

Changing Trends of Asthma Prevalence and Seasonal Variation in Children

H. Paramesh

MD,FAAP(USA), FIAP, FIAMS, FIAA, FICAAI

Pediatric Pulmonologist

Director

Lakeside Medical Center and Hospital

Bangalore, India

dr_paramesh1@yahoo.com

Introduction:

- ❑ Asthma is a chronic inflammatory lung disease in children
- ❑ It is a major health burden socioeconomically
- ❑ The prevalence is increasing globally
- ❑ Environment factors outweigh the genetics for the increase prevalence of asthma.

BALANCING FACTORS IN THE GENESIS OF ALLERGIC DISEASES

REPORTS FROM

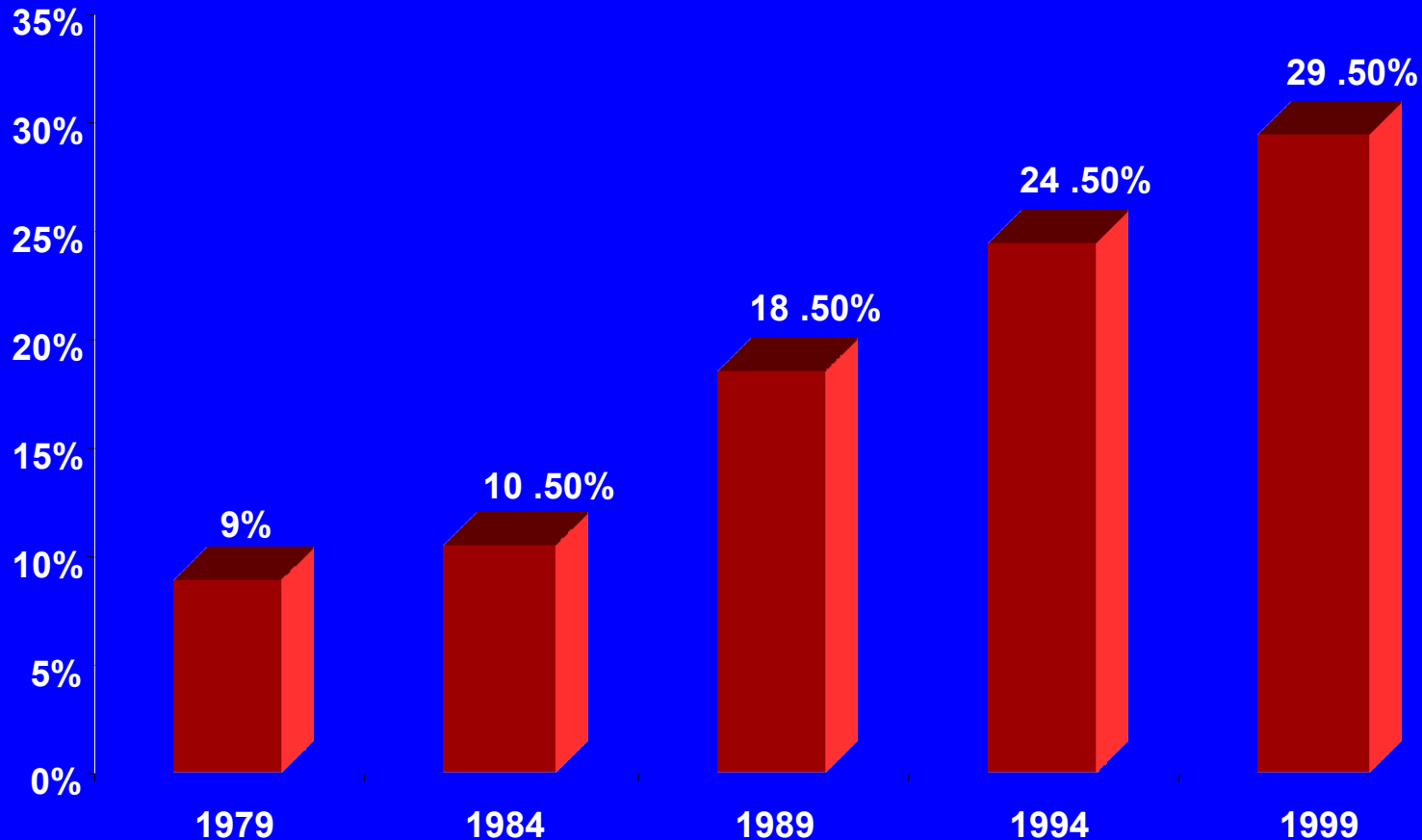
Genetics

- Triston Da Cunha
- Caroline Island
- Twin Studies

Environment

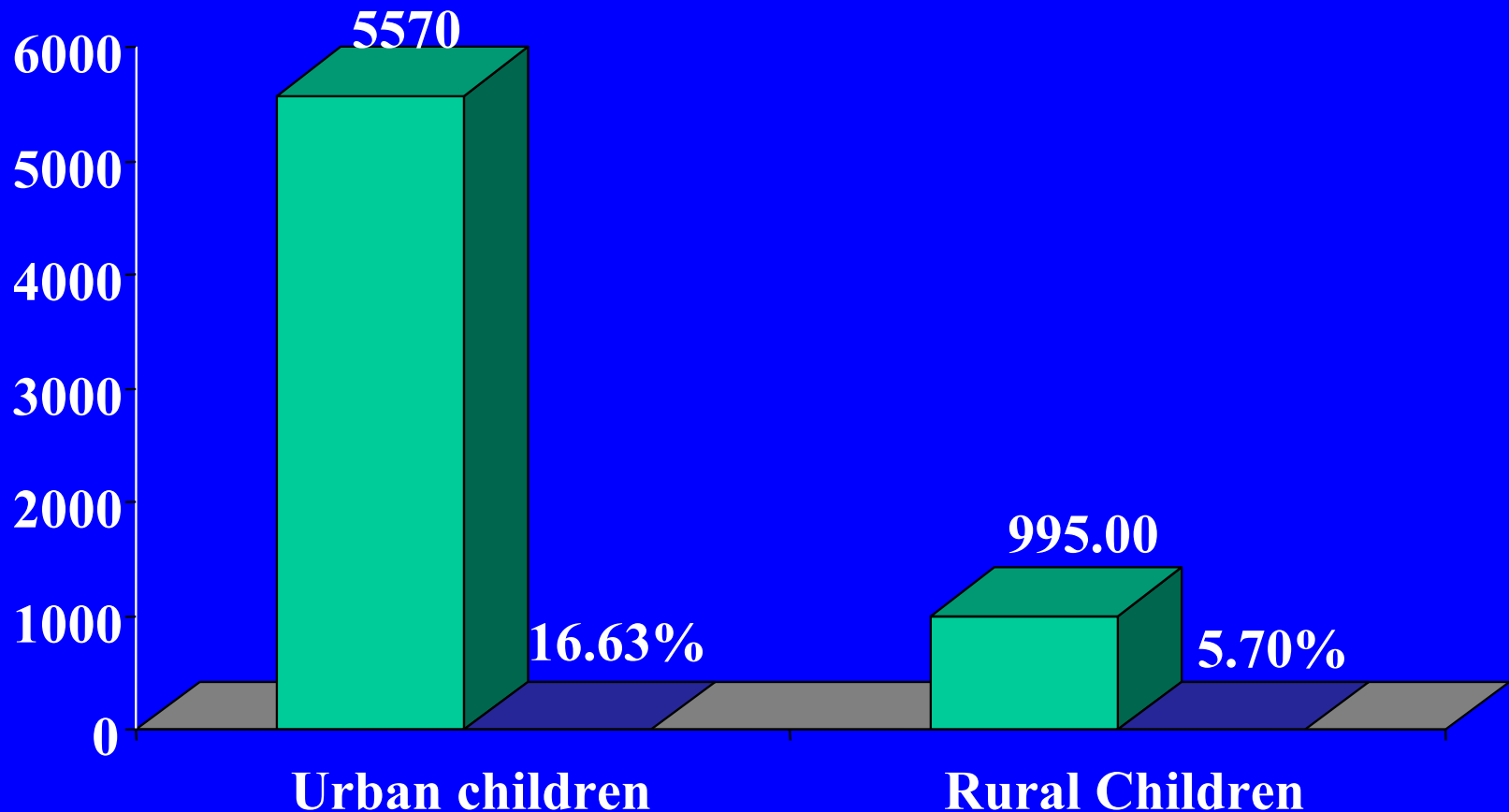
- Papua New Guinea
- Chile
- Tokelu Islands
- Sweden
- East Berlin
- Hong Kong
- South Africa
- Bangalore

Asthma Prevalence 1979-1999

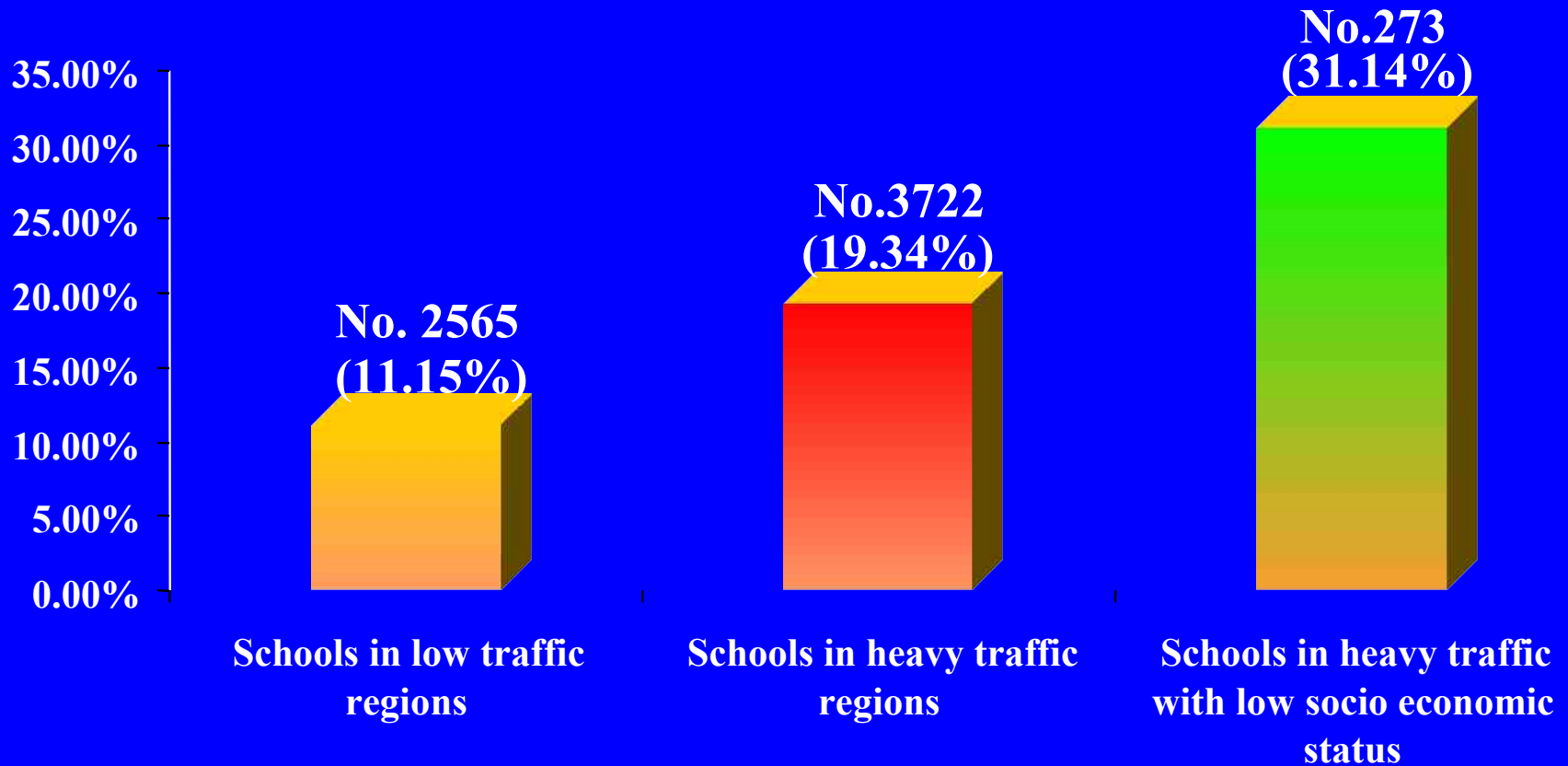


Asthma urban / rural children Age 6-15 years

Urban children suffer more asthma than rural



Children of heavy traffic school suffer more from asthma it further increases with low SE children



P. Value I, II & III < 0.001.

H. Paramesh. Ind. J. of Ped - 2002

Asthma Pattern

- ❑ 35% of children showed a definite seasonal pattern of asthma episodes
- ❑ Only 2.8% of children experienced asthma episodes in summer season in the year 1994

Objective of Current Study:

- To find out the current prevalence of asthma in children
- To see any change in the seasonal pattern

Materials and Methods:

- ❑ Prospective study; 6677 children under the age 18 years of age were evaluated in the general pediatric out patient clinic by Pediatric Pulmonologist
- ❑ Duration of the study – Jan 1st to Dec 31st 2004
- ❑ Diagnosis of asthma was made

Children under 5 years

- 3 episodes of wheeze, persistent cough over 2 weeks good response to bronchodilators, along with other features of atopic disease and family history of atopy

Children over 5 Years

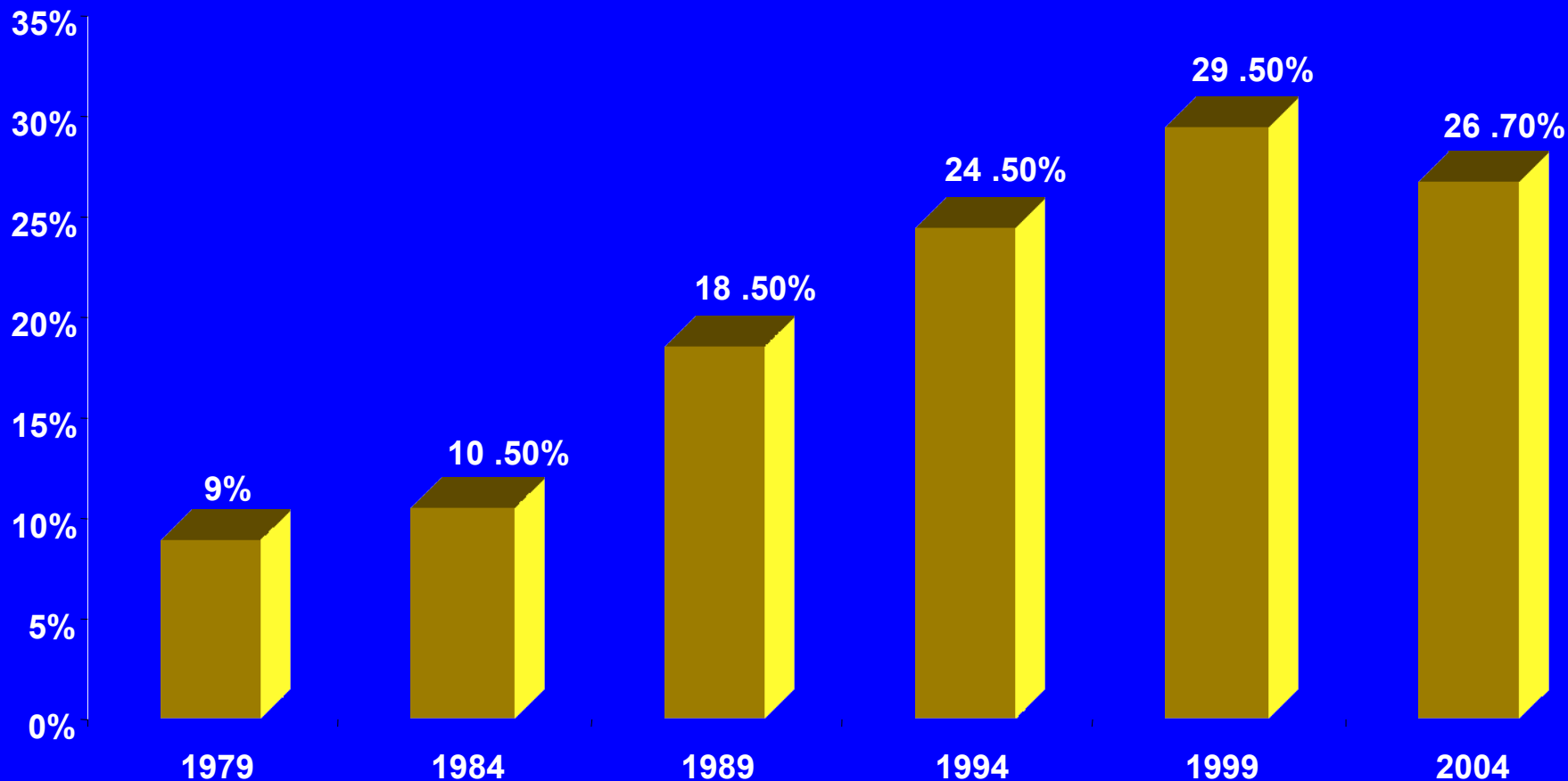
- 15% improvement in PEF values after bronchodilators therapy

Result

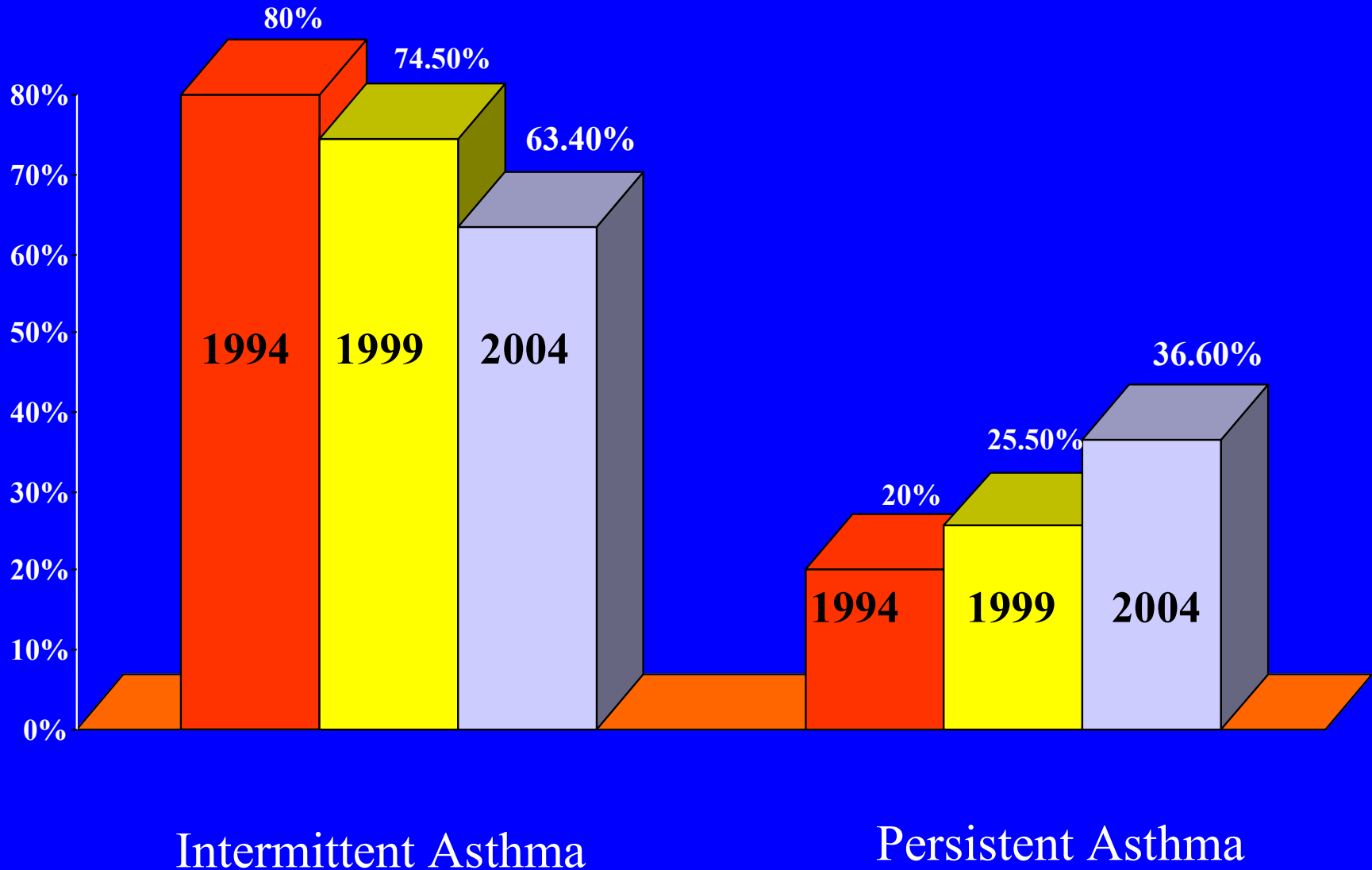
- ❑ 1762 out of 6677 children had asthma – 26%
- ❑ Age distribution
 - < 5 year – 67%
 - 5 – 10 years – 24%
 - 10 – 18 years – 07%
- ❑ Gender ratio
 - Male – 60%
 - Female – 43%

Asthma Prevalence 1979-2004

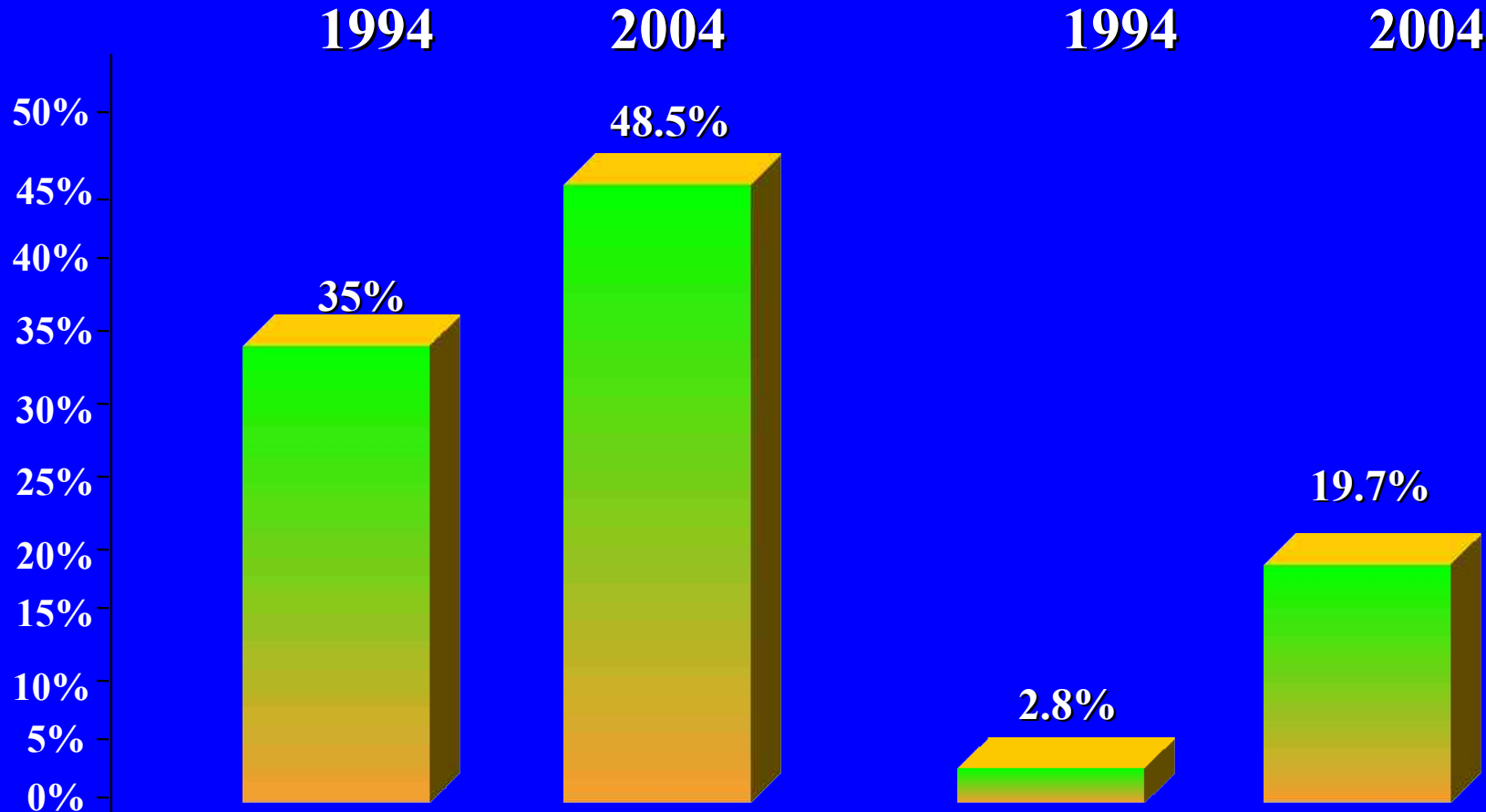
($P < 0.05$)



Prevalence of Persistent Asthma 1994 – 2004 ($P < 0.0058$)



Seasonal Pattern of Asthma Episodes



Seasonal Variation

Summer Season

P Value 0.001171

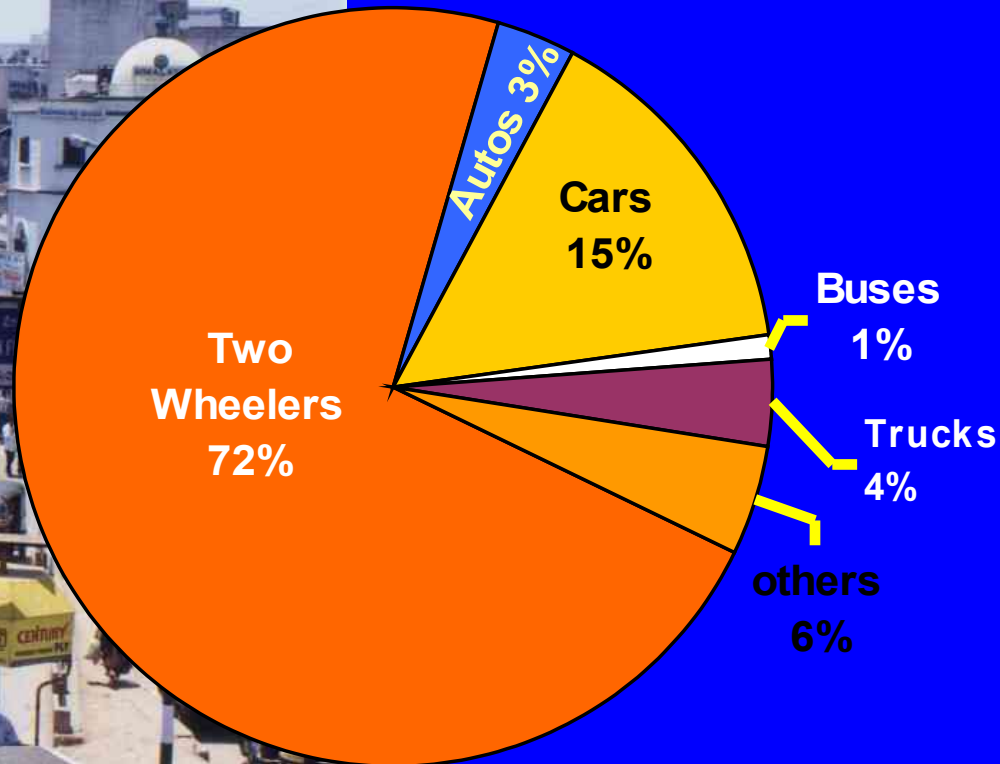
P Value 0.00025

Reason for Changing trends of Asthma

- ❖ Saturation of genetically predisposed population in our city for decrease in the prevalence
- ❖ However the persistent asthma is increasing due to continued air pollution
- ❖ Increase in asthma episodes in summer season is from increased production of ozone from automobile emissions from oxides of nitrogen

Bangalore – Vehicles

Total No. of vehicles as on 31 March 2005 - 25.6 Lacks



- Two Wheelers
- Cars
- Autos
- Buses
- Trucks
- others

Two Wheelers - 72 %
Three Wheelers (Autos) - 3 %

About 900 new vehicles are being registered in Bangalore everyday

Ozone Production HP

- ❑ O₃ produced by the action of sunlight and oxides of nitrogen and other hydrocarbons from automobiles and industrial emission
- ❑ O₃ Level will be higher in warm, sunny, windless days, often peaks in mid afternoon
- ❑ O₃ is a powerful oxidant and respiratory tract irritant
- ❑ O₃ produces airway inflammation mostly small airways and has cumulative effect, hyperreactivity, decrease PFT, increase asthma
- ❑ Increase O₃ by 0.11 PPM in Atlanta produced 37% increase of ER, visits from asthma*

HP

*White MC, Etzel RA, Environ Res-1994; 65:271 - 290

Conclusion:

- ❑ Steady increase in prevalence of asthma from 9% to 29.5% from 1979 to 1999 is due to change in the demography of our city
- ❑ In 2004 there is decrease of prevalence by 2.8%
- ❑ However the persistent asthma is increased from 20% in 1994, 36.6% in 2004
- ❑ Episodes of asthma is increased in summer months from 2.8% in 1994, 19.7% in 2004
- ❑ Environmental factors like increased production of ozone from automobile emission seems to be the major

THANK YOU

