Resource Consumption and Asthma Severity

David U. Himmelberger

Health Outcomes Group, Palo Alto, CA

ISOQoL, Amsterdam, 6 November 2001

Study Objective

- **Evaluate the relationship between:**

  - **asthma severity (GINA)**

    and

  - **resource consumption**

Study Methods

- National survey of asthmatics
- Consecutive patients
- Physical evaluation of asthmatic status
- Patient self-report of resource consumption
  - limitation of activities – past 14 days
  - medication use and MD visits – past 6 months
  - hospitalization and lost work – past year

GINA Classification of Asthma Severity

- Intermittent – symptoms < 1 time a week
- Mild Persistent – sym > 1 time a week and sym < 1 time a day
- Moderate Persistent – symptoms daily
- Severe Persistent – symptoms continuously

GINA Classification Using 7 Variables

- Daytime Symptoms
- Nocturnal Symptoms
- Attacks
- Use of beta-agonists
- Physical Activity
- FEV1
- PEF Variability

Distribution of Patients in Spain

Total: **300 pts**

Distribution of Patients in Italy

North	125 pts
Center	225 pts
South	150 pts
Total:	500 pts

Demographics

	Italy	Spain
• Age	38.0	38.0 yrs
• Gender (male %)	42.8	28.3 %
• Married / Living together	59.8	62.3 %
• Education (primary or less)	12.4	50.0 %
• Employed	66.4	49.7 %

Asthma Related Conditions

	Italy	Spain
• Rhinitis	56.8	51.0 %
• Sinusitis	21.2	13.7 %
• Atopic Dermatitis	3.8	6.0 %
• Chronic Uticaria	2.4	3.7 %
• Nasal Polyps	13.0	8.0 %
• Family History of Above	40.2	34.7 %

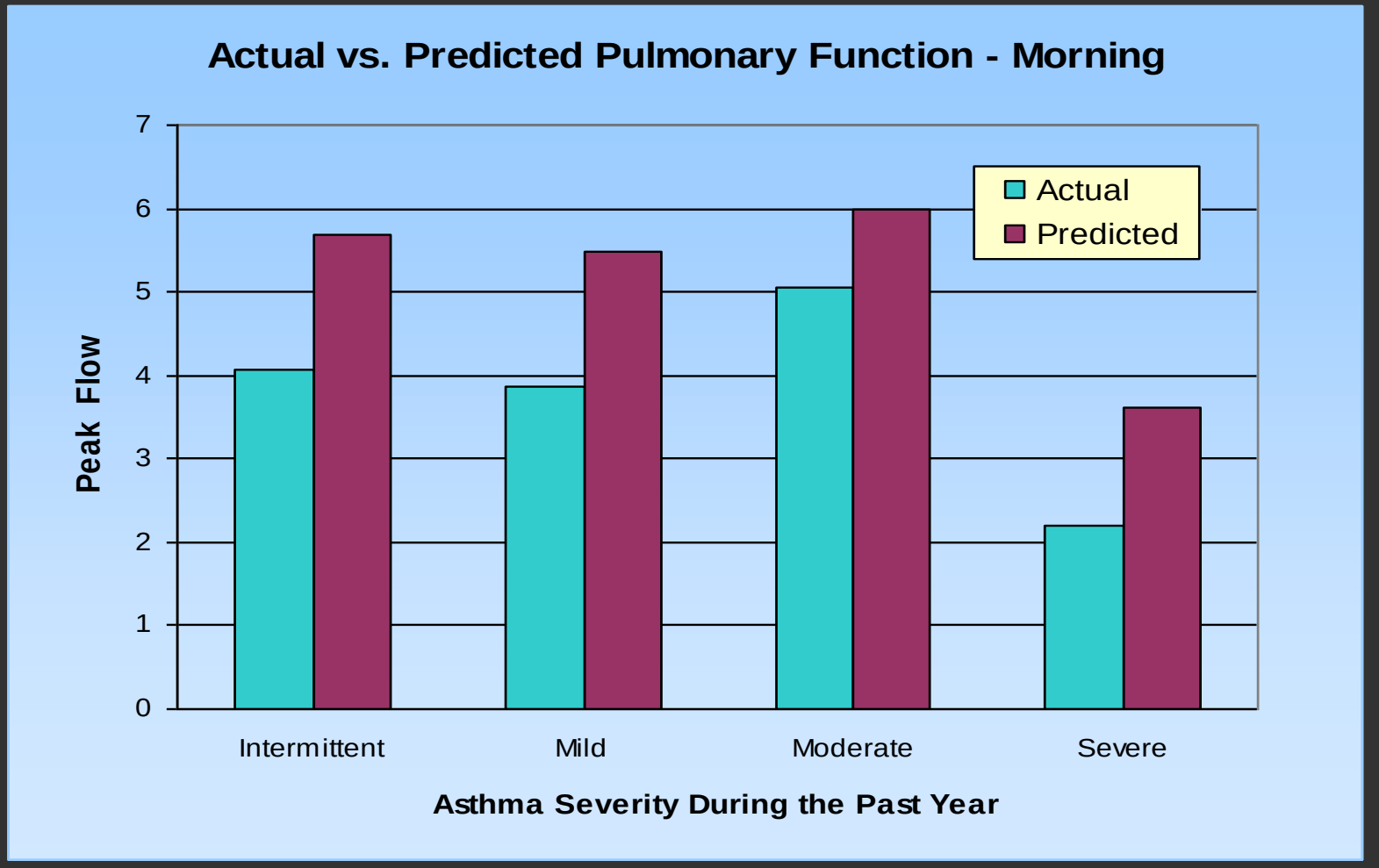
GINA Classification
Asthma Severity – Past 14 Days

	Italy	Spain
• **Intermittent**	**34.8**	**43.7 %**
• **Mild Persistent**	**26.8**	**28.3 %**
• **Moderate Persistent**	**30.6**	**23.0 %**
• **Severe Persistent**	**7.8**	**3.7 %**
Not Reported	0.0	1.3 %

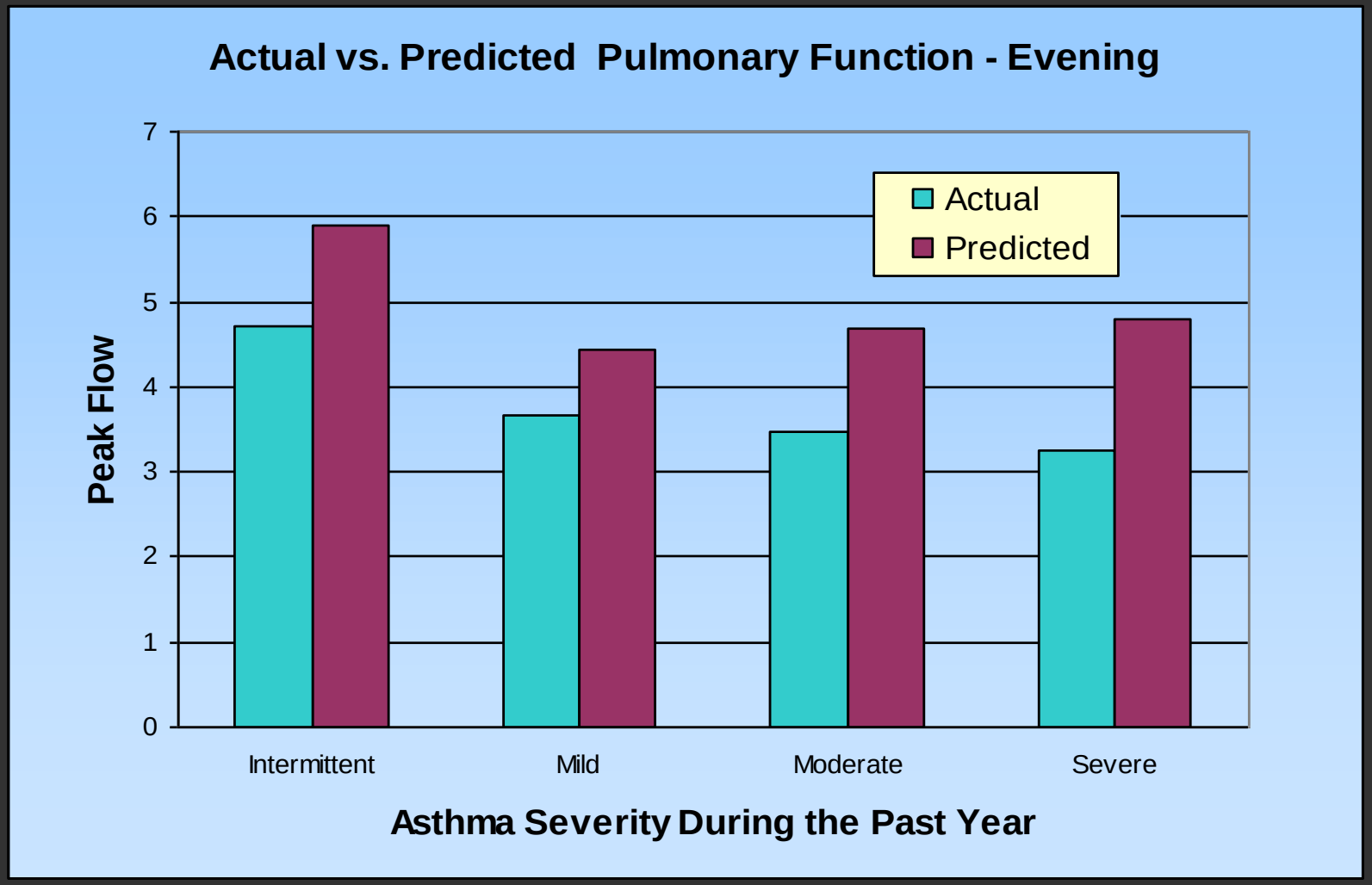
GINA Classification
Asthma Severity – Past Year

	Italy	Spain
• Intermittent	27.2	29.0 %
• Mild Persistent	29.8	43.0 %
• Moderate Persistent	37.6	22.7 %
• Severe Persistent	5.4	3.0 %
Not Reported	0.0	2.3 %

Morning Peak Flow - Italy



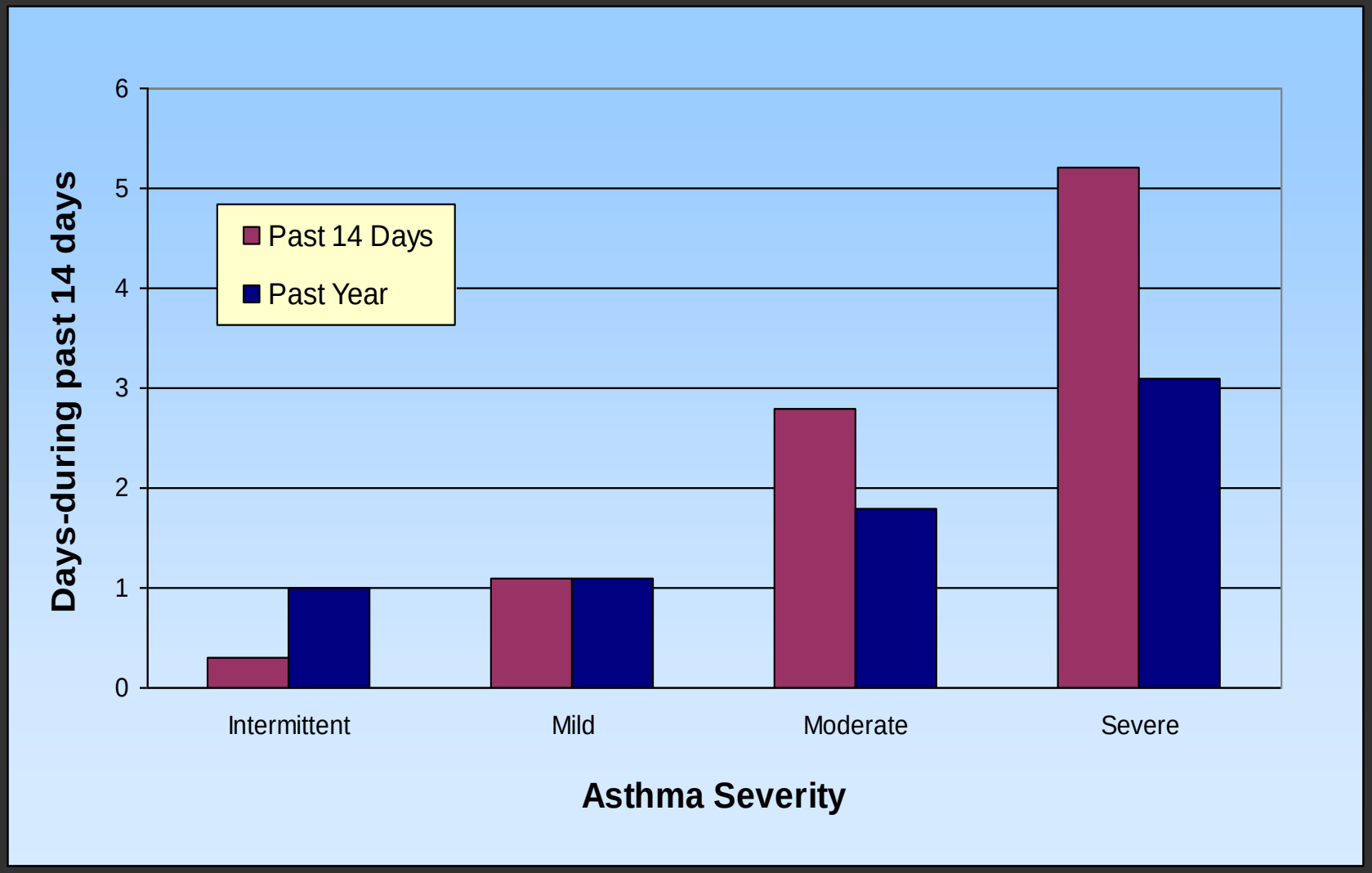
Evening Peak Flow - Italy



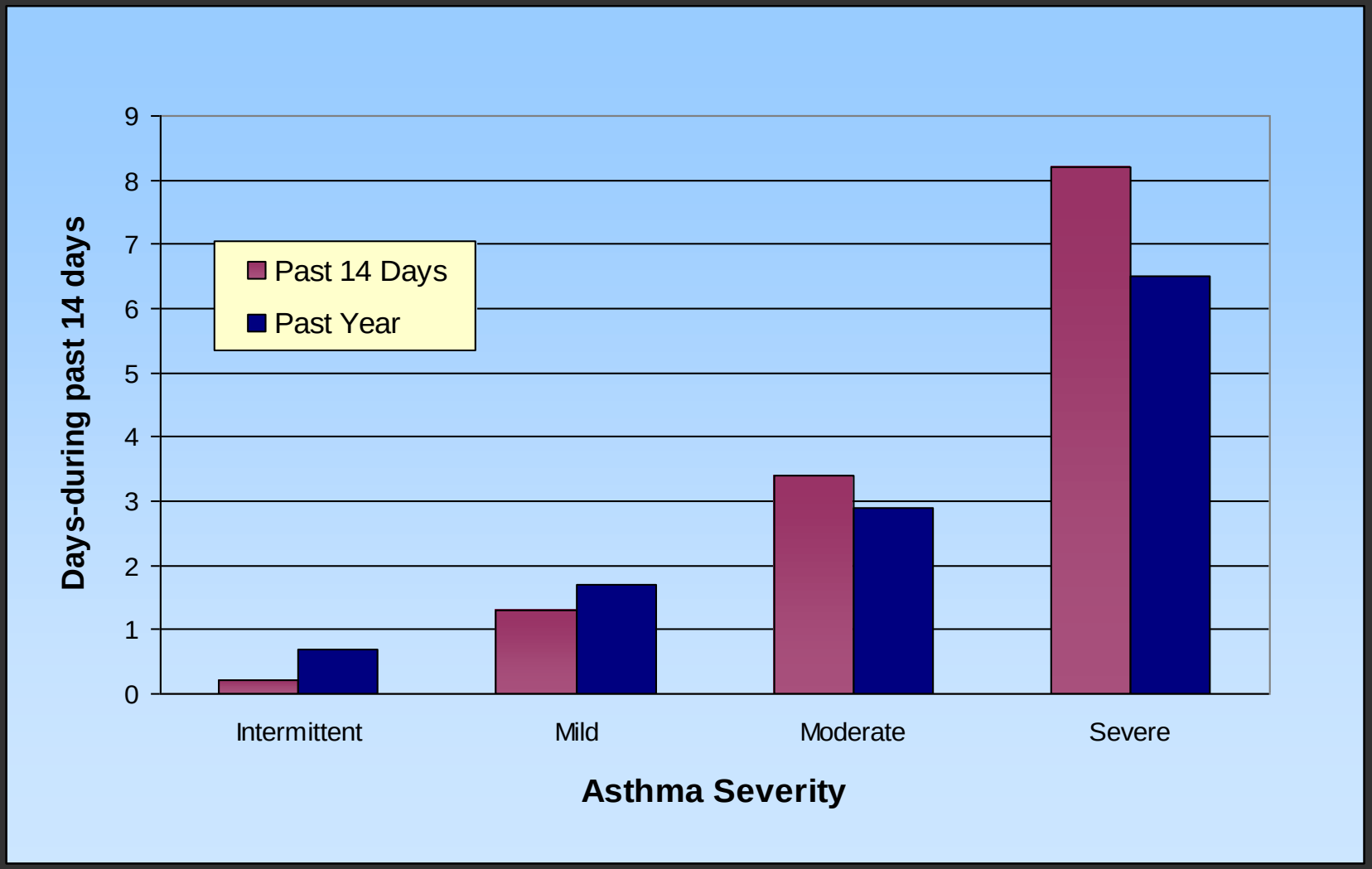
Resource Consumption

- **Past 14 days**
  - daytime symptoms
  - nocturnal symptoms
  - symptom free days
  - asthma medication use
  - limitation of activities
  - effects of attacks
- **Past year**
  - days missed from paid work
  - days missed from unpaid work
  - effectiveness at paid work
  - visits to emergency room
  - hospitalization
- **Past 6 months**
  - physician visits
  - use of asthma medications
  - oral steroid use

Days Limited by Asthma - Spain



Days Limited by Asthma - Italy

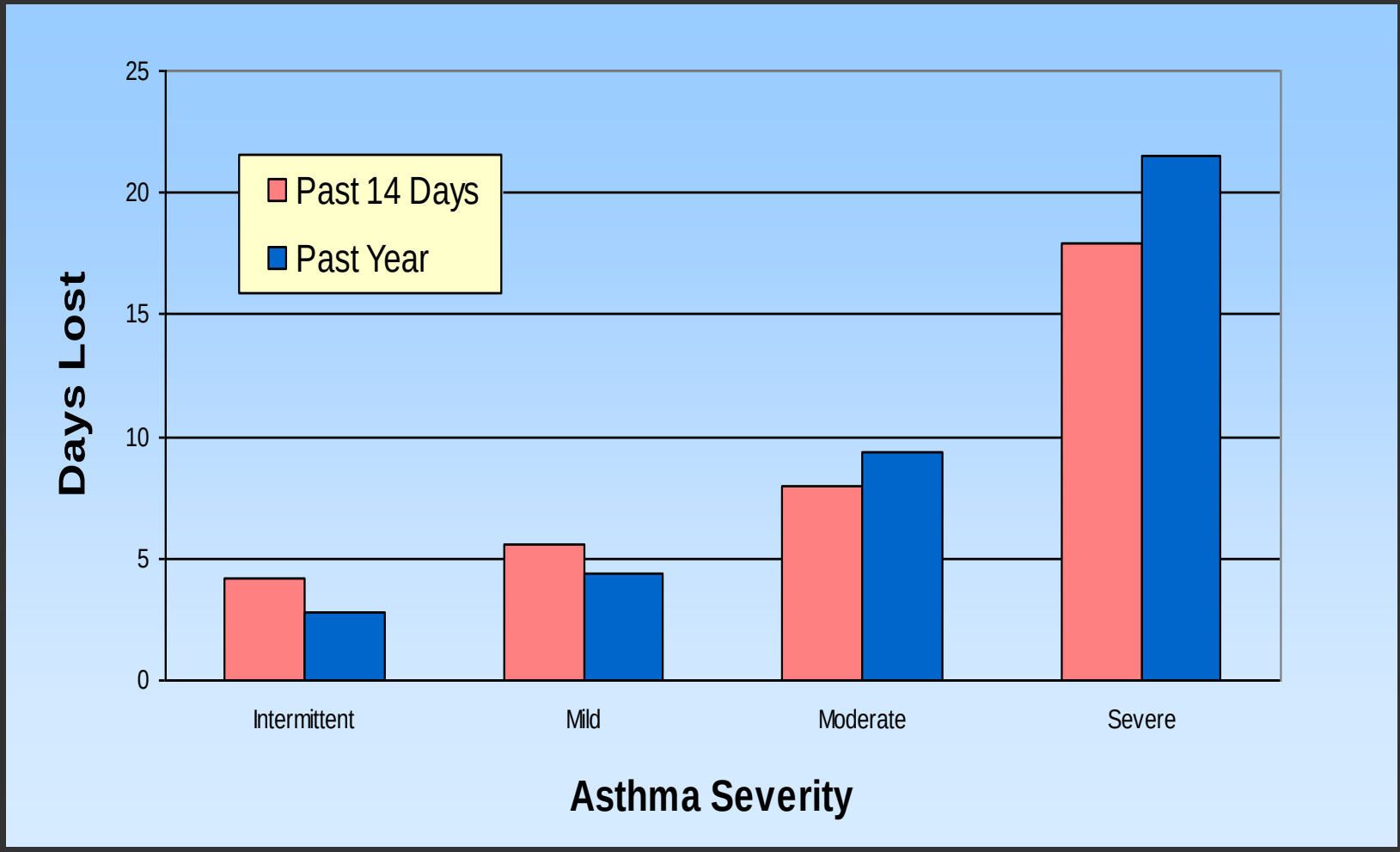


Effect of Asthma for Patients with Intermittent vs Severe Asthma

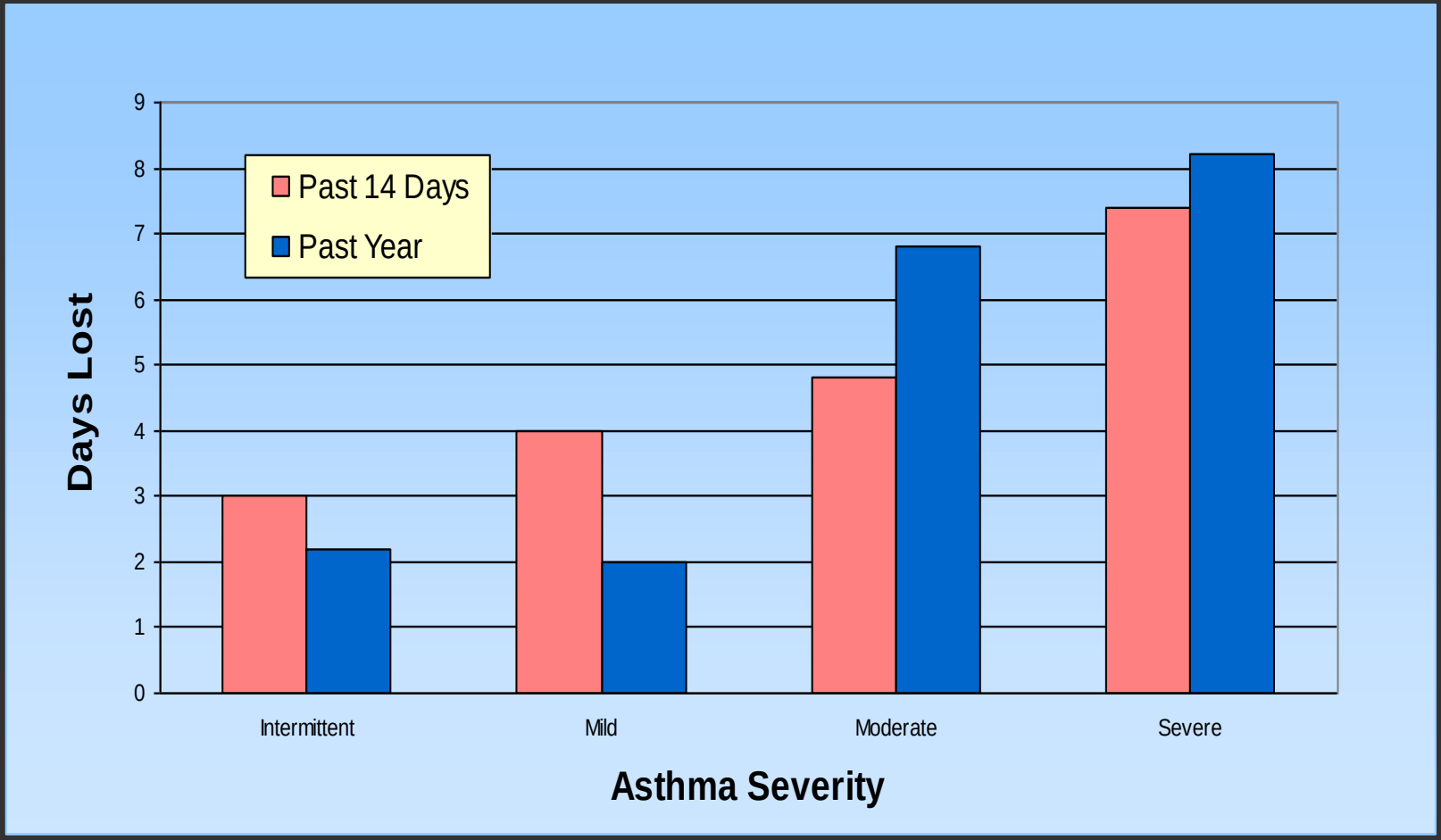
	Italy	Spain
• Nights Awake	0.2 / 7.2	0.5 / 3.4
• Days with Symptoms	1.1 / 9.3	1.5 / 8.4
• Days Limited	0.2 / 8.2	0.3 / 5.2

(During the past 14 days)

Lost Days of Paid Work - Italy

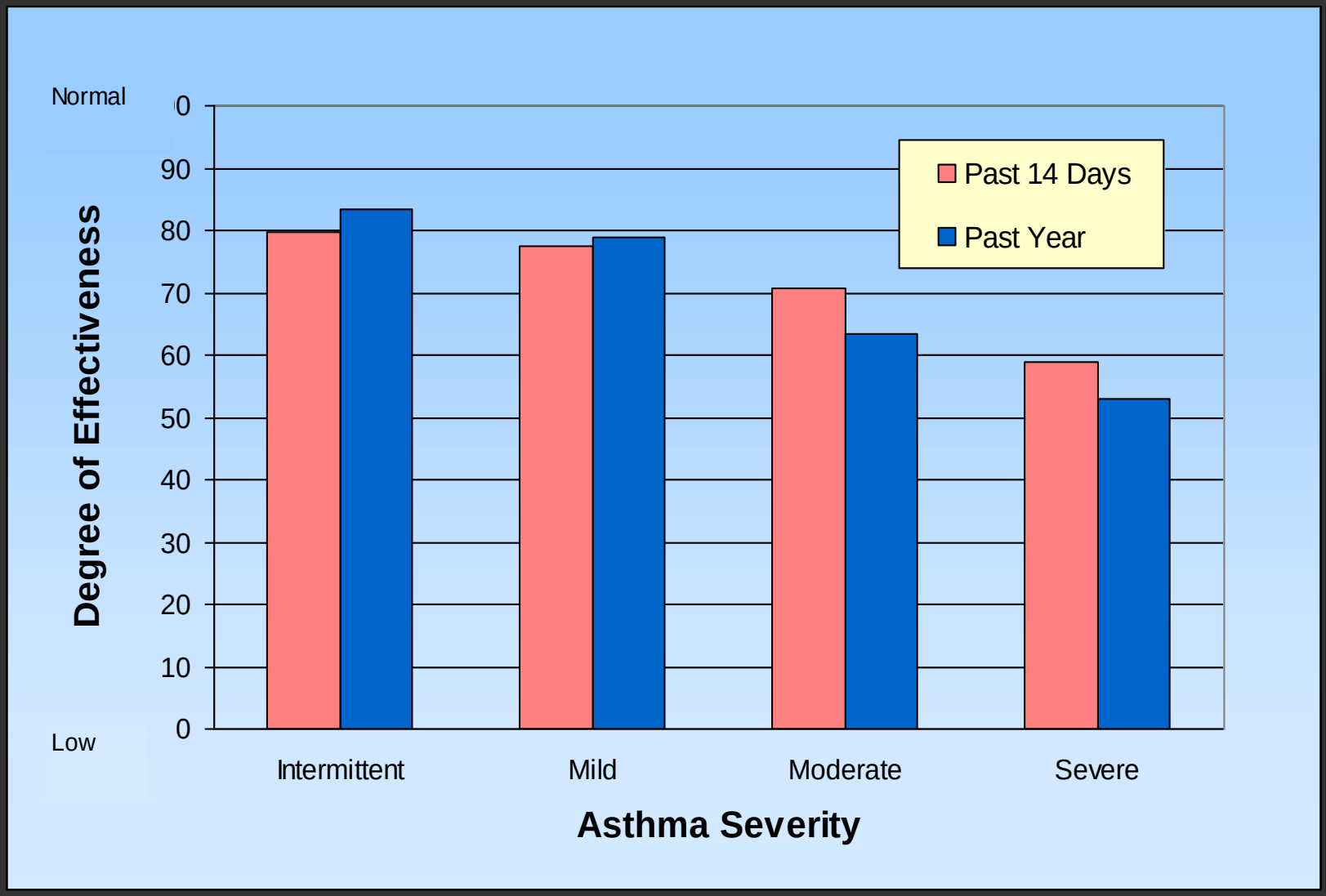


Lost Days of Unpaid Work - Italy

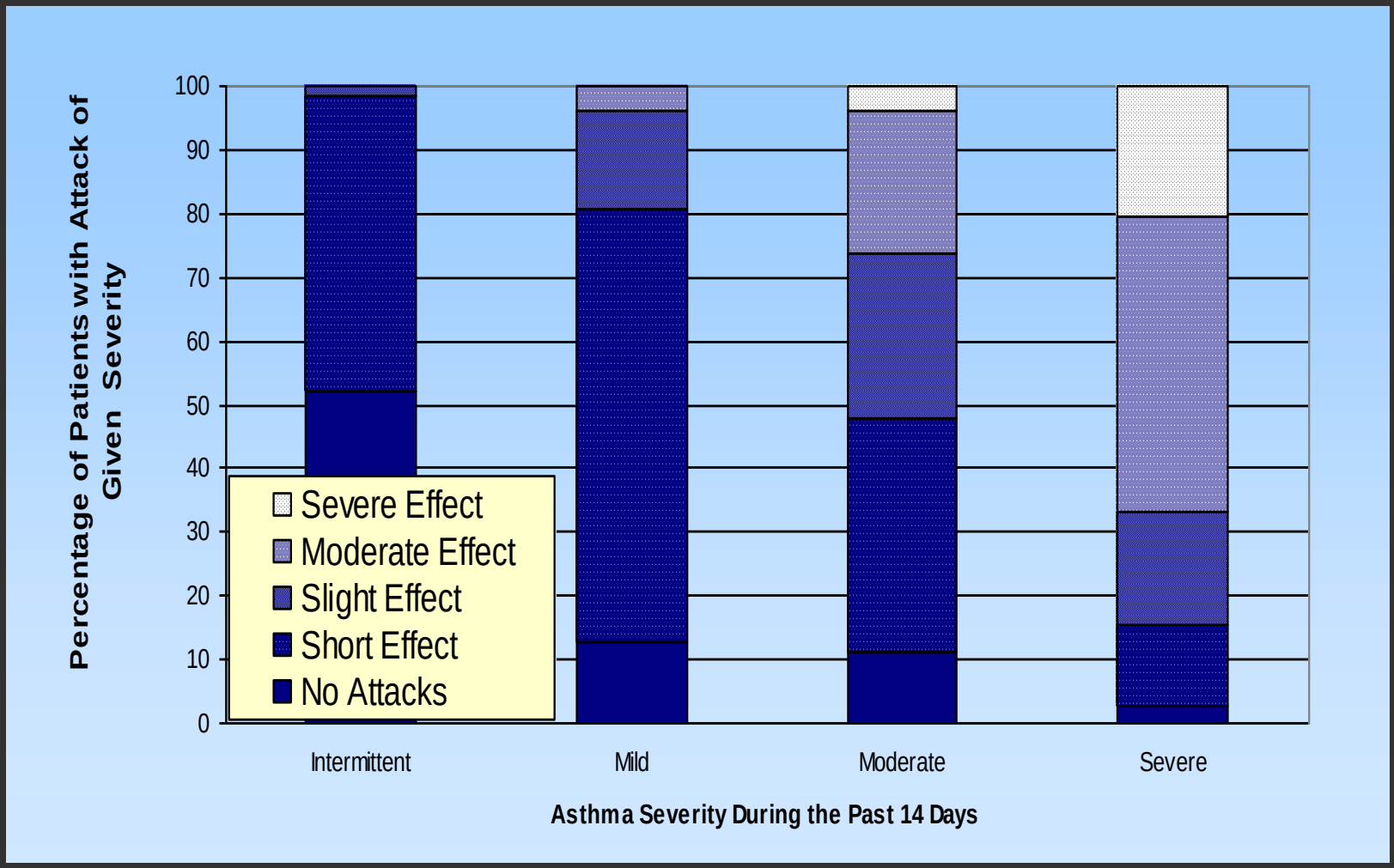


Effectiveness at Paid Work – Italy

(during past 14 days)



Effects of Asthma Attacks – Italy
(during past 14 days)

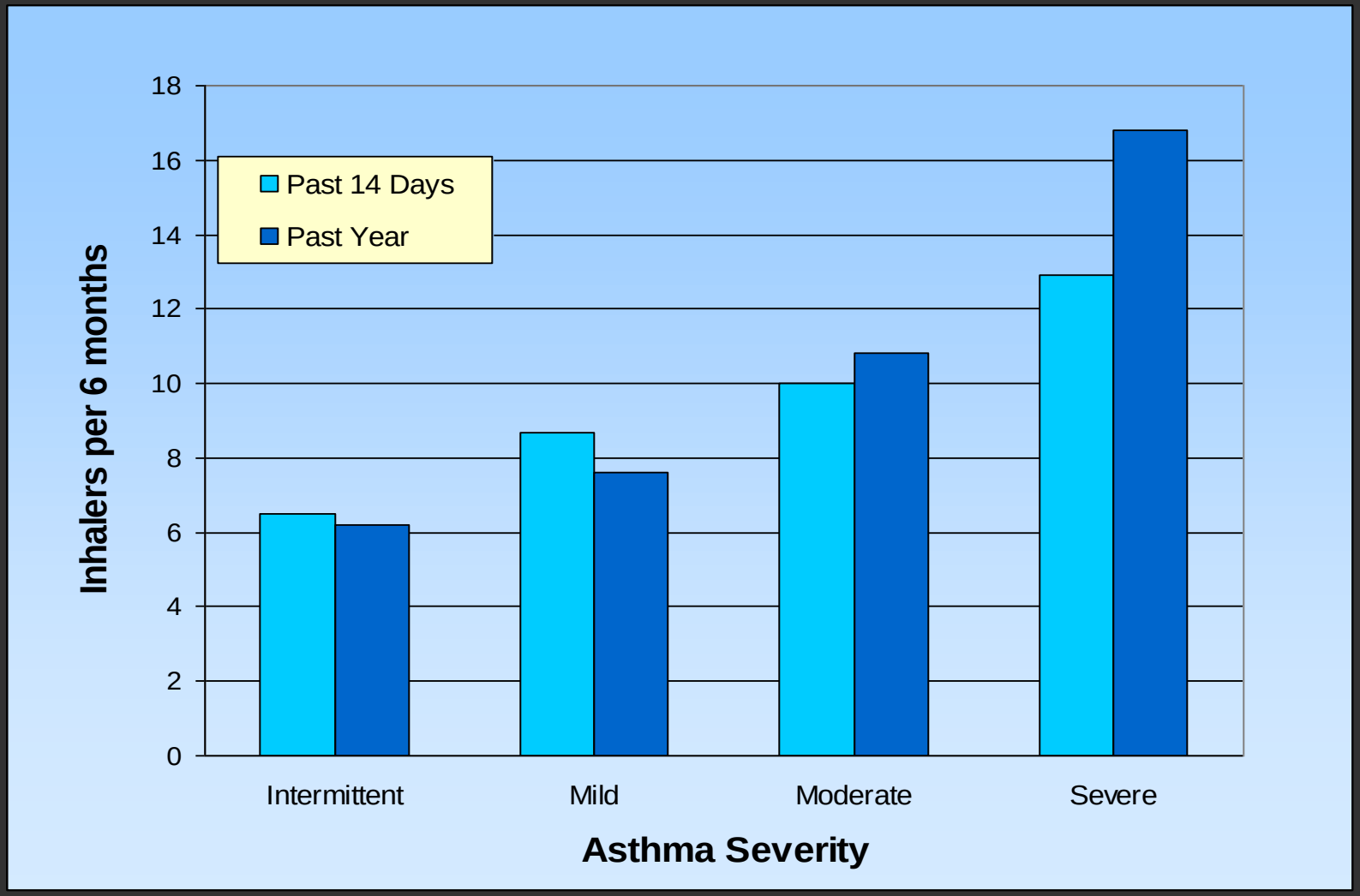


Physician Visits
Intermittent vs Severe Asthma

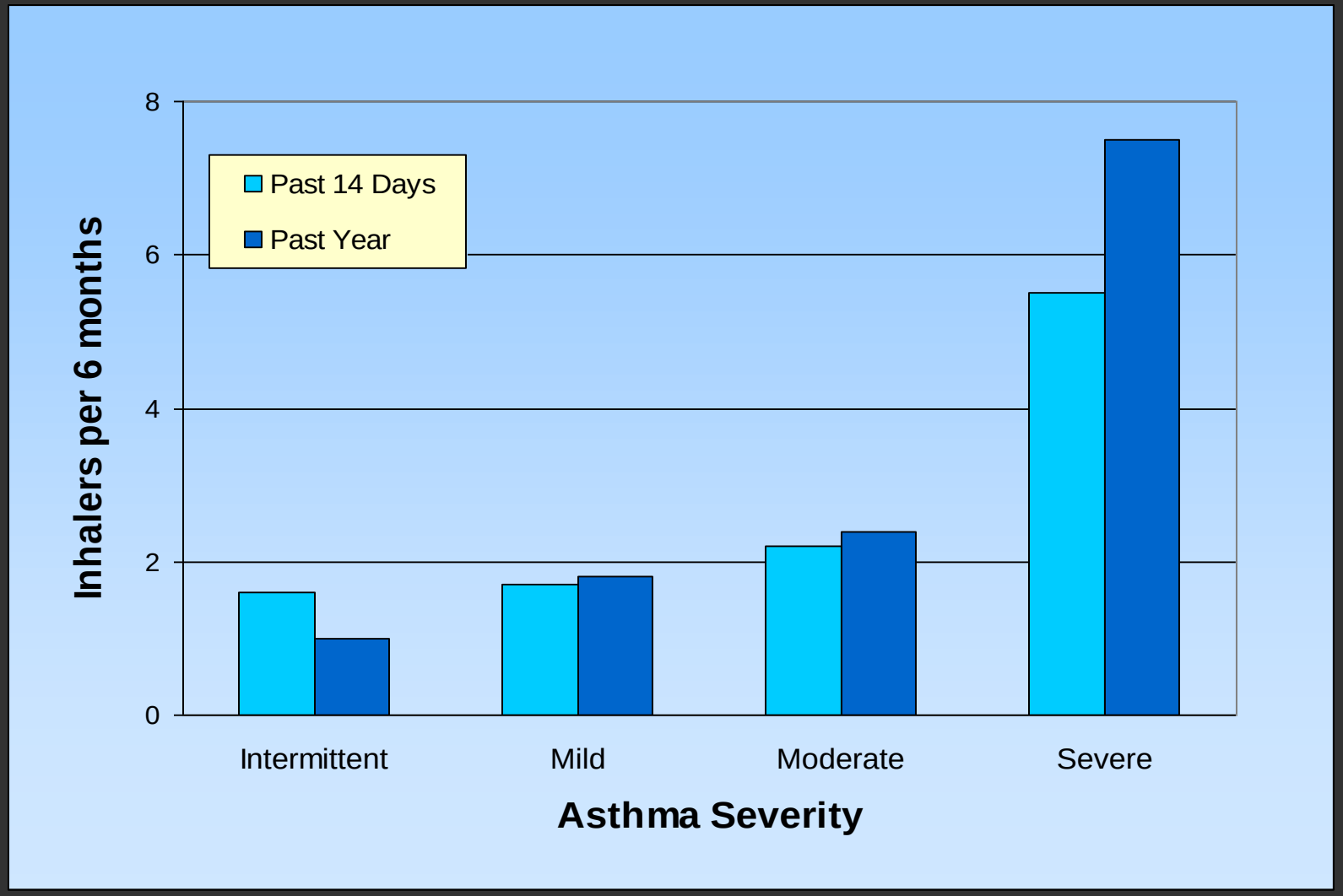
	Italy	Spain
• Non specialists	1.9 / 7.9	1.8 / 6.2
• Pulmonologists	1.2 / 2.5	0.4 / 2.0
• Allergologist	1.4 / 2.3	0.3 / 2.0

(During the past 6 months)

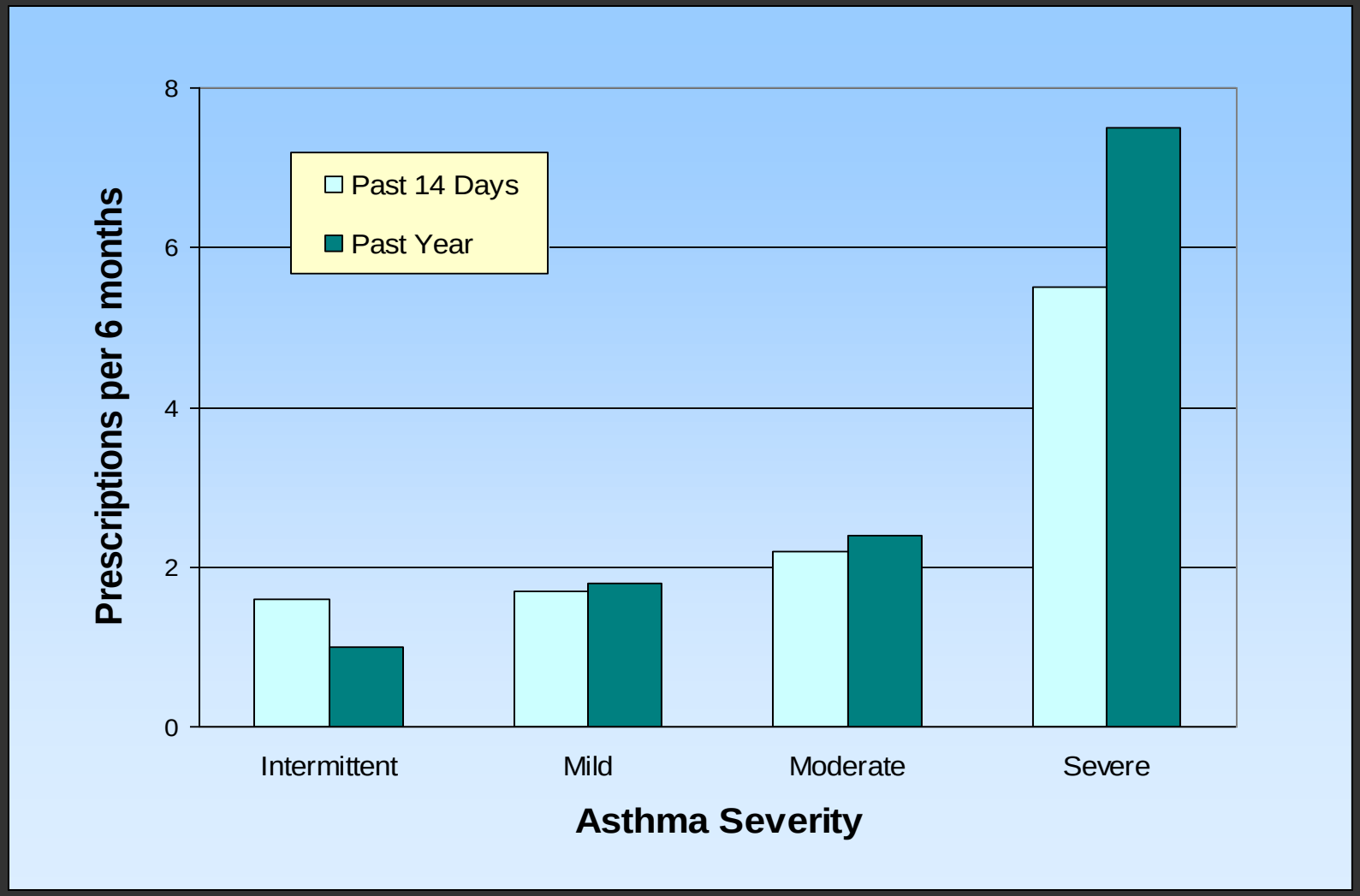
Consumption of All Inhaled Medications – Spain



Consumption of All Inhaled Medications – Italy



Consumption of All Oral Medications – Italy

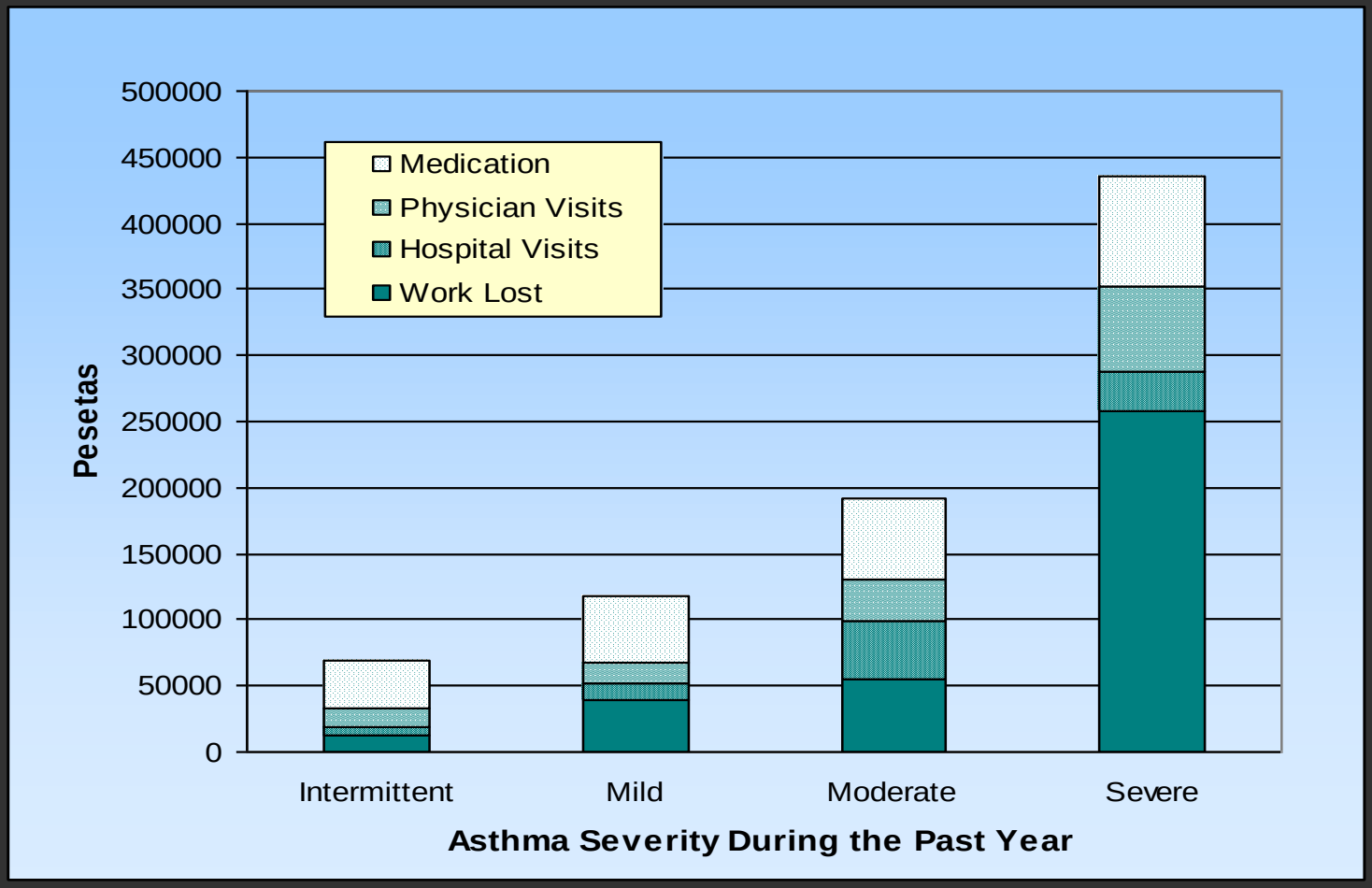


Non-planned Visits and Procedures
Intermittent vs Severe Asthma

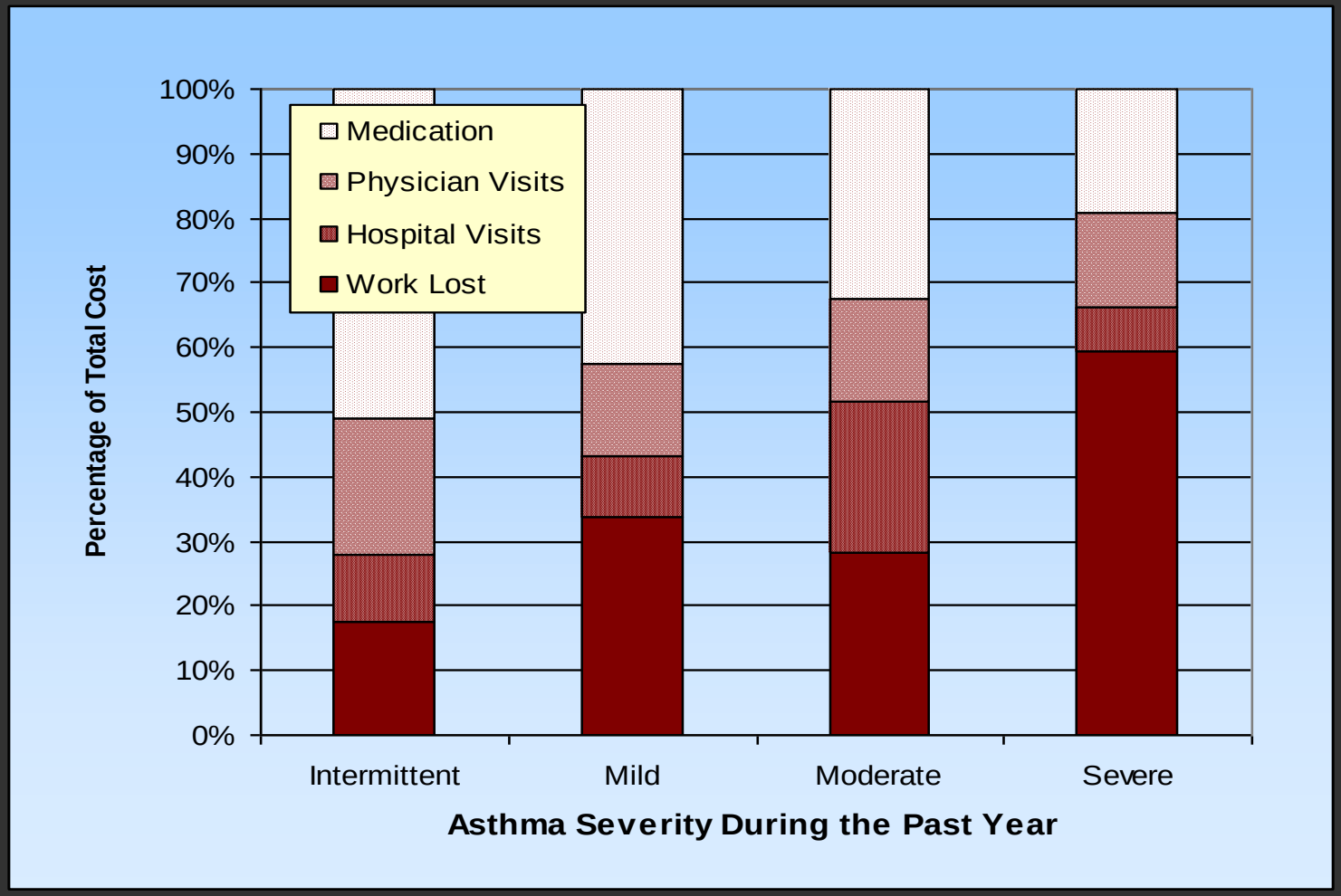
	Italy	Spain
• Hospitalization Rate	0.05 / 1.12	0.03 / 0.22
• Days Hospitalized	0.4 / 10.2	4.3 / 3.0
• Visits to Emergency	0.1 / 1.7	1.1 / 2.7
• Courses of Oral Steroids	0.4 / 2.2	0.3 / 1.7

(During the past year)

Average Cost per Patient per Year – Spain



Distribution of Cost – Spain



Limitations

- Possible selection bias in participants
- Self reported data
- Small representation of severe asthma
- Better measures of pulmonary function
- Better economic data

Summary

- More major medical problems
- Peak flow 10% lower than predicted
- Use of inhalers 2.5 times higher
- Days with symptoms 3 times higher
- Nights awake 3 times higher
- Days limited 3 – 5 times higher
- Asthma attacks 3 times higher
- More frequent hospitalization
- Longer length of stay

Conclusions

- Resource consumption increases as asthma severity increases
- Relative cost of medications is higher for patients with less severe asthma
- Peak flow was not related to asthma severity
- Resource consumption was 2 – 3 times higher in natural units
- Resource consumption was 6 times higher in monetary units (in Spain)