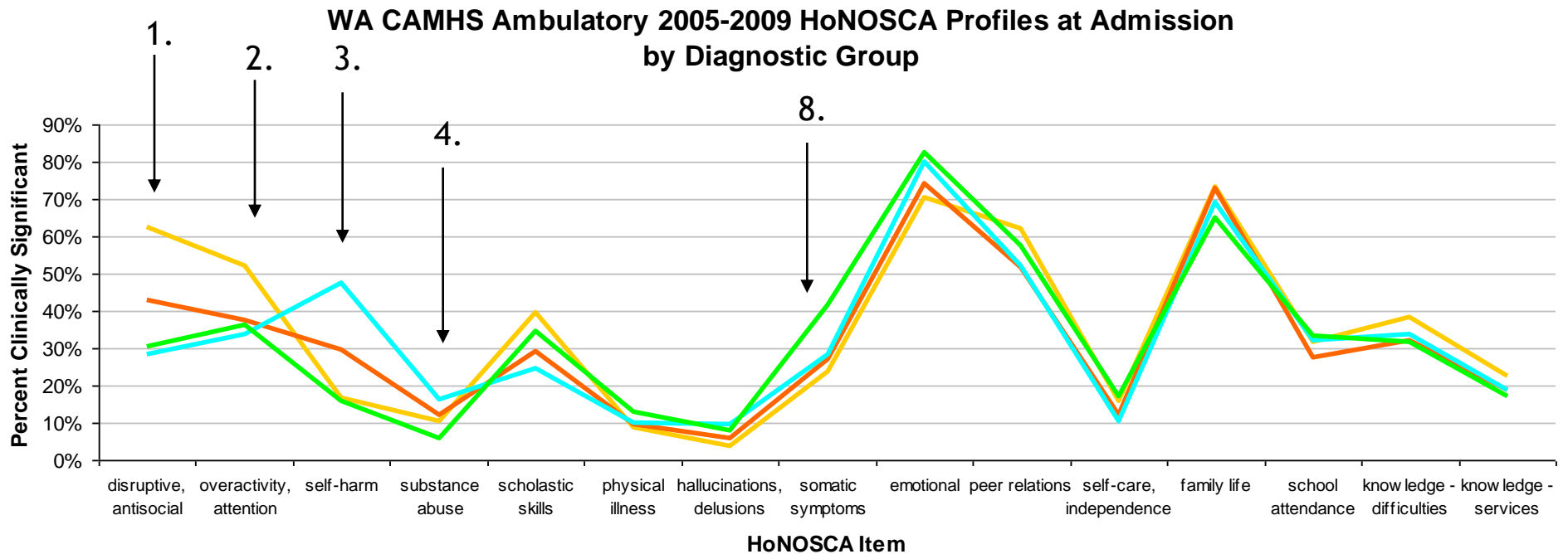
Mild: At least one item is scored as 2 but not higher

Moderately Severe: Scores of 3 or 4 on only one item

Very Severe: Scores of 3 or 4 on two or more items



CAMHS Ambulatory HoNOSCA Profile at Admission by Diagnostic Group



— DISORDERS OF CHILDHOOD AND ADOLESCENCE
 — STRESS AND ADJUSTMENT DISORDERS
 — MOOD DISORDERS
 — ANXIETY DISORDERS

Mean # of clinically significant items:

6.14

5.72

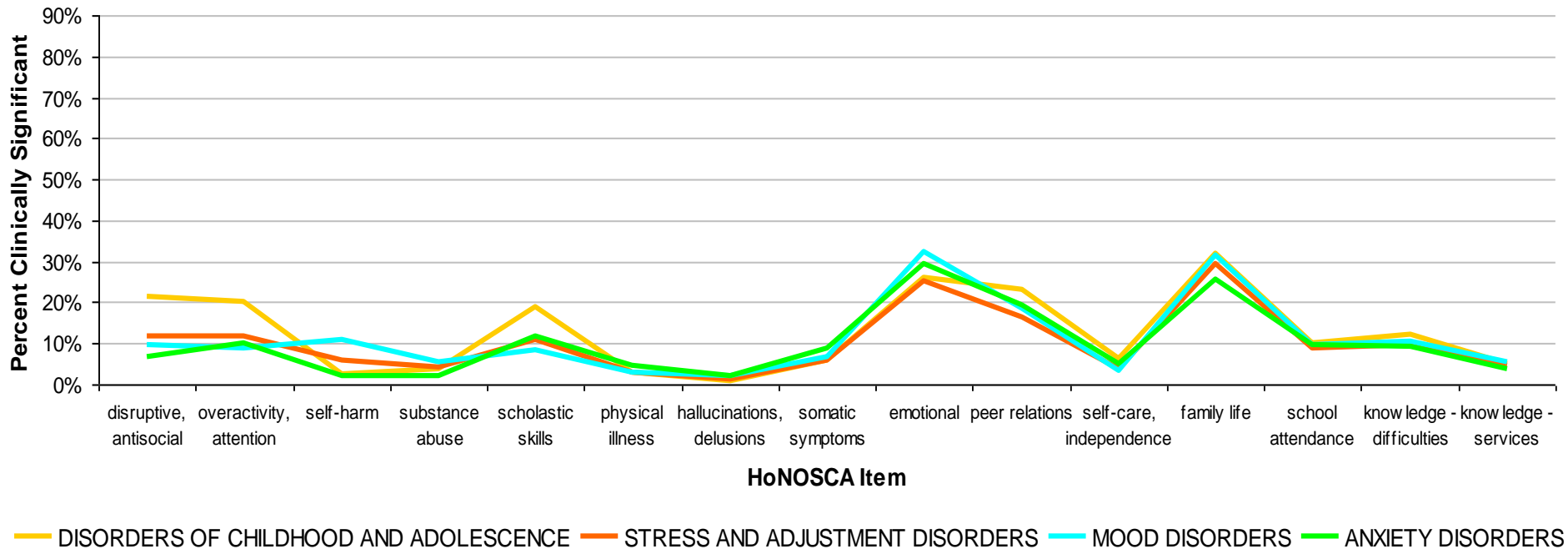
6.07

5.46



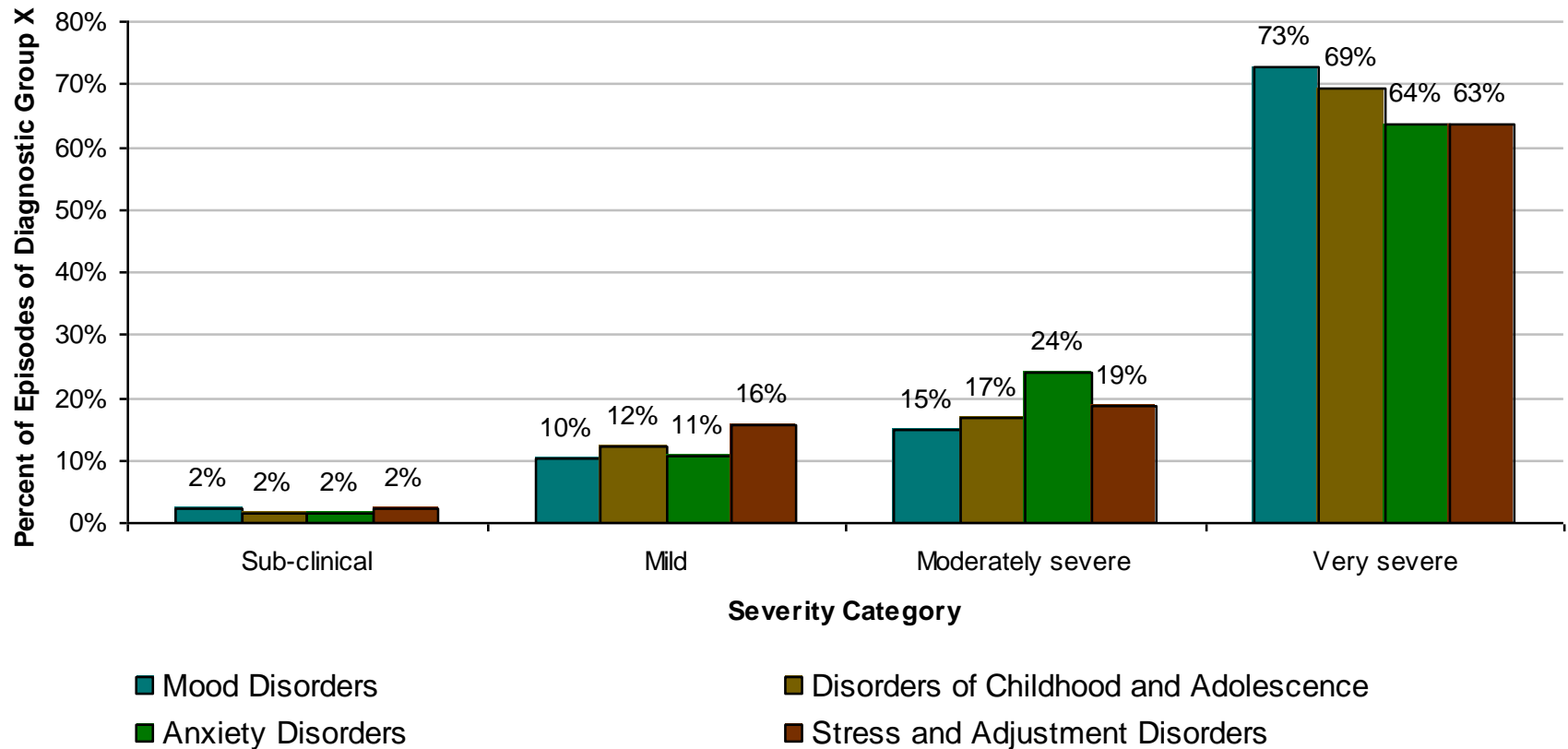
CAMHS Ambulatory HoNOSCA Profile at Discharge by Diagnostic Group

WA CAMHS Ambulatory 2005-2009 HoNOSCA Profiles at Discharge by Diagnostic Group



Severity by Diagnostic Group

WA CAMHS Ambulatory 2005-2009: Severity by Diagnostic Group



Severity and LOS

ANOVA

p-value < 0.001

% variation explained = 0.6%

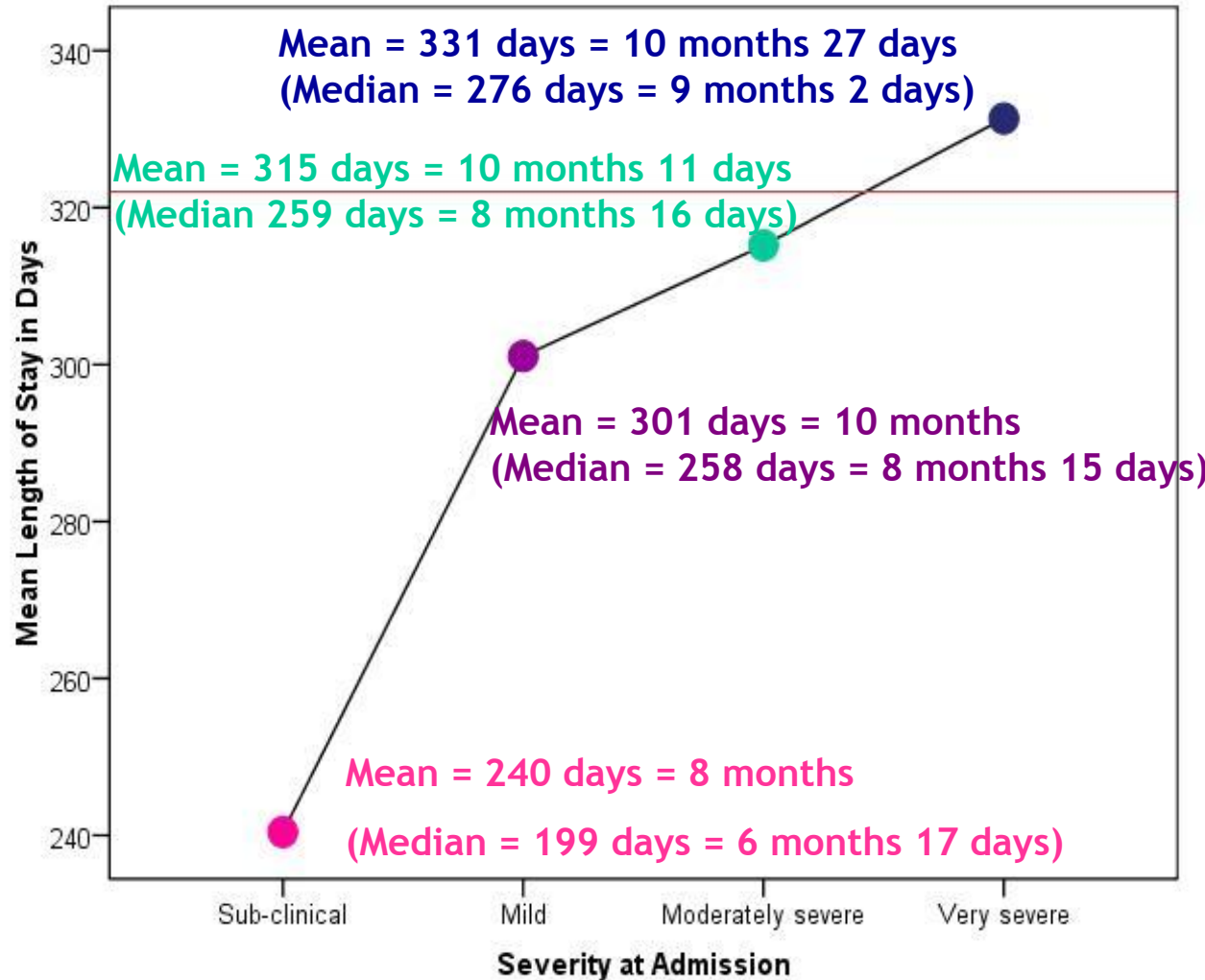
The **sub-clinical** group is significantly smaller than the other groups.

The **mild** group is significantly different to the sub-clinical and very severe groups.

The **moderately severe** group is significantly higher than the sub-clinical group.

The **very severe** group stays significantly longer than the sub-clinical and mild groups.

WA CAMHS Ambulatory 2005-2009: Mean Length of Stay by Severity Category



5. Total Difficulties at Admission: Strengths and Difficulties Questionnaire (Consumer-rated)



How do we get the Total Difficulties Score?

Child/Parent answers questions e.g. How true is this statement of your child: “Often loses temper?”

Answer 0=not true, 1=somewhat true, 2=certainly true

Total Score is summed and converted according to SDQ form used to:

- 1 – **Average**: Clinically significant problems unlikely
- 2 – **Raised**: May reflect clinically significant problems
- 3 – **High**: Substantial risk of clinically significant problems



SDQ Total Difficulties Score and LOS

Linear Regression and ANOVA

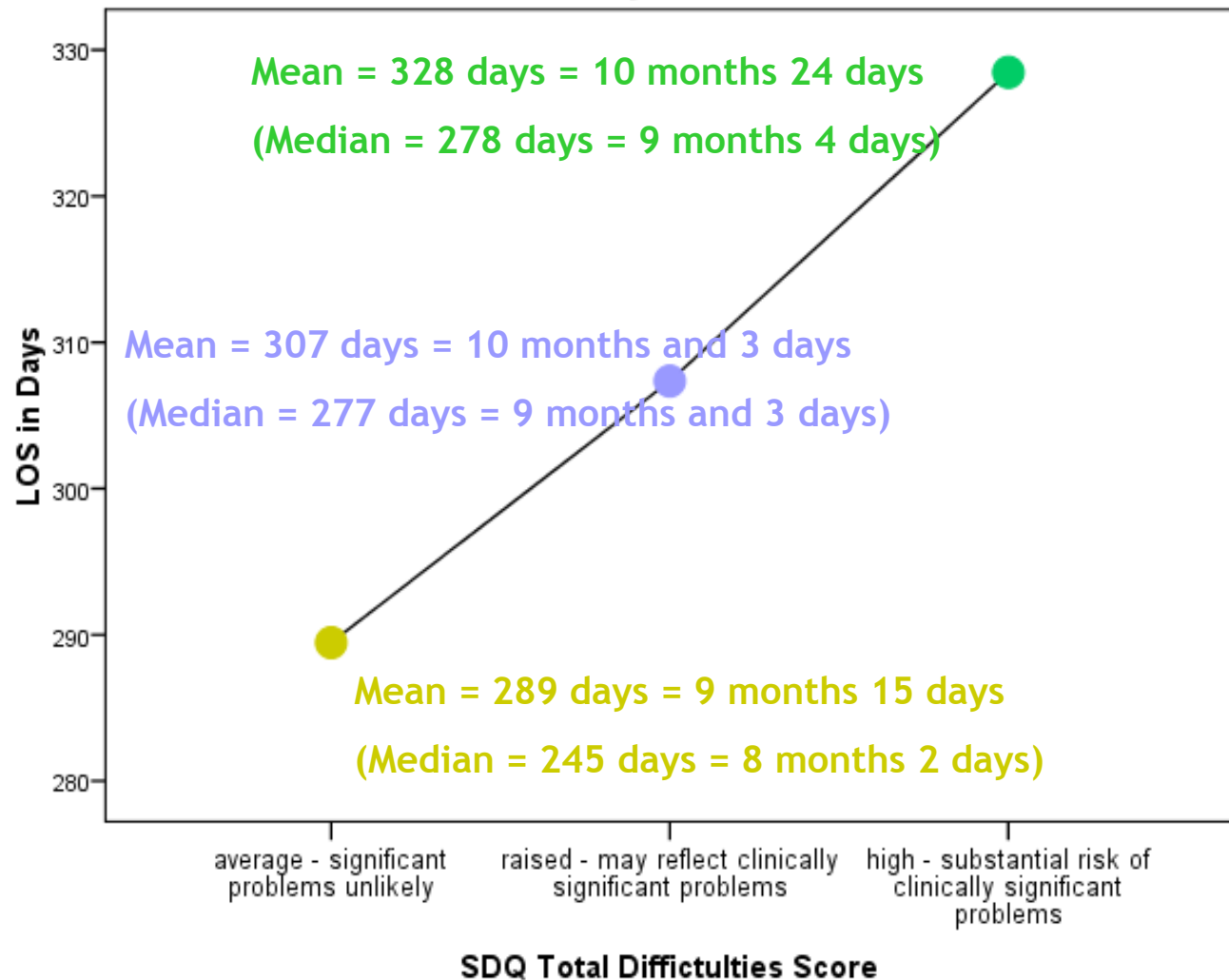
p-value<0.001

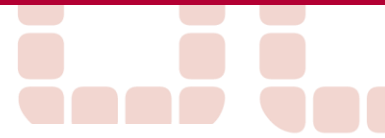
% variation
explained=0.6%

The **high** group is significantly higher than both the other groups.

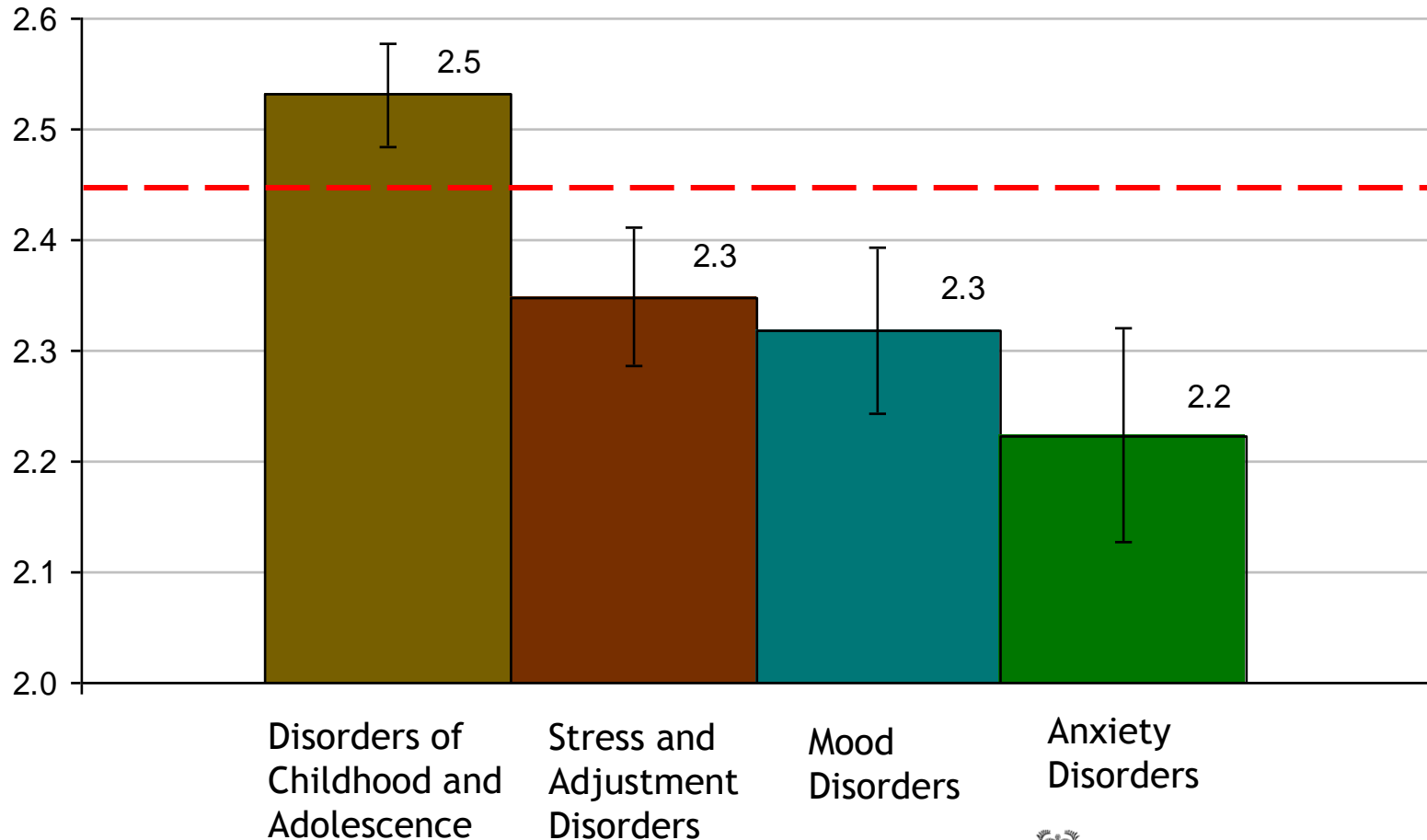
The **raised** and **average** groups are not significantly different to each other.

WA CAMHS Ambulatory 2005-2009: SDQ Total Difficulties Score and Length of Stay





WA CAMHS Ambulatory 2005-2009: SDQ TOTAL DIFFICULTIES Scores by Diagnostic Category



4. Case Complexity (FIHS, CGAS)



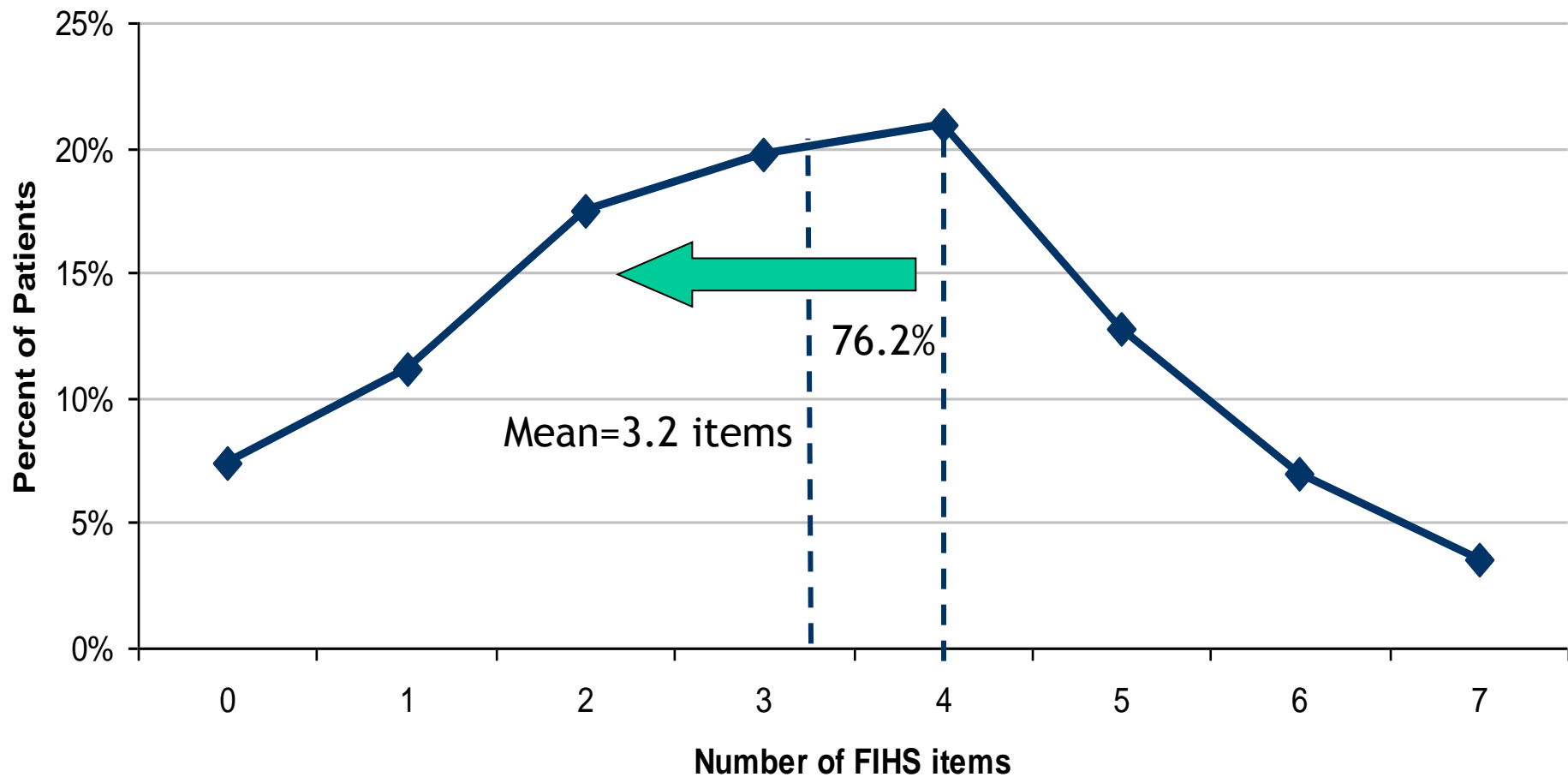
Factors Influencing Health Status- Complexity Measure

Children are scored as having or not having (yes/no) the following at review and discharge.

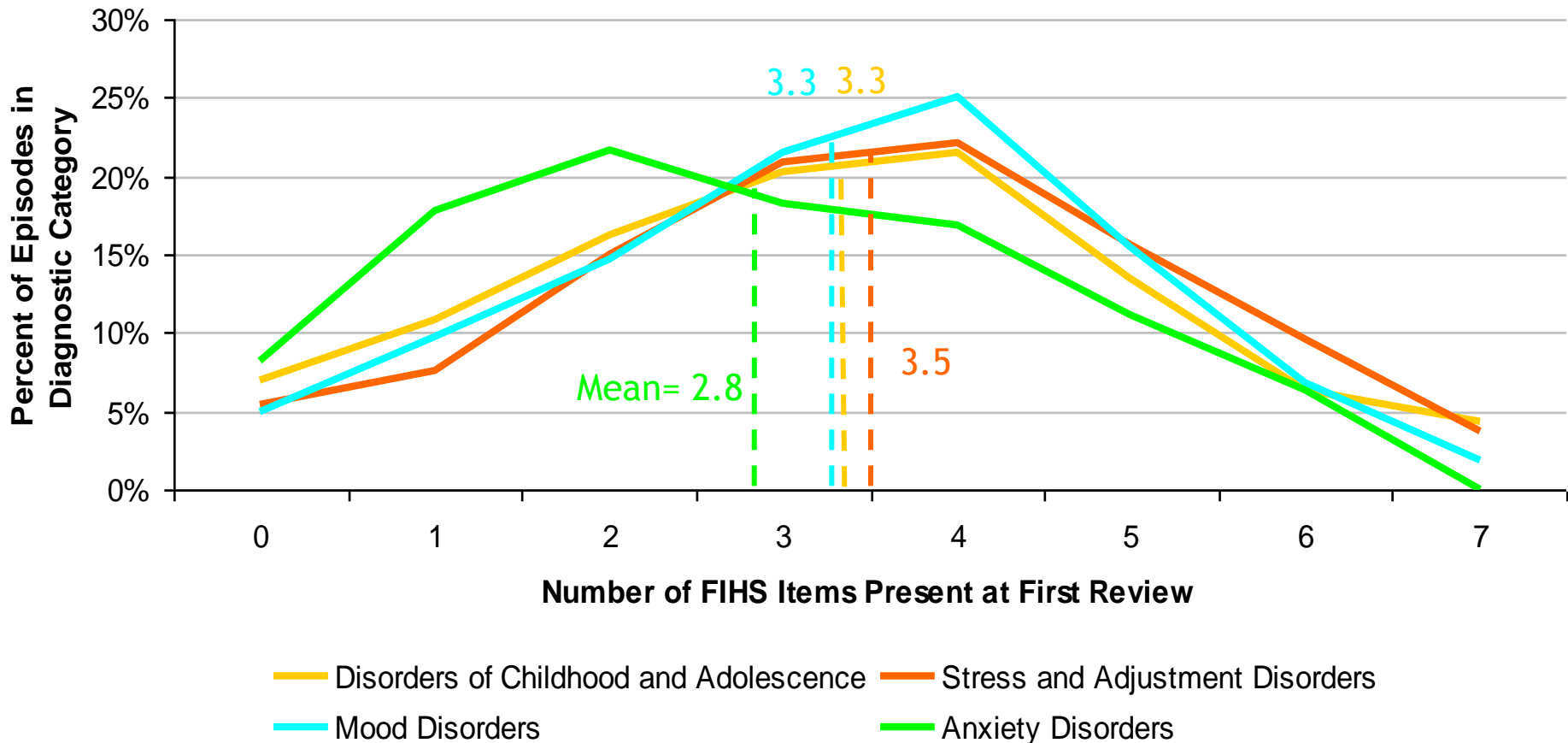
- 1 – Maltreatment syndromes (neglect, abuse, etc)
- 2 – Problems related to negative life events in childhood (Loss of love relationship, removal from home, etc)
- 3 – Problems related to upbringing (inadequate parental supervision, overprotection, emotional neglect)
- 4 – Problems related to primary support group (problems in relationship with parents, loss of parent)
- 5 – Problems related to social environment (social exclusion, problems adjusting to life cycle transitions)
- 6 – Problems related to certain psychosocial circumstances (problems related to unwanted pregnancy, seeking chemical/nutritional/chemical interventions that are harmful)
- 7 – Problems related to other psychosocial circumstances (civil/criminal conviction, victim of crime/disaster, imprisonment, exposure to disaster).



WA CAMHS Ambulatory 2005-2009: Case Complexity No of FIHS Factors Present at First Review



WA CAMHS Ambulatory 2005-2009 Number of FIHS Items Present at First Review by Diagnostic Category



Number of FIHS Items Present at First Review and Length of Stay

ANOVA

p-value=.039

% variance explained=0.7%

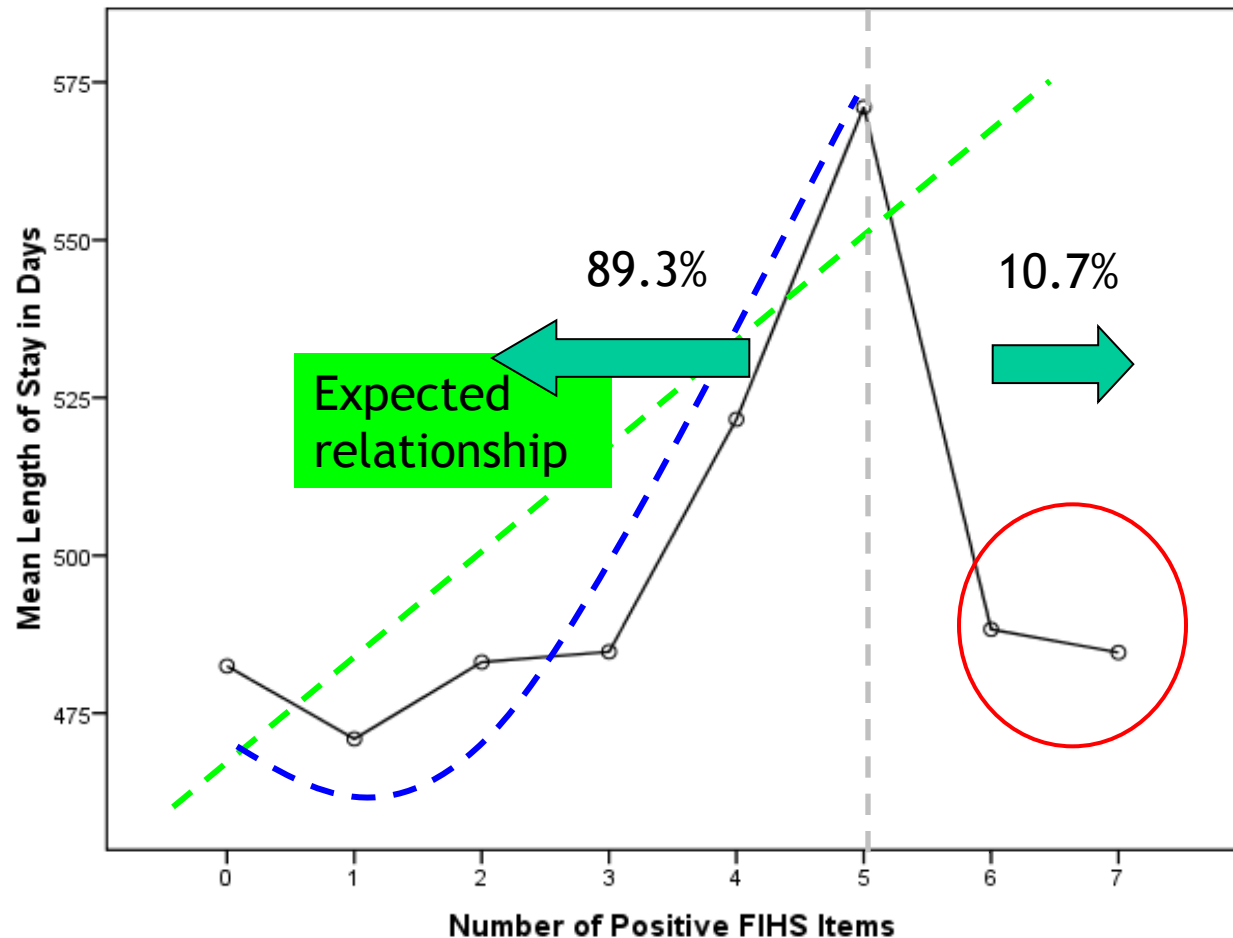
Possibly fit an exponential curve?

P-value=0.001

% variance explained=0.5%

What's going on with the most adversely affected groups, 6 and 7 ??

WA CAMHS Ambulatory 2005-2009: Length of Stay and Number of Positive FIHS Items at First Review in Period



CGAS – Children’s Global Assessment Scale

CGAS – Key measure of the level of functioning.

Children and adolescents are given a score between 1 and 100.

1-10: Needs constant supervision ...

21-30: Unable to function in almost all areas (e.g. stays at home, in ward, or in bed all day)

31-40: Major impairment of functioning in most social areas or severe impairment of function in one area (e.g. such as might result from suicidal preoccupations, forms of anxiety, obsessive rituals, anxiety attaches etc)....

41-50: ...

.

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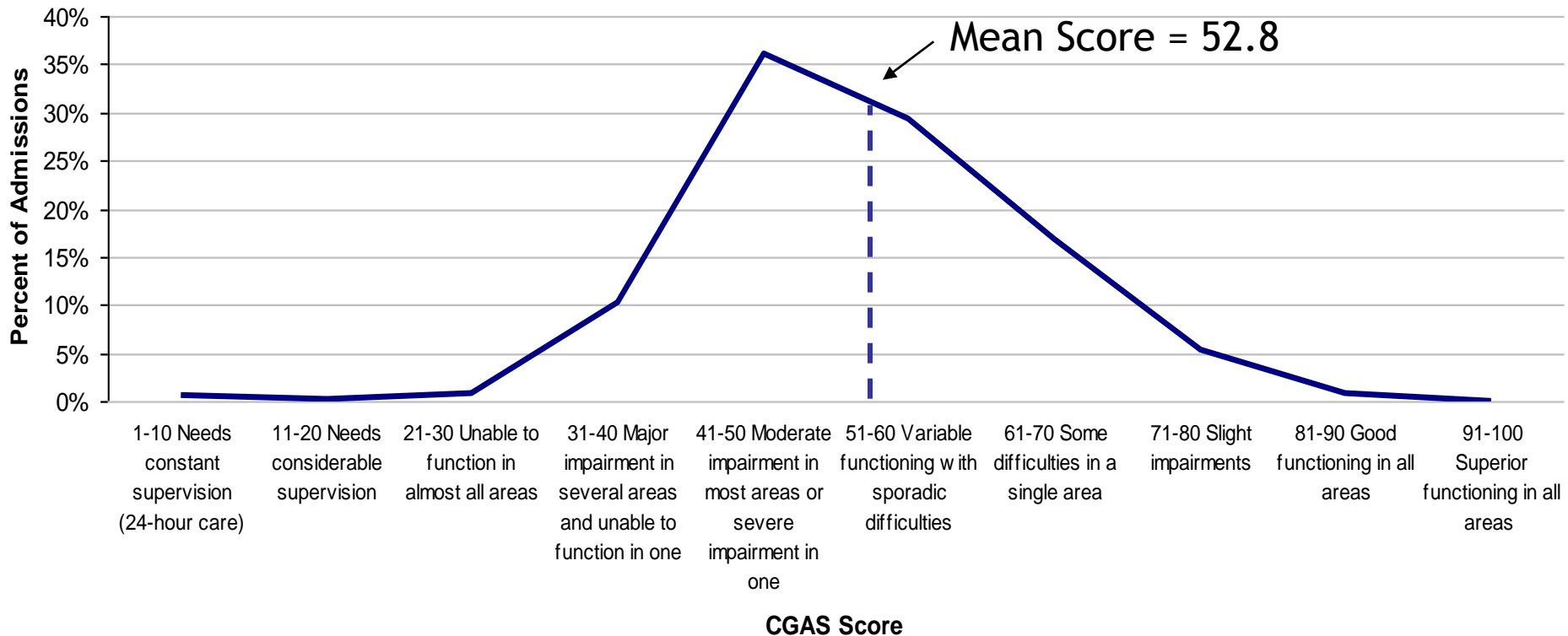
91-100: Superior functioning

Rating occurs at admission and review.



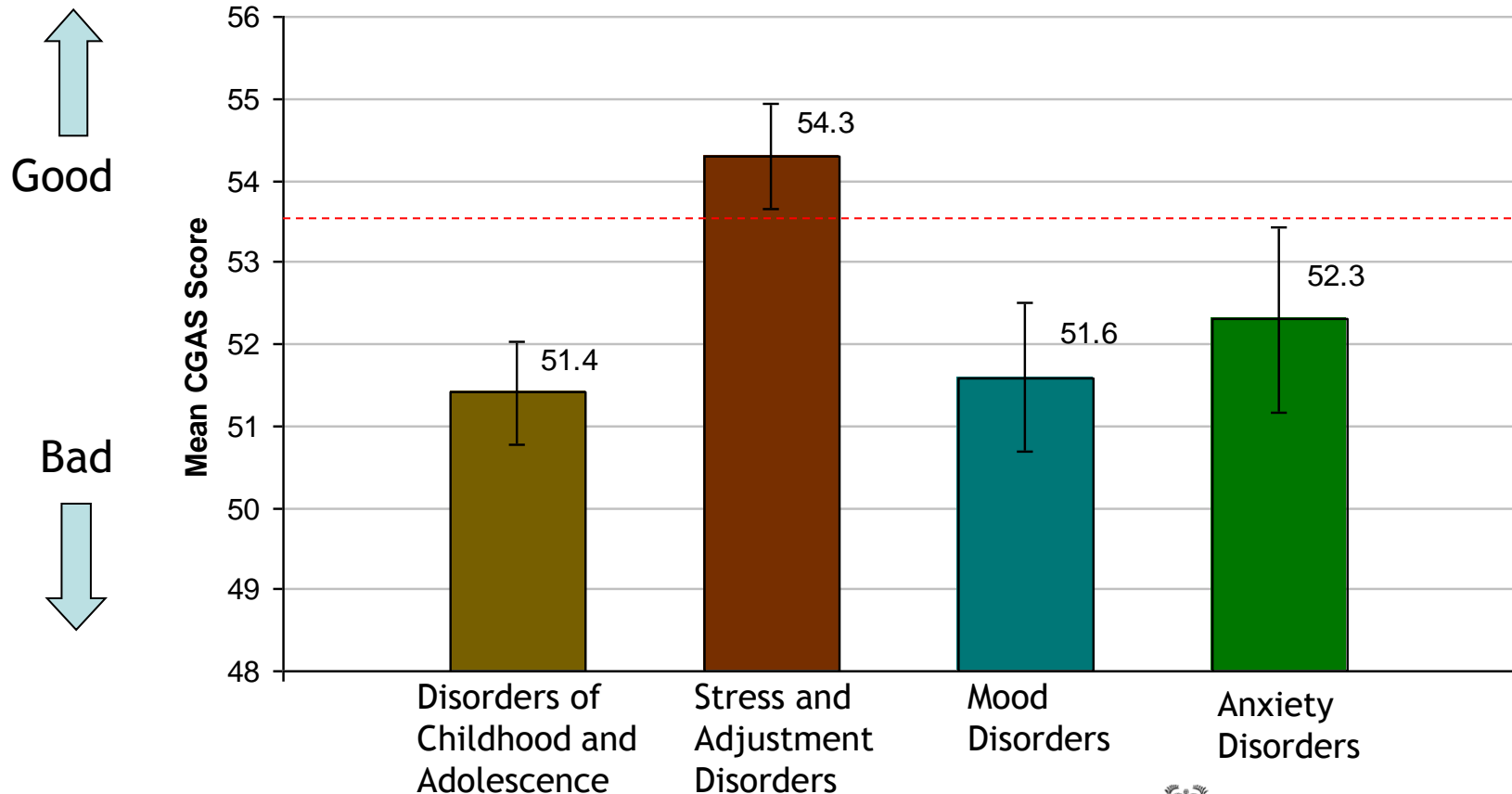
WA CAMHS Ambulatory CGAS Scores at Admission

WA CAMHS Ambulatory CGAS Scores at Admission 2005-2009

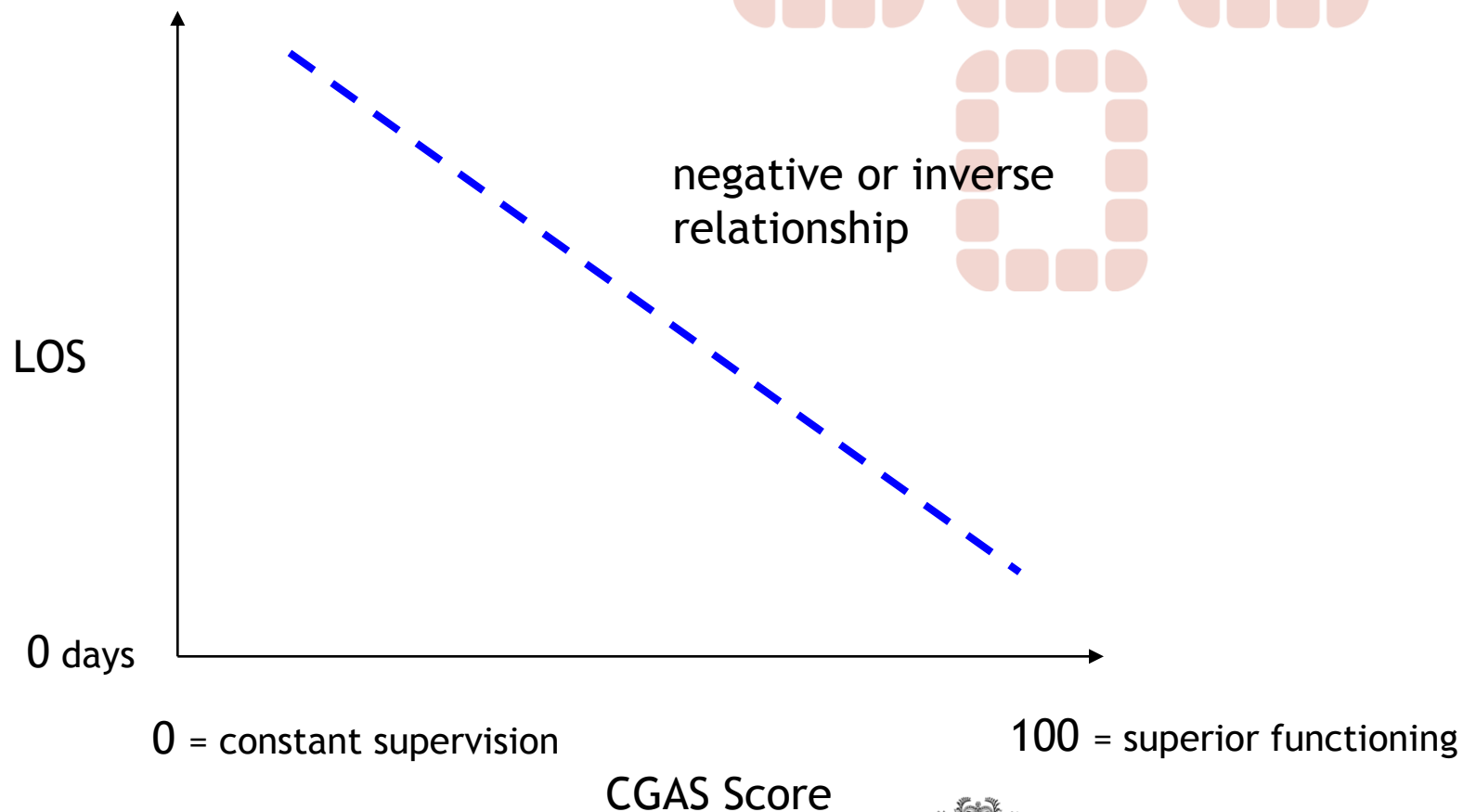


CGAS Scores by Diagnostic Category

WA CAMHS Ambulatory CGAS Scores by Diagnosis 2005-2009

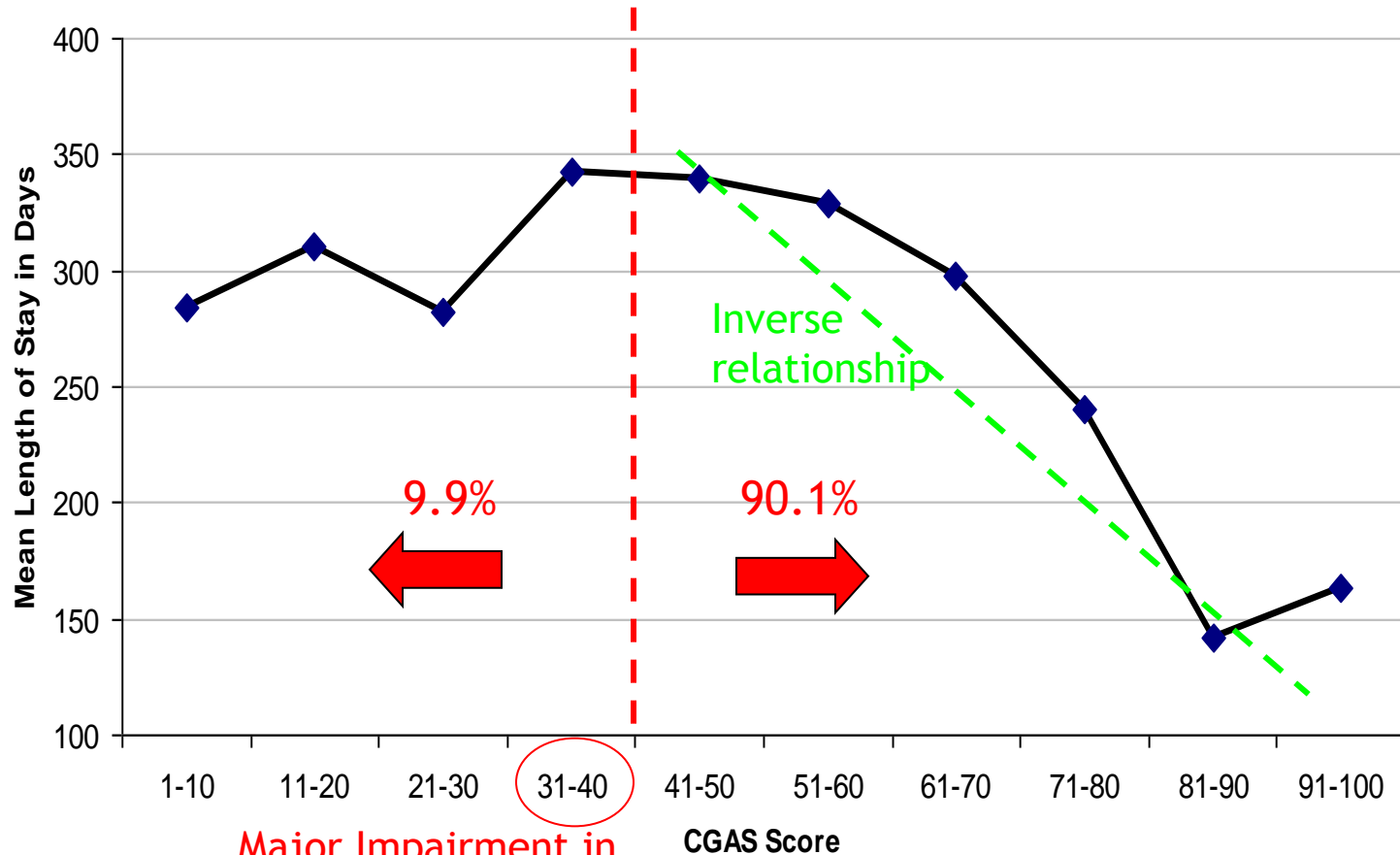


What relationship would we expect between the CGAS and Length of Stay?



CGAS and LOS

WA CAMHS Ambulatory 2005-2009: CGAS Score at Admission and Length of Stay



Major Impairment in most social areas or severe impairment in one.

Correlation

$p < 0.001$

Coefficient =

- 0.102

Simple Regression

$p < 0.001$

% variance explained 1%

ANOVA

$p < 0.001$

% variance explained = 1.8%

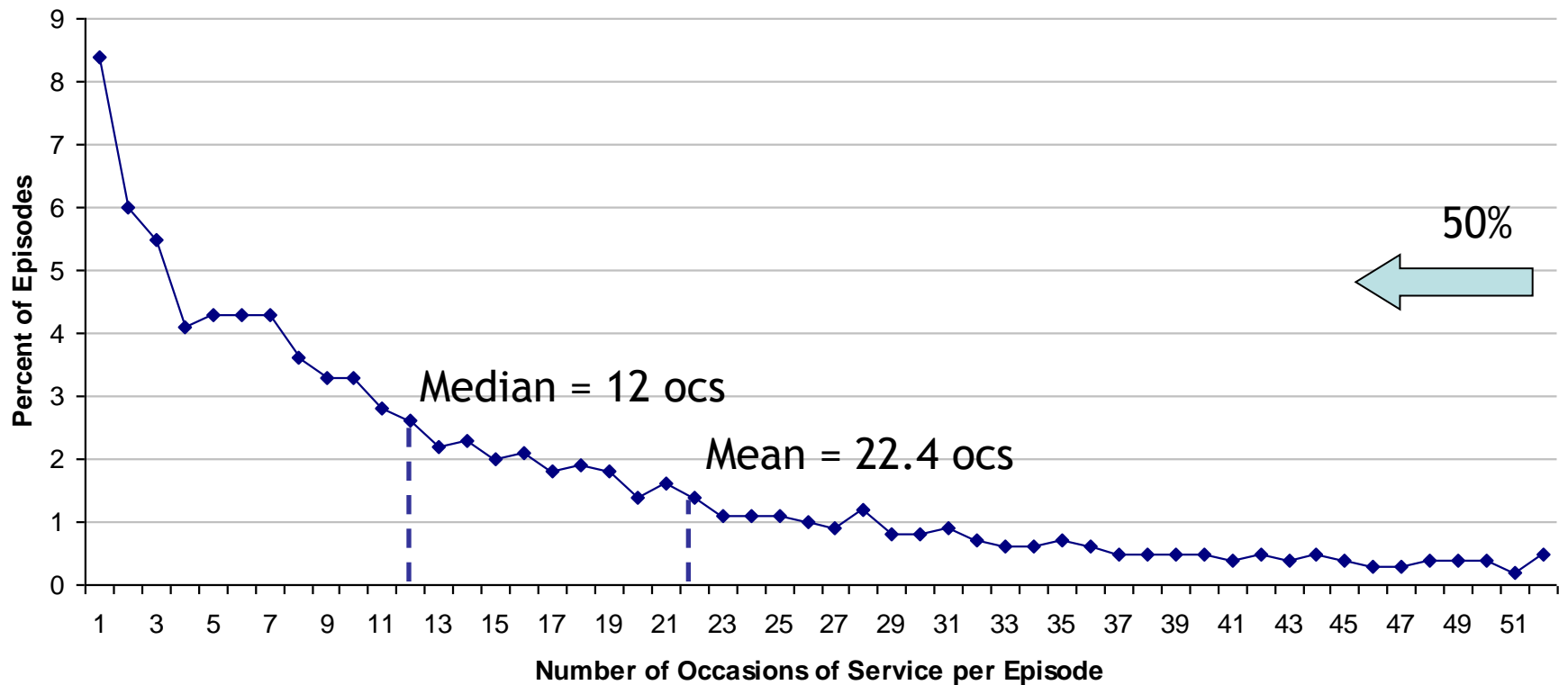


6. Frequency of Occasions of Service



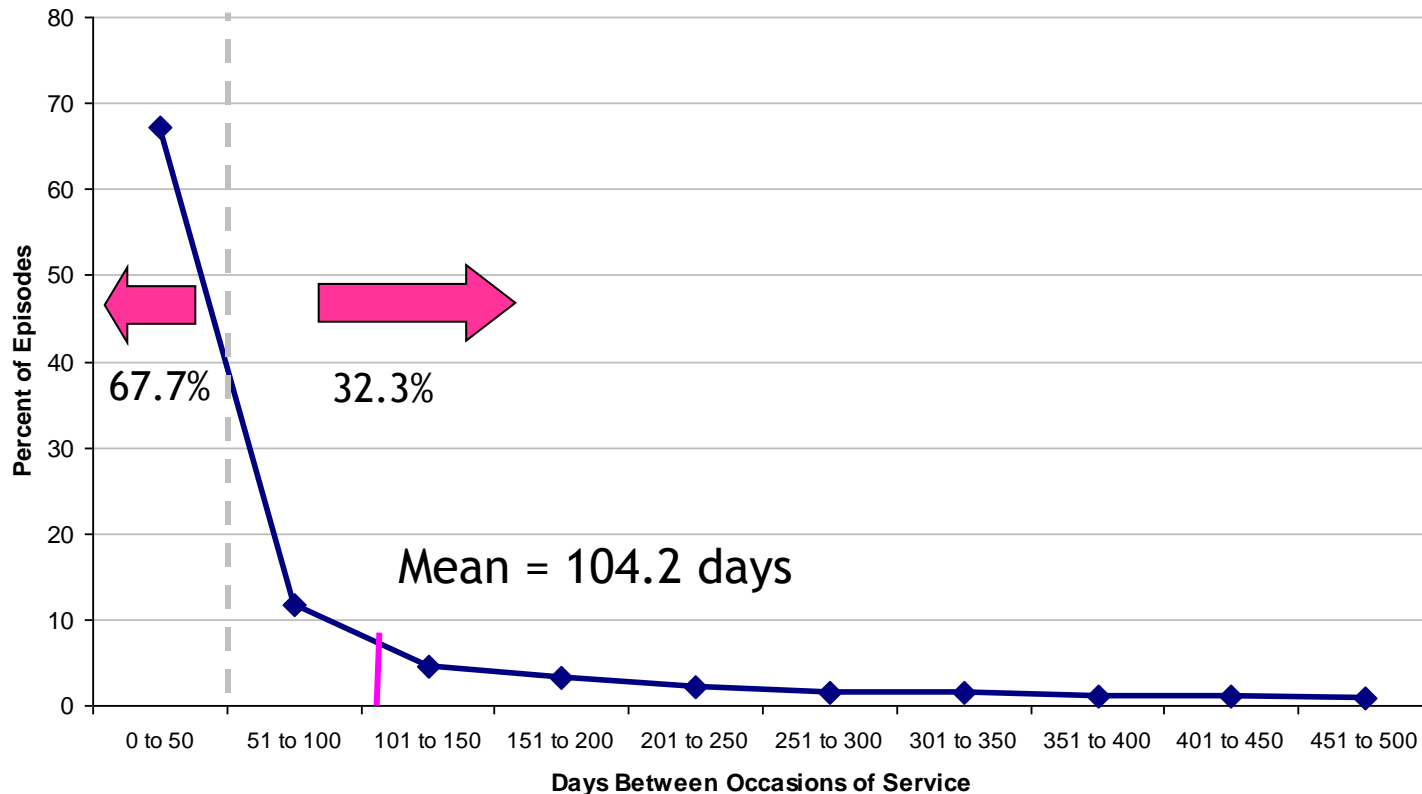
Distribution of Number of Occasions of Service per Episode

WA CAMHS Ambulatory 2005-2009: Number of Occasions of Service per Episode



Distribution of Days Between Occasions of Service

WA CAMHS Ambulatory 2005-2009: Frequency of Occasions of Service

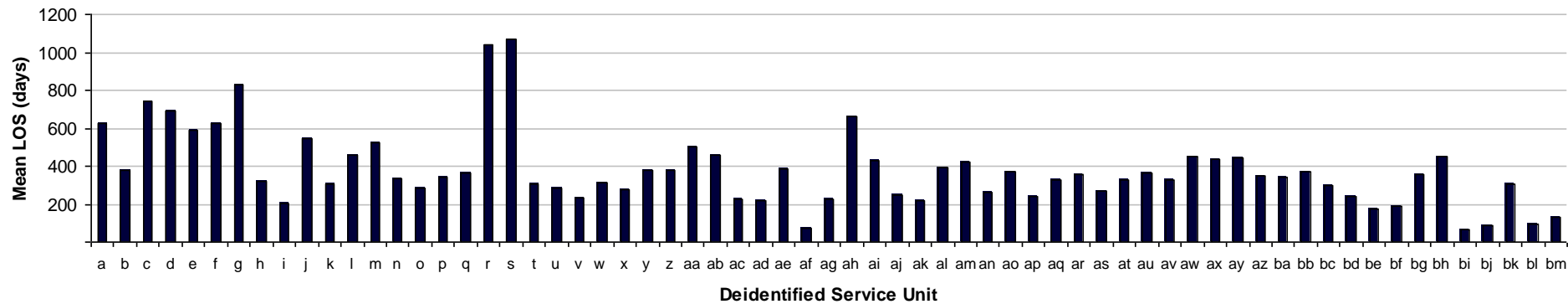


7. Service program child is admitted to



Mean LOS per Program

WA CAMHS AMBUALTRY 2005-2009: Mean Length of Stay and Service Unit



ANOVA

$p < 0.001$

% variance explained=21.2%

Possible Predictors for Length of Stay

What can we use to predict length of stay at admission?

- Gender ✓
- Diagnosis at Admission ✓
- Severity at Admission (HoNOSCA) ✓
- Total Difficulties at Admission (SDQ) ✓
- Case Complexity at Admission (FIHS, CGAS) FIHS ✓ CGAS ✓
- Frequency of Occasions of Service ?
- Program Attended ✓

Future Considerations: Possibility of interaction effects

e.g. If frequency of occasions of service increases for children with disorders of childhood and adolescence, does LOS decrease as well?

**The End –
Thank you very much for listening.**



After Presentation Slides (extras)

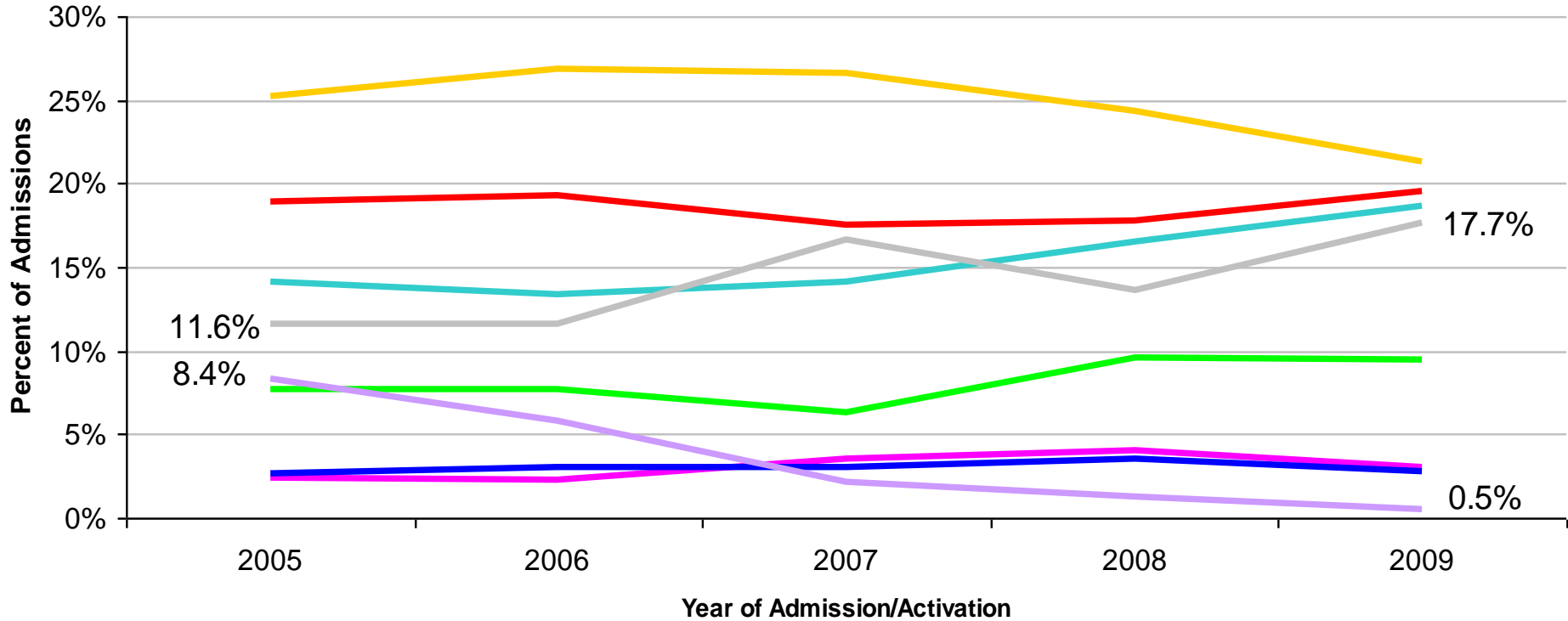
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Slide 49



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WA CAMHS Diagnoses at Admission 2005-2009 by Year

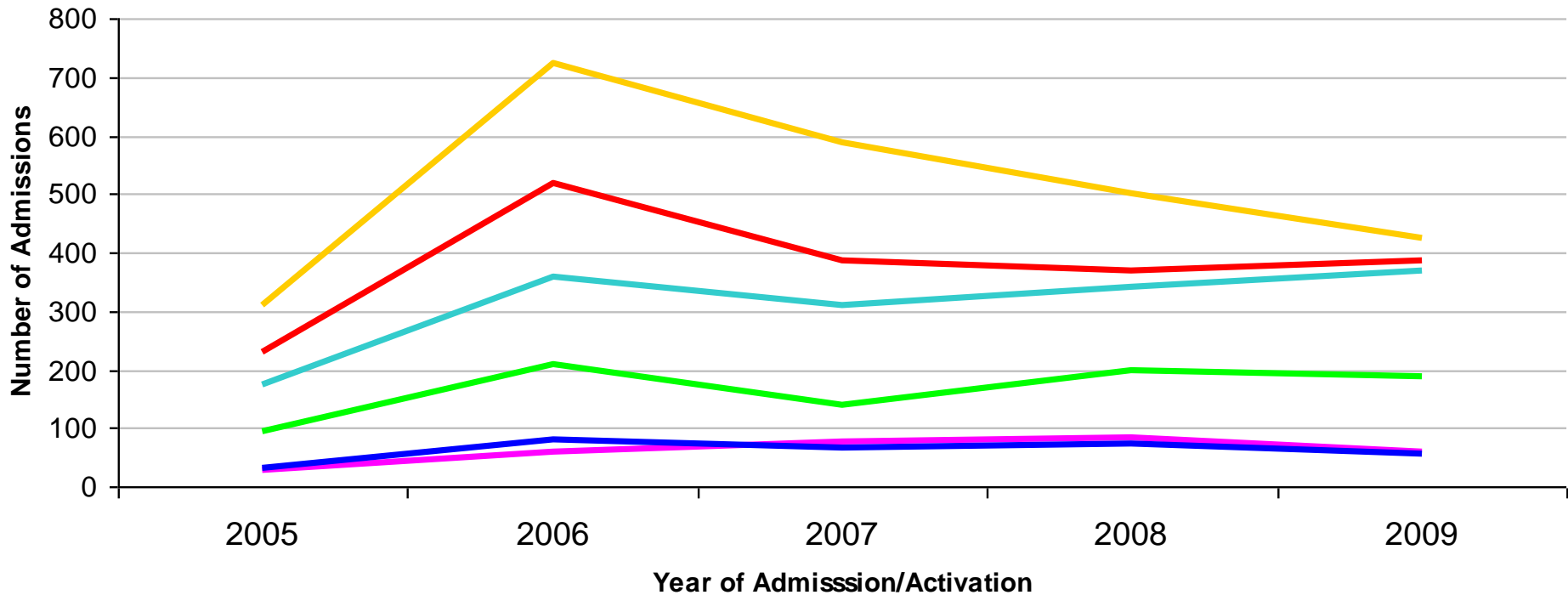


— Disorders of childhood and adolescence
— Mood disorders
— Eating disorders
— Unspecified mental disorder

— Stress and adjustment disorders
— Anxiety disorders
— Schizophrenia, paranoia and acute psychotic disorders
— Other (includes Z, non-psychiatric and invalid codes)



WA CAMHS Diagnoses at Admission 2005-2009 (Excluding 'other' and 'unspecified')



Disorders of childhood and adolescence

Stress and adjustment disorders

Mood disorders

Anxiety disorders

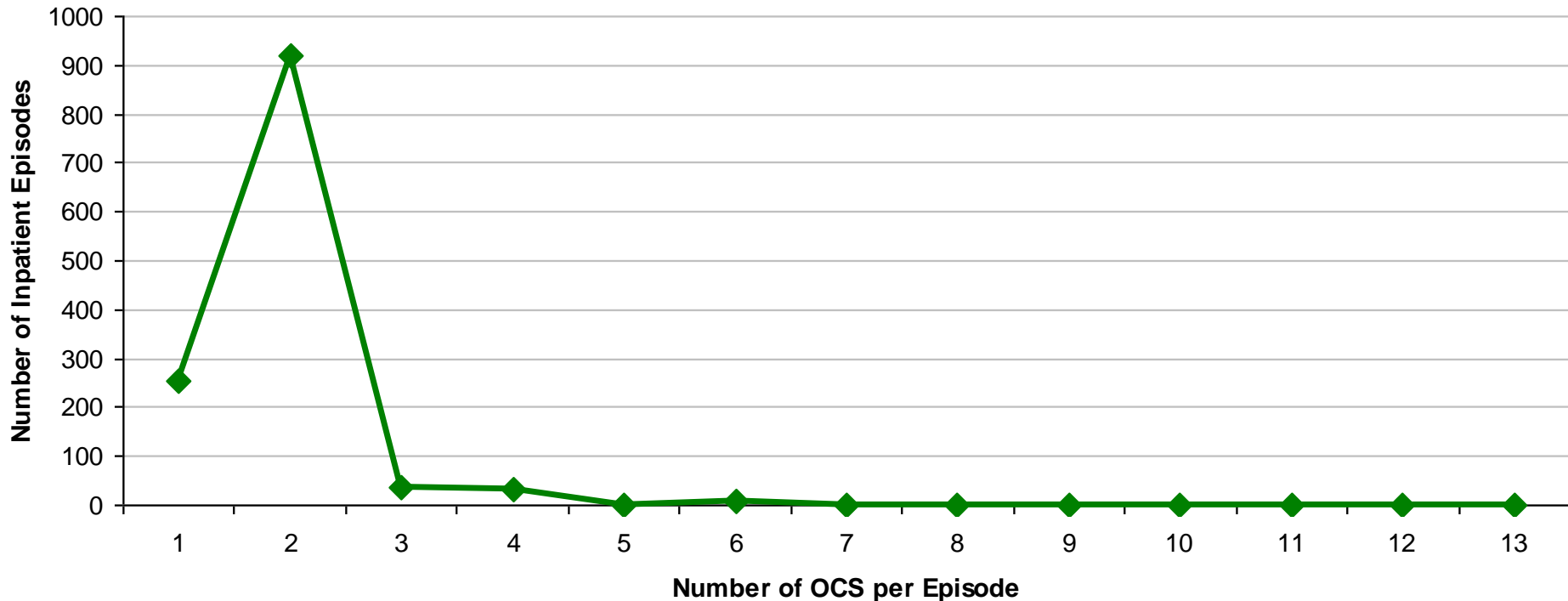
Eating disorders

Schizophrenia, paranoia and acute psychotic disorders



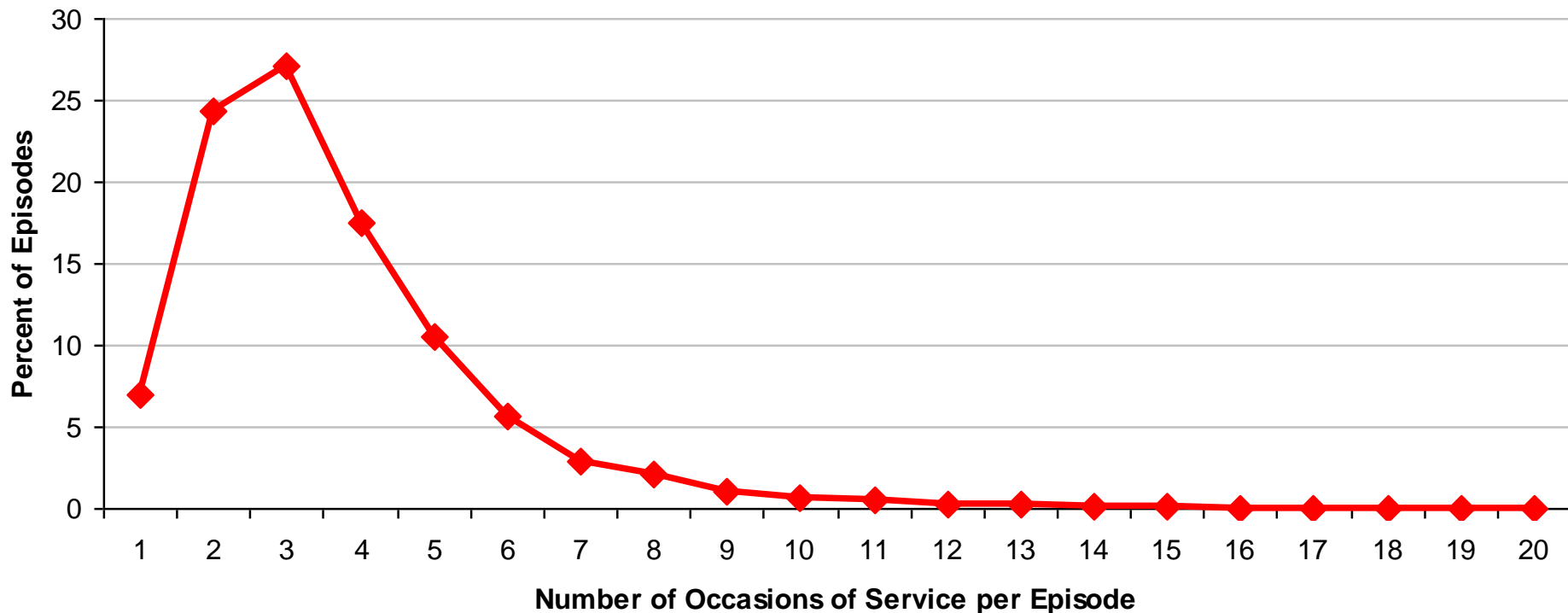
WA CAMHS 2005-2009 Number of NOCC Collection Occasions Per Episode: Inpatient

WA CAMHS 2005-2009 NOCC Collection Occasions Per Episode: Inpatient Only



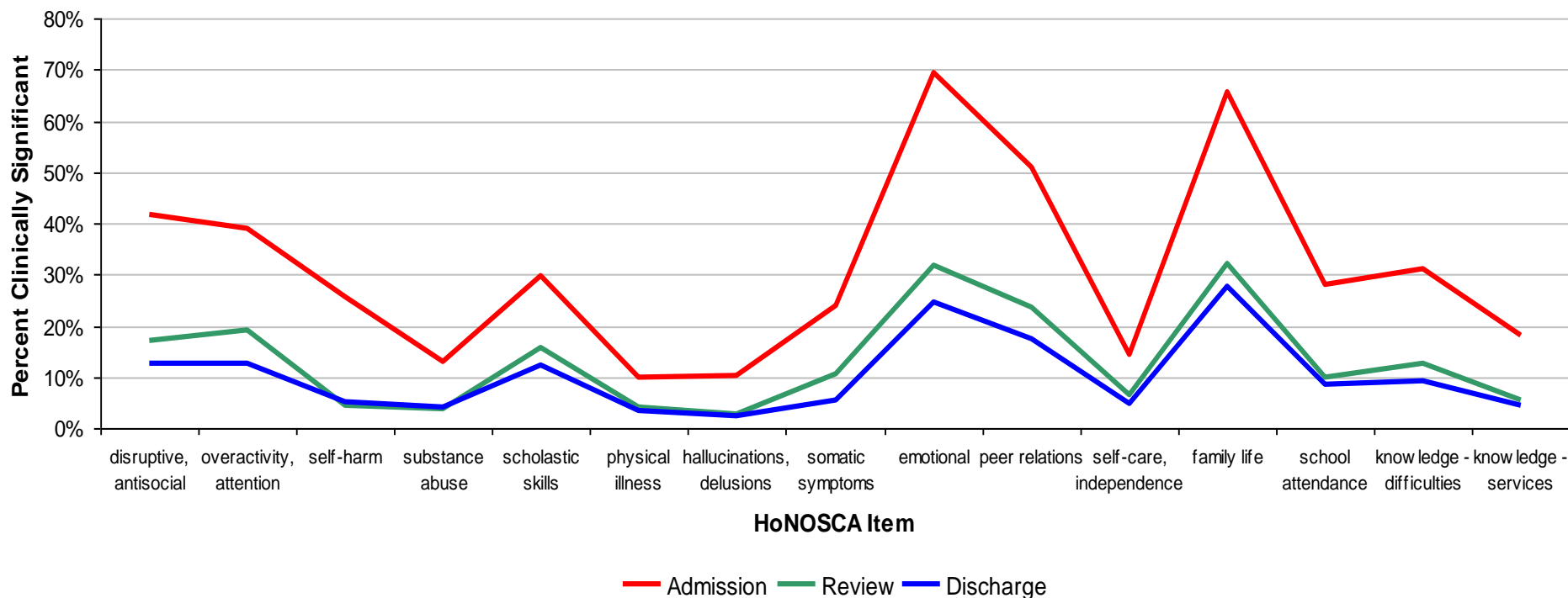
WA CAMHS 2005-2009 Number of NOCC Collection Occasions Per Episode: Ambulatory

WA CAMHS 2005-2009 NOCC Collection Occasions Per Episode:
Ambulatory Only

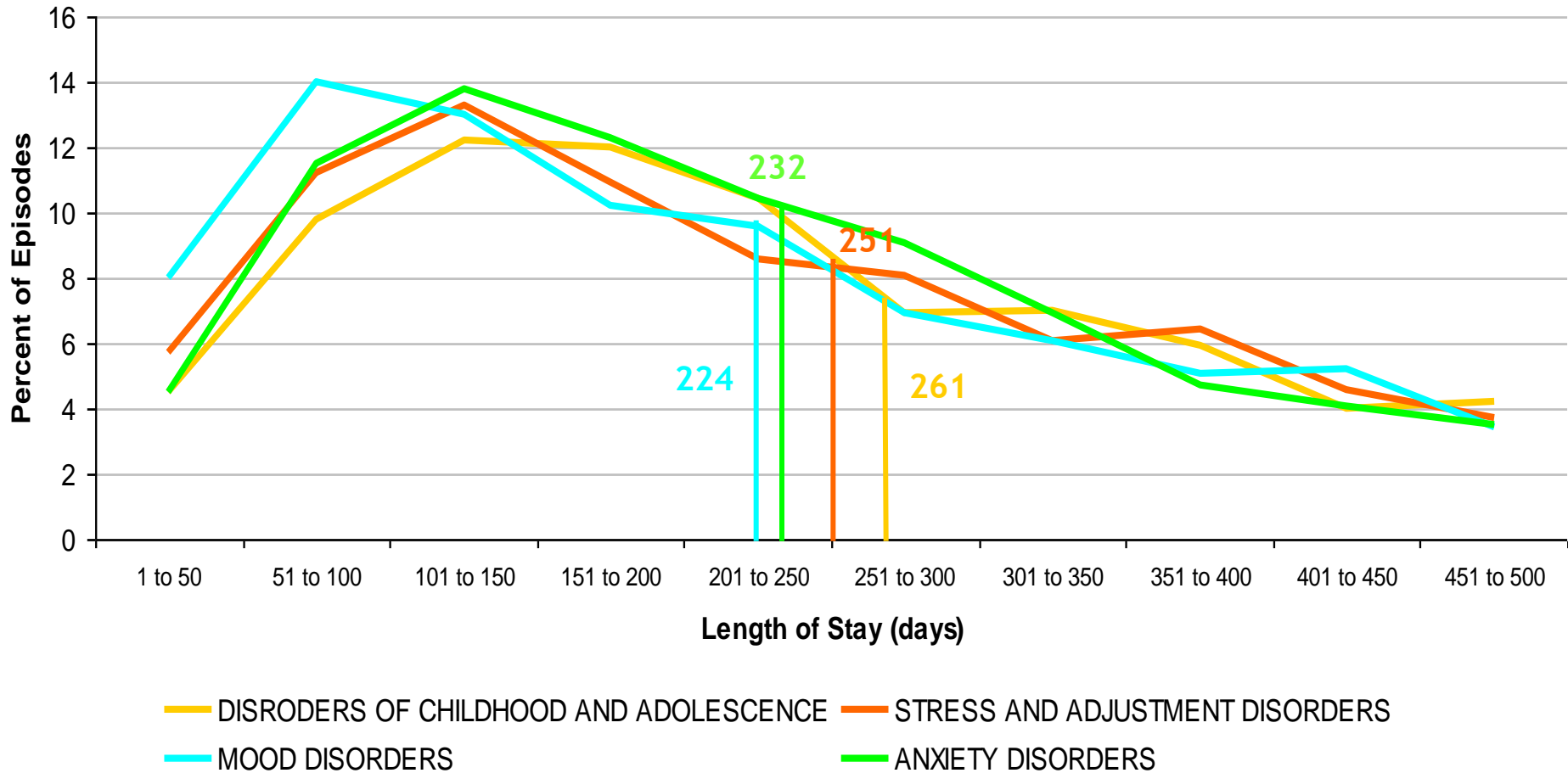


CAMHS Ambulatory Disorders of Childhood and Adolescence: HoNOSCA Profile

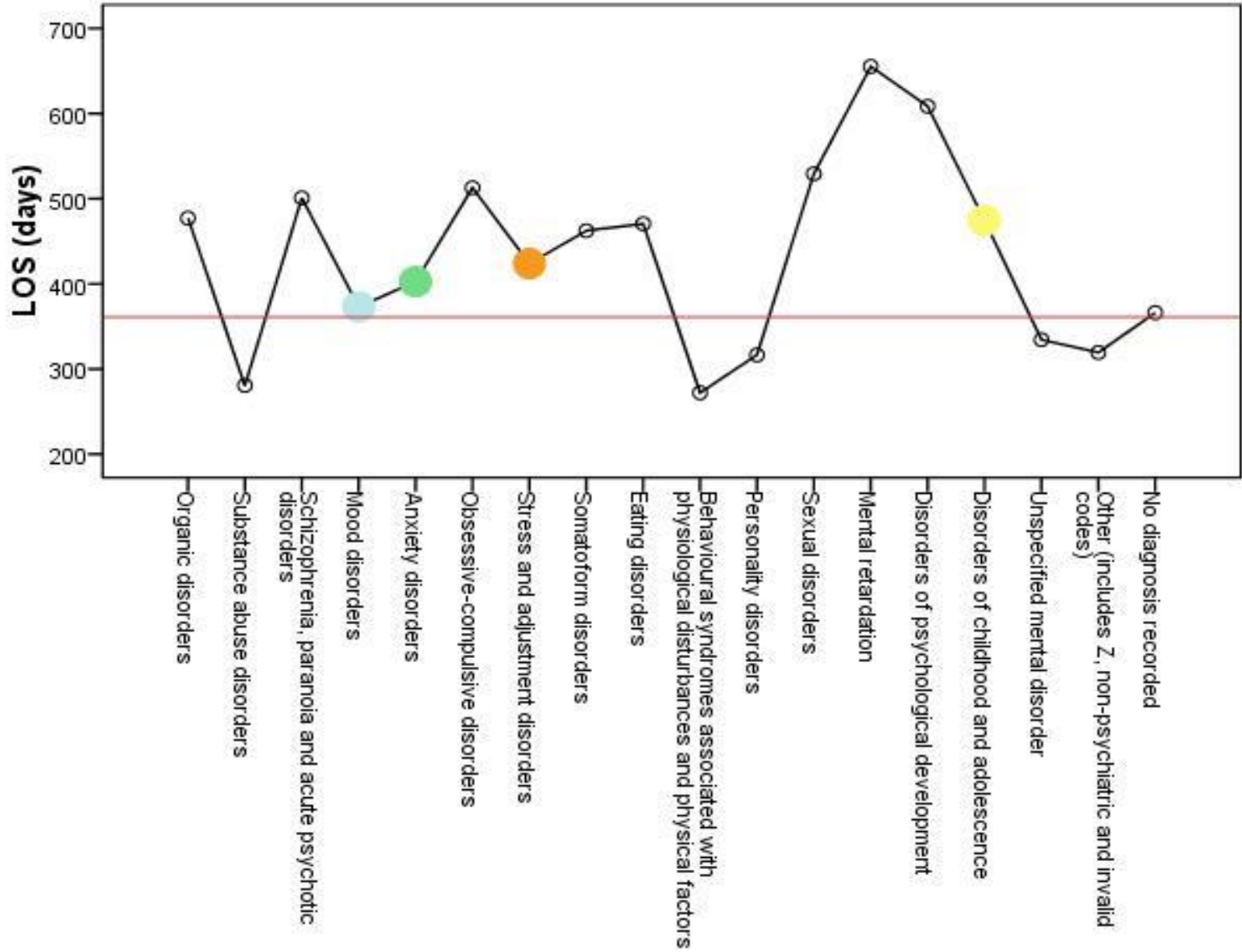
WA CAMHS Ambulatory 2005-2009 HoNOSCA Profile - Overall



WA CAMHS Ambulatory Length of Stay 2005-2009 by Diagnosis

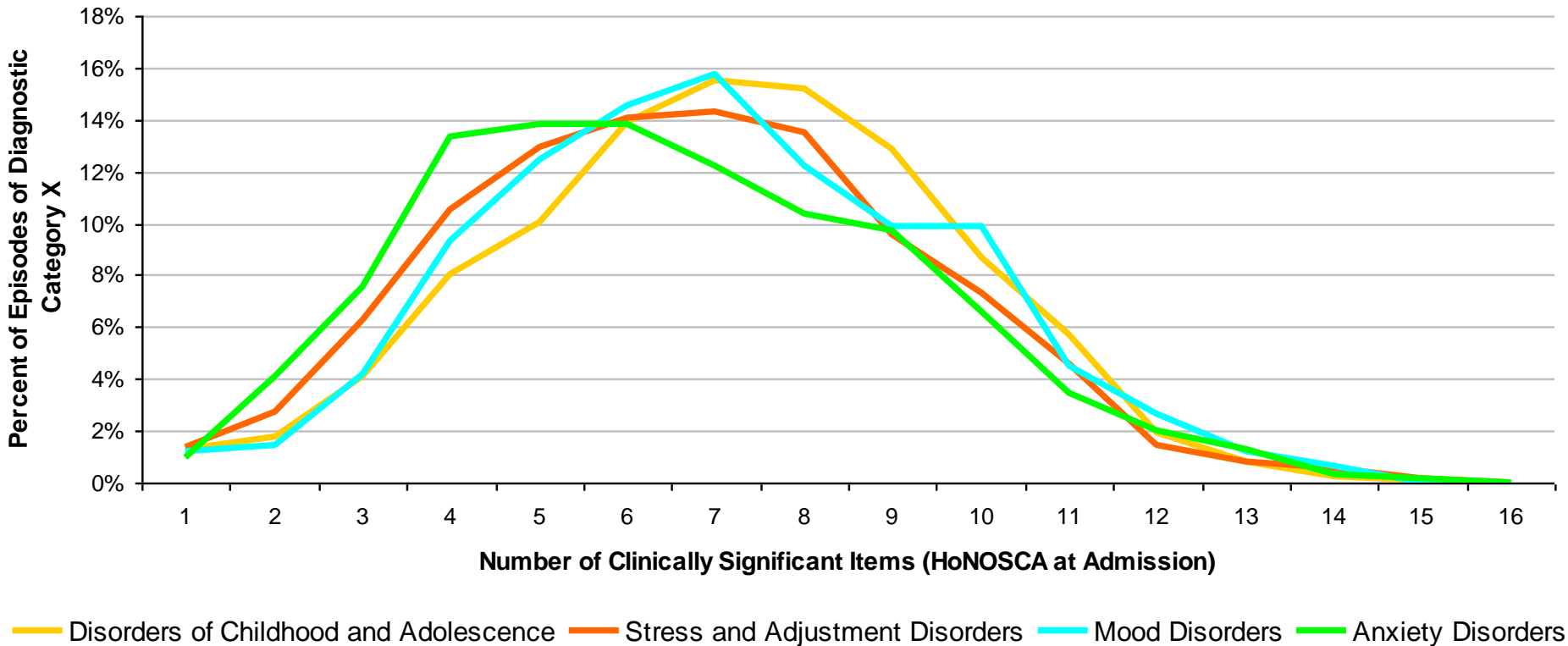


Mean Length of Stay by Diagnosis - CAMHS Ambulatory Services 2005-2009

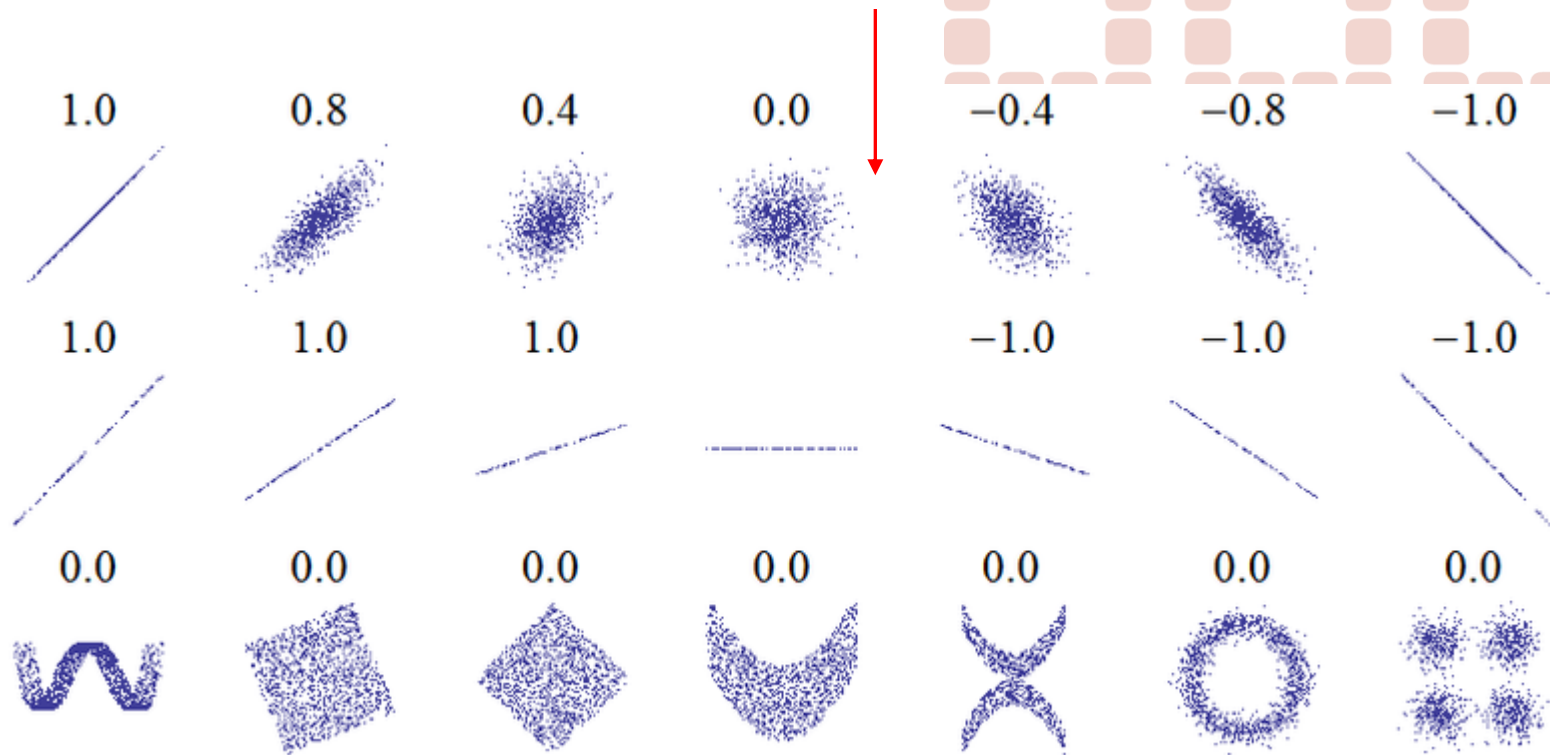


Number of Clinically Significant Items by Diagnostic Category

WA CAMHS Ambulatory 2005-2009: Number of Clinically Significant Items by Diagnostic Category



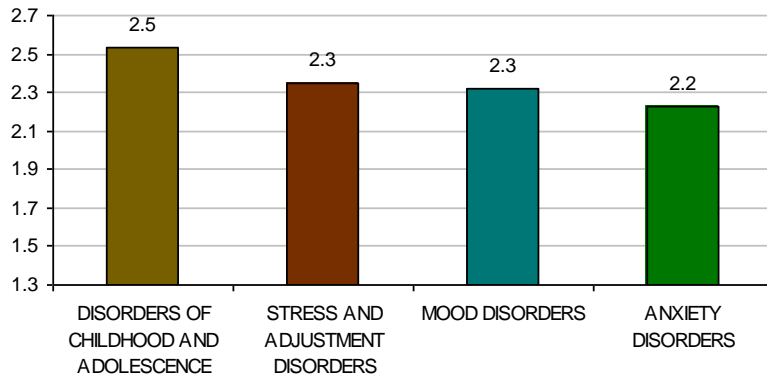
Correlation Coefficients and What They Mean



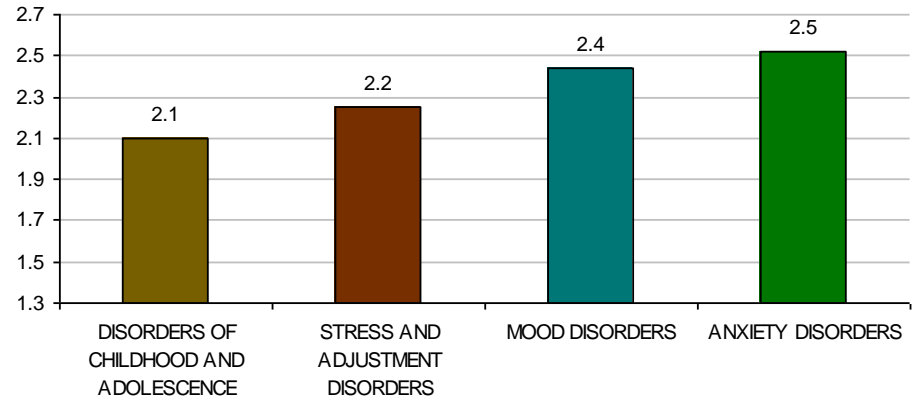
Not a practically significant association,
but it does exist.



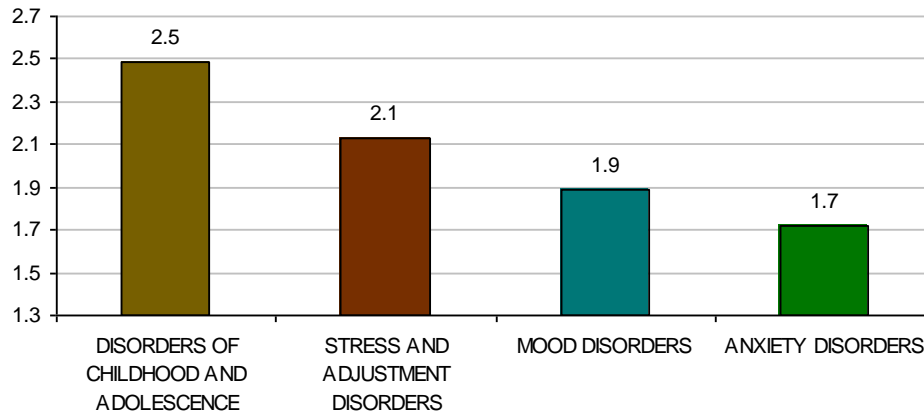
WA CAMHS Ambulatory 2005-2009: SDQ Total Difficulties Scores by Diagnostic Category



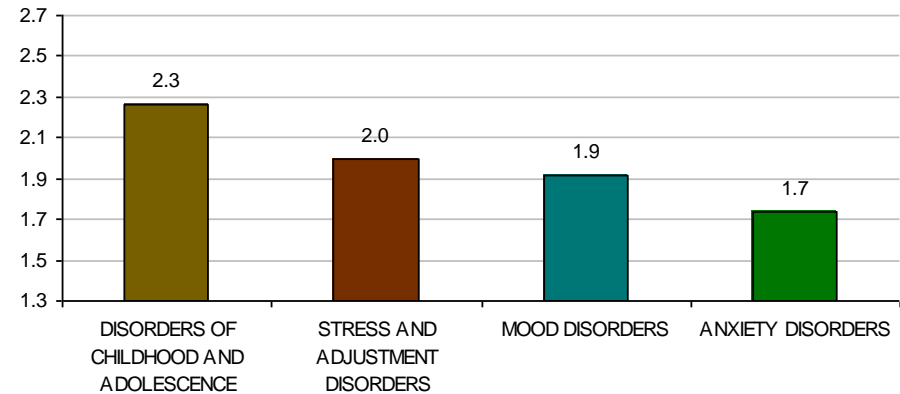
WA CAMHS Ambulatory 2005-2009: SDQ Emotional Symptoms Subscale by Diagnostic Category



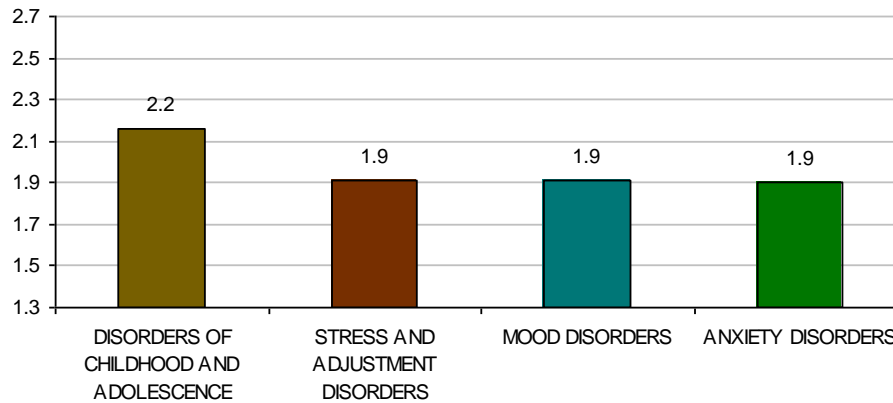
WA CAMHS Ambulatory 2005-2009: SDQ Conduct Problems Subscale by Diagnostic Category



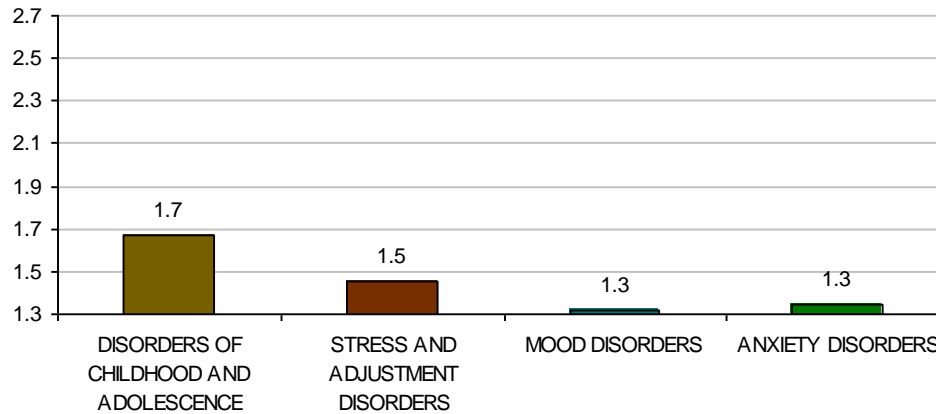
WA CAMHS Ambulatory 2005-2009: SDQ Hyperactivity Symptoms Subscale by Diagnostic Category



**WA CAMHS Ambulatory 2005-2009: SDQ Peer Problems Subscale
by Diagnostic Category**



**WA CAMHS Ambulatory 2005-2009: SDQ Prosocial Behaviour
Problems Subscale by Diagnostic Category**



WA CAMHS Ambulatory CGAS Scores at Admission by Diagnostic Category

WA CAMHS Ambulatory 2005-2009: CGAS Scores by Diagnostic Category

