

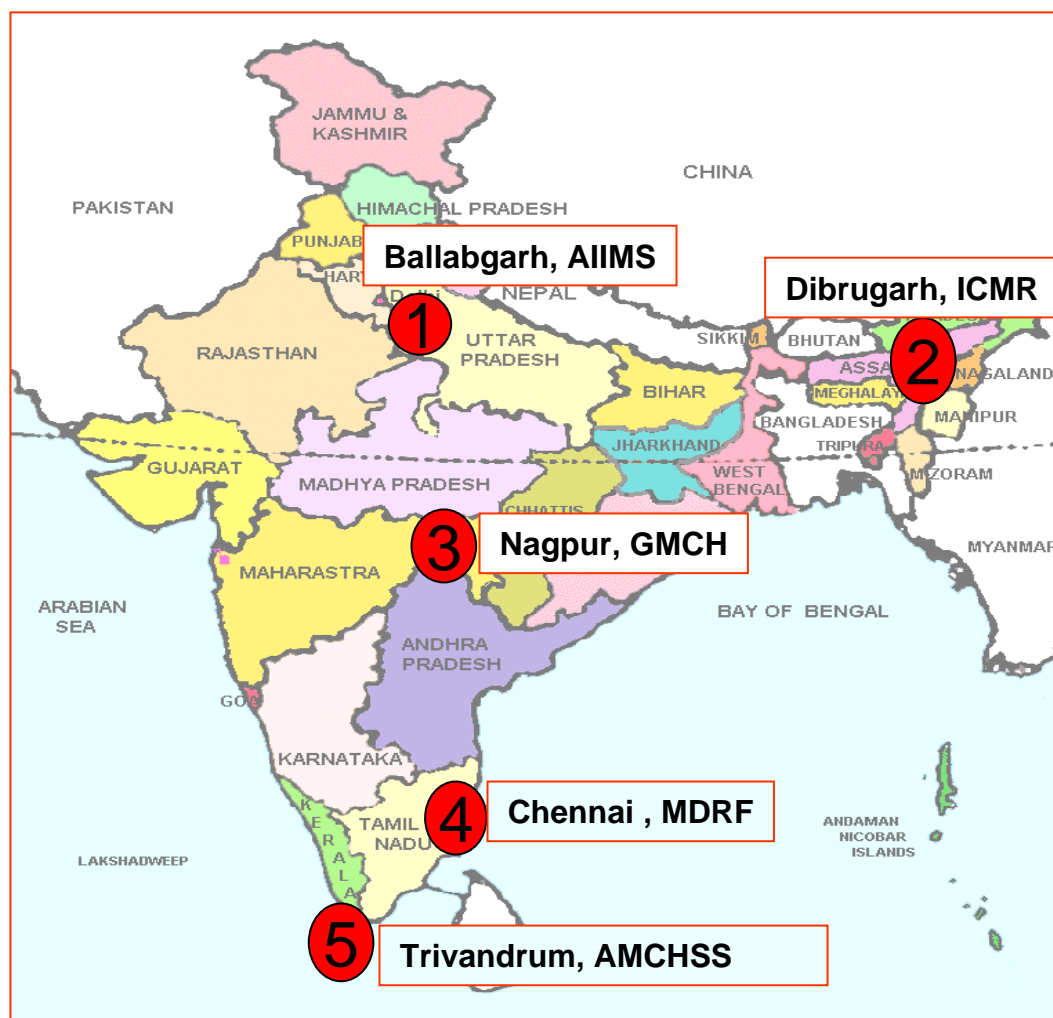
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**Report of the surveillance of risk factors of  
non-communicable diseases (STEPS 1 and 2)  
from 5 centres in India.**

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**A WHO India - ICMR initiative**

# National NCD Surveillance centres



## Five centres:

1. Comprehensive Rural Health Services Project, All India Institute of Medical Sciences [AIIMS], Ballabgarh (North)
2. Regional Medical Research Centre, Indian Council of Medical Research [ICMR], NE Region, Dibrugarh (East)
3. Government Medical Colleges & Hospital [GMCH], Nagpur (Central)
4. Madras Diabetes Research Foundation, Chennai (South)
5. Achutha Menon Centre for Health Science studies[AMCHSS], Sri Chitra Tirunal Institute of Medical Sciences and Technology, Trivandrum (South)

# WHO –ICMR NCD RF Surveillance Project

## *Centres and investigators*

- **ICMR, New Delhi – the NCD Division at ICMR coordinated the study**

Dr. Bela Shah- Senior Deputy Director General & Chief, Division of NCD and Principal Investigator

Dr. DK Shukla- Deputy Director General (SG)

Dr. Prashant Mathur- Assistant Director General & Programme Officer (NCD Surveillance)

Dr. Ravinder Singh- Senior Research Officer

Dr. Geetha Menon- Research Officer

# WHO –ICMR NCD RF Surveillance Project

## *Centres and investigators*

- **Comprehensive Rural Health Services Project, AIIMS, Ballabgarh, Haryana**
  - Dr. K. Anand, Associate Professor
  - Mr. Eldho Paul, Statistical Assistant
  - Dr. S.K. Kapoor, Professor & Officer-in-charge CRHSP Ballabgarh
- **Government Medical College & Hospital, Nagpur**
  - Dr Prashant P. Joshi MD, (Medicine) MSc. (Clinical Epidemiology, UNC, Australia), Associate Professor in Medicine, Senior Faculty, Clinical Epidemiology Unit,
  - Dr Poonam Lavhe, MD (Medicine), Lecturer in Medicine
  - Dr VS Dani, Dean, GMC, Nagpur
  - Dr VR Bhutada, Ex Dean, GMC, Nagpur
  - Dr WB Tayade, Director, Medical Education and Research
- **Regional Medical Research Centre, ICMR, NE Region, Dibrugarh, Assam**
  - Dr J Mahanta, MD
  - Dr G K Medhi MD
  - Dr N C Hazarika MD

# WHO –ICMR NCD RF Surveillance Project

## *Centres and investigators*

- **Madras Diabetes Research Foundation, Chennai**  
Dr. V. Mohan, M.D., FRCP, Ph.D., D.Sc., FNASc  
Dr. Deepa Raj, Ph.D.  
Ms. M. Deepa, M.Sc
- **Achutha Menon Centre for Health Science Studies, Sri Chitra Tirunal Institute of Medical Sciences and Technology, Trivandrum**  
Dr K R Thankappan Additional Professor and Head  
Dr Biju Soman, Assistant professor
- **WHO India Office, New Delhi.**  
Dr. Cherian Varghese, Cluster Coordinator (NMH)  
Dr. Kavita Venkataraman, Cluster Assistant (NMH)

# WHO –ICMR NCD RF Surveillance Project

## About this report

- The data presented is from the preliminary analysis of the pooled data
- This is an illustrative presentation of NCD risk factor surveillance data in a manner useful for planning and monitoring interventions
- The ICMR and the individual centres will come out with detailed analysis and reports subsequently

# WHO – ICMR NCD RF Surveillance Project

## DATA ANALYSIS

The multicentric NCD risk factor surveillance project generated data as per the WHO STEPS approach. The Madras Diabetes research Foundation, Chennai and the WHO India Office have analysed the pooled data set for preliminary presentation. The ICMR and the individual centres will come out with detailed reports and discussions. The intent of this presentation is to depict the population prevalence of risk factors in a manner useful for planning and monitoring interventions. The data requires further cleaning and hence the figures presented may change after the detailed analysis.

The surveillance study had data on prevalence of key NCDs [self reported diabetes, hypertension] and risk factors associated with NCDs from three areas [urban, periurban / slum and rural] in five different centres [Ballabgarh, Chennai, Dibrugarh, Nagpur, Trivandrum].

The total sample size of the study is 39,429 urban 12,732 (6,314 male and 6,418 female), rural 13,525 (6,671 male and 6,854 female) and periurban / slum 13,170 (6,420 male and 6,750 female).

The data was analyzed using SPSSc 10.0 version. The following criteria were applied for various analysis:

- *General rule:* Missing data were excluded from analysis for all analysis
- *Age:* All the individuals were taken for analysis on age.
- *Gender:* Gender wise analysis was performed for all variables included in the study.
- *Education level:*

Individuals with education level with 08 [unknown] were excluded from the analysis.

Education level was categorized as

- No formal schooling as *illiterate*
  - Less than primary schooling to high school completed as *some schooling*
  - College / university completed and postgraduate degree as *graduate and above*
- *Years spent at school:*

Subjects who had never attended school were coded as “0”

Years spent at school were categorized as

1-5 years, 6-10 years, 11-15 years and >15 years.

- *Employment categories:* There were 29 individuals with missing data who were excluded from analysis.
- *Smoking:* Smokers were classified as current smokers and non-smokers.
- *Age started smoking:*
  1. Analysis was restricted to current smokers with age < 77 years and > 6 years.
  2. Age started smoking was graded as <10 years, 11-15 years, 16-20 years and >20 years.
- *Smokeless tobacco:* Categories were current users and non-users.
- *Fruit consumption pattern:* For fruit consumption pattern individuals who never consumed fruits or none were graded as 0, and others as 1-3 days, 4-6 days and seven days as appropriate.
- *Vegetable consumption pattern:* Categories were similar to fruit consumption pattern
- *Oil consumption pattern:* Categories were vegetable oil [refined / unhydrogenated], Vegetable oil (hydrogenated), Butter or ghee. Code “06” was changed to other, as this code was not in the questionnaire.
- *Job related physical activity:* This data was computed based on three questions
  - i. Does your work involve mostly sitting or standing, with walking for not more than 10 minutes at a time? [if yes, the person was graded as sedentary at work]
  - ii. Does your work involve moderate-intensity activity, like brisk walking [or carrying light loads] for at least 10 minutes at a time? [if yes, the person was coded moderately active at work]
  - iii. Does your work involve vigorous activity like (heavy lifting, digging or other work) for at least 10 minutes at a time? [if yes, the person was graded as vigorously active at work]

If an individual said yes for all the three, he / she was graded as vigorously active at work.

If an individual said yes for both moderate and sedentary, he / she was graded as moderately active at work.

- *Leisure time physical activity:* This data was computed based on three questions

- Does your [recreation, sport or leisure time] involve mostly sitting, reclining, or standing, with no physical activity lasting more than 10 minutes at a time? [if yes, the person was graded as sedentary during leisure]
- In your [leisure time] do you do any moderate intensity activities like brisk walking (cycling or swimming) for at least 10 minutes at a time? [if yes, the person was coded as moderately active during leisure ]
- In your [leisure time] do you do any vigorous activities like (running or strenuous sports, weight lifting) for at least 10 minutes at a time? [if yes, the person was graded vigorously active during leisure]

If an individual said yes for all the three, he / she was graded as vigorously active during leisure.

If an individual said yes for both moderate and sedentary, he / she was graded as moderately active during leisure.

- *History of blood pressure measurement:* Data obtained were graded as within past 12 months, 1-5 years and not within past 5 years.
- *Blood pressure:* For analysis on systolic blood pressure subjects with SBP >300 mm of Hg was excluded, similarly for diastolic blood pressure subjects with DBP >200 mm of Hg was excluded.
- *Waist circumference:* Pregnant ladies and subjects with waist circumference >160 cm were excluded from analysis.
- *Body mass index:* Subjects with BMI>65 were excluded from analysis.

For further information, please contact:

Dr. V. Mohan, M.D., FRCP (UK)., FRCP (Glasg), Ph.D., D.Sc., FNASc.  
Chairman & Chief of Diabetes Research,  
Dr. Mohan's Diabetes Specialities Centre &  
Madras Diabetes Research Foundation,  
No. 4, Conran Smith Road,  
Gopalapuram,  
Chennai - 600 086.  
Tel : 91-44-2835 9048  
Fax : 91-44-2835 0935  
Email : [drmohans@vsnl.net](mailto:drmohans@vsnl.net)  
Website : [www.drmoahnsdiabetes.com](http://www.drmoahnsdiabetes.com)

# ***STUDY POPULATION***

## **Centerwise**

<b>1. Ballabgarh</b>	<b>————→</b>	<b>7990</b>
<b>2. Chennai</b>	<b>————→</b>	<b>7847</b>
<b>3. Dibrugarh</b>	<b>————→</b>	<b>8394</b>
<b>4. Nagpur</b>	<b>————→</b>	<b>7661</b>
<b>5. Trivandrum</b>	<b>————→</b>	<b>7537</b>
<hr/>		
<b>Total</b>	<b>————→</b>	<b>39429</b>

## **Areawise**

<b>1. Urban</b>	<b>————→</b>	<b>12732</b>
<b>2. Peri-urban / Slum</b>	<b>————→</b>	<b>13170</b>
<b>3. Rural</b>	<b>————→</b>	<b>13525</b>

## **Genderwise**

<b>1. Male</b>	<b>————→</b>	<b>19406</b>
<b>2. Female</b>	<b>————→</b>	<b>20023</b>

## ***STUDY POPULATION* : By Centre, residence and gender**

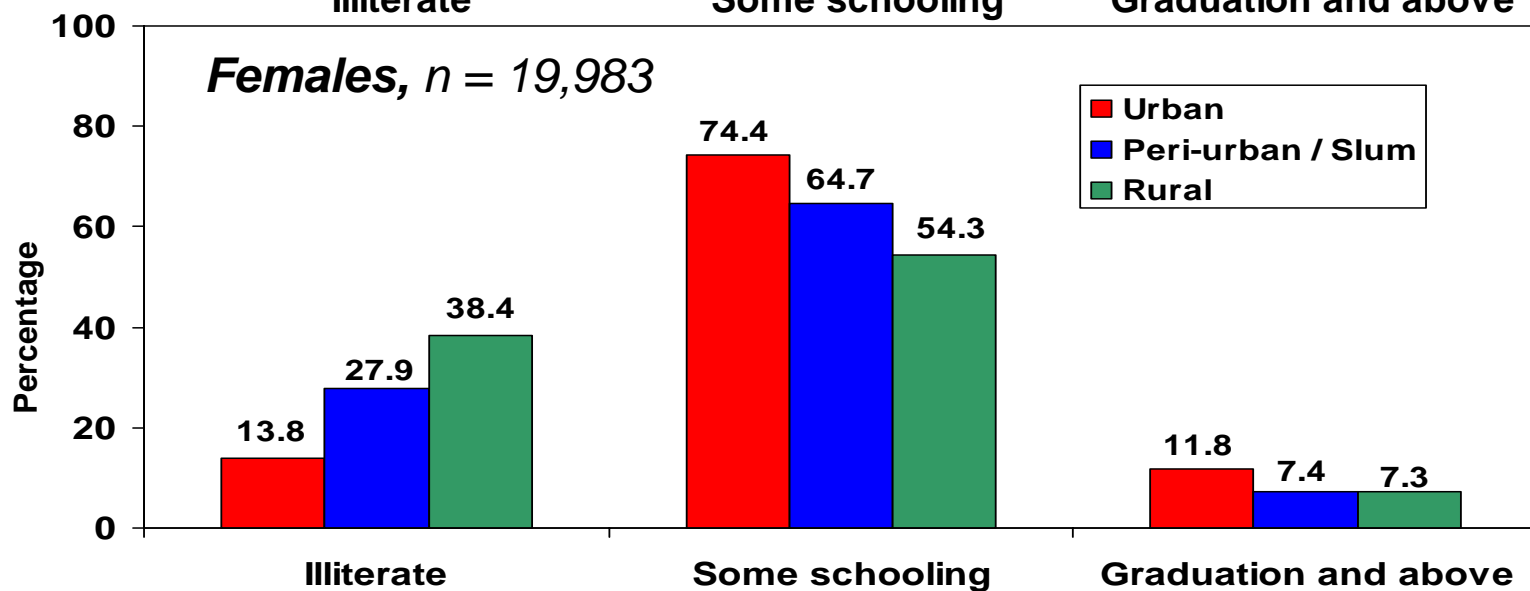
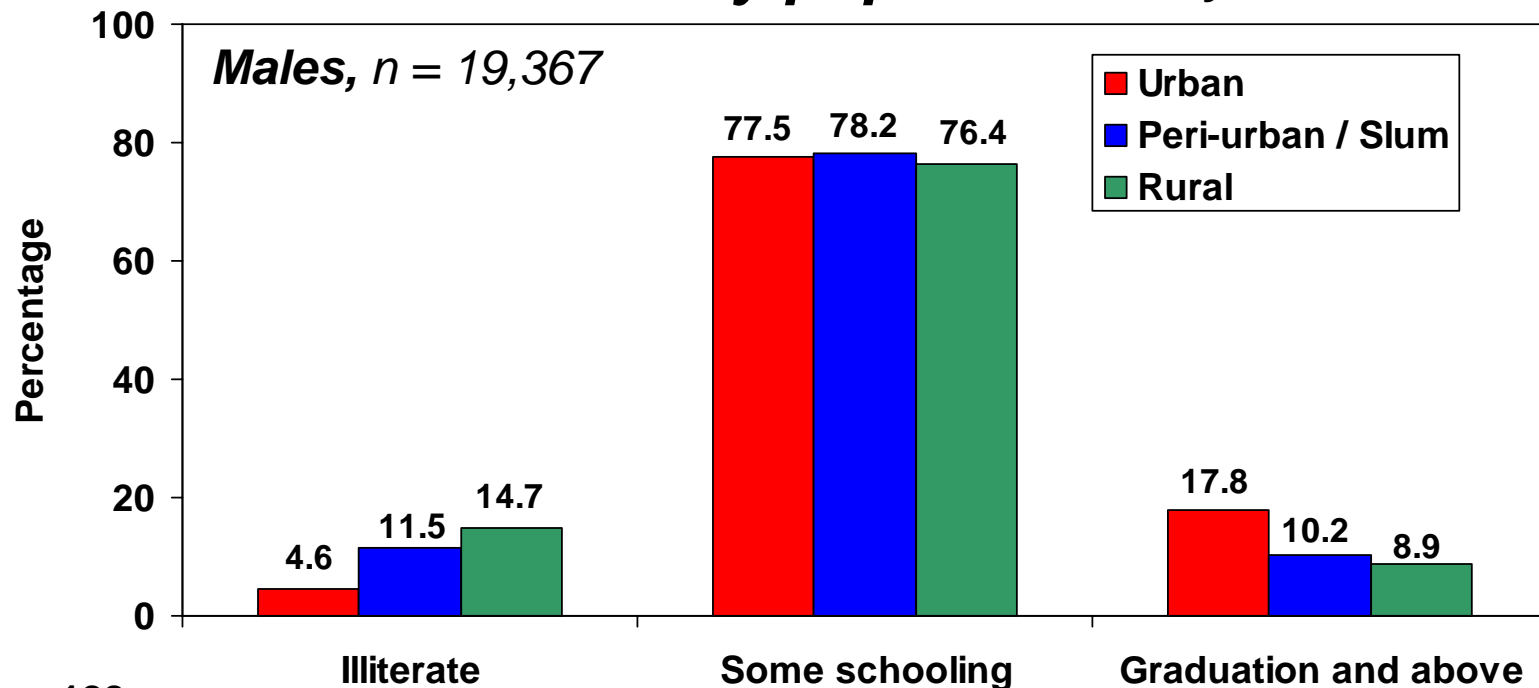
<b>Centre</b>	<b>Urban</b>		<b>Rural</b>		<b>Periurban / Slum</b>	
	<b>Male</b>	<b>Female</b>	<b>Male</b>	<b>Female</b>	<b>Male</b>	<b>Female</b>
<b>Ballabgarh</b>	<b>1266</b>	<b>1327</b>	<b>1360</b>	<b>1470</b>	<b>1260</b>	<b>1306</b>
<b>Chennai</b>	<b>1282</b>	<b>1284</b>	<b>1374</b>	<b>1338</b>	<b>1286</b>	<b>1283</b>
<b>Dibrugarh</b>	<b>1260</b>	<b>1293</b>	<b>1479</b>	<b>1457</b>	<b>1370</b>	<b>1535</b>
<b>Nagpur</b>	<b>1252</b>	<b>1261</b>	<b>1252</b>	<b>1256</b>	<b>1261</b>	<b>1379</b>
<b>Trivandrum</b>	<b>1254</b>	<b>1253</b>	<b>1206</b>	<b>1333</b>	<b>1243</b>	<b>1247</b>

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# STEP 1

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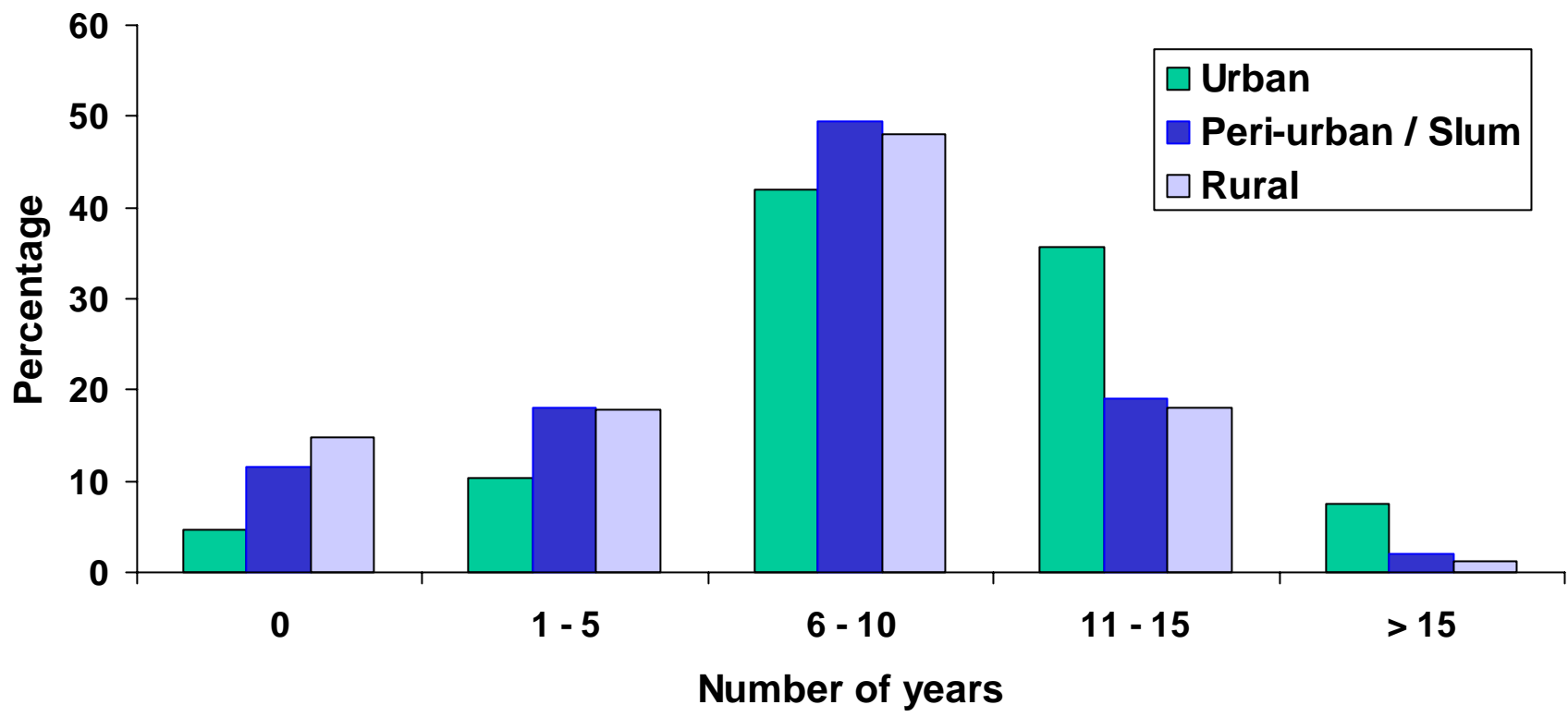
# Education level in the study population : By residence and gender



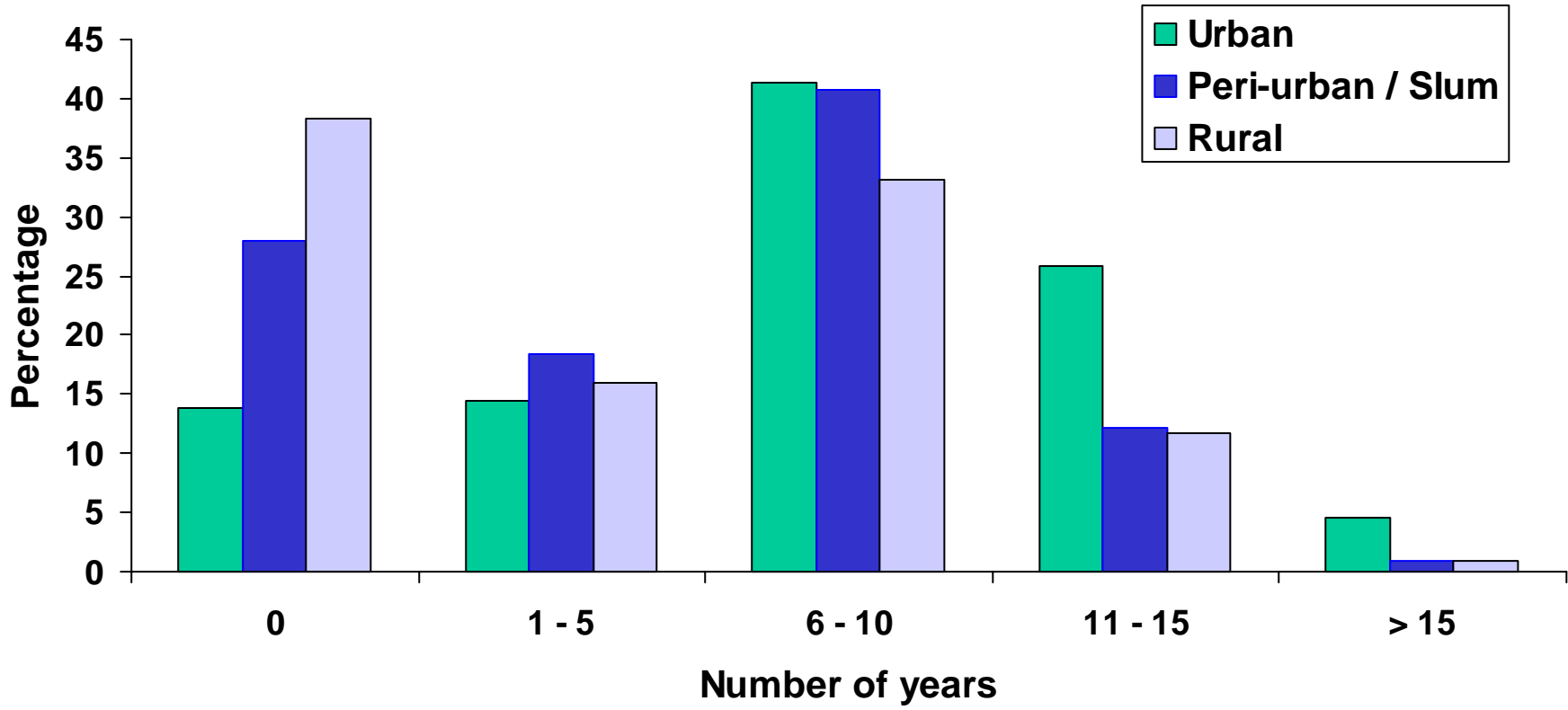
## *Years spent at school* : By residence and Gender

	<b>Urban</b>	<b>Peri-urban / Slum</b>	<b>Rural</b>
<b>Male</b>	10.68 ± 3.76	8.85 ± 3.44	8.75 ± 3.34
<b>Female</b>	9.78 ± 3.75	8.25 ± 3.33	8.37 ± 3.35
<b>Overall</b>	10.25 ± 3.78	8.58 ± 3.39	8.59 ± 3.35

# Years spent at school : Male



# Years spent at school : Female



***Employment categories in the study population : By residence***  
**n = 39,059**

<b>Occupation</b>	<b>Urban</b>	<b>Peri-urban / Slum</b>	<b>Rural</b>
Professional/Executive/Big business	3.5%	0.4%	0.4%
Clerical/medium business	14.9%	10.3%	6.9%
Self-employed/skilled	13.0%	14.1%	14.0%
Unskilled/landless labourer	8.1%	19.7%	27.4%
Student	9.6%	5.9%	6.4%
Homemaker	40.4%	37.9%	34.3%
Retired	5.6%	3.4%	2.3%
Unemployed (able to work)	3.3%	5.0%	5.5%
Unemployed (unable to work)	1.7%	3.5%	2.8%

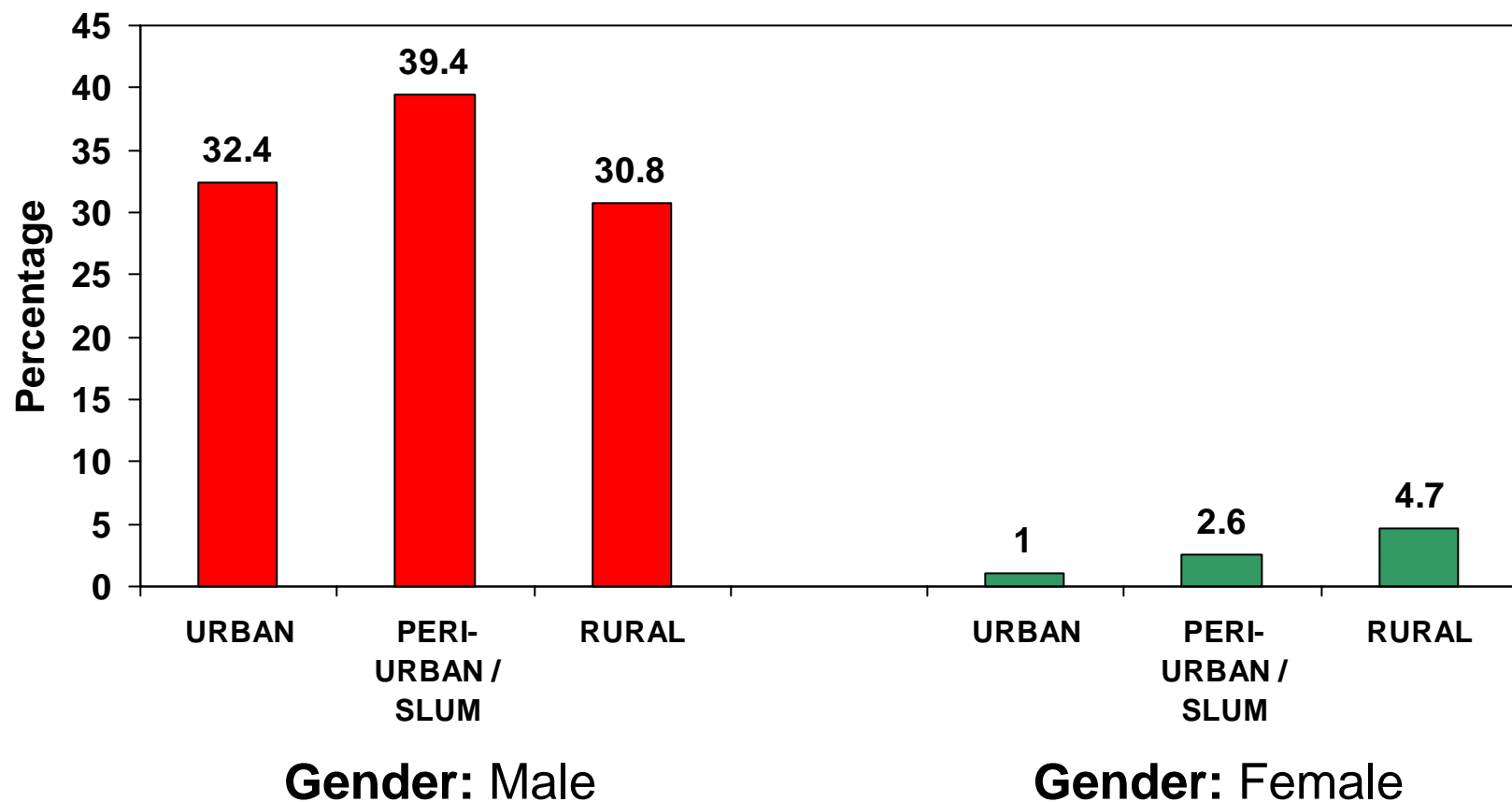
**Employment categories in the male population**  
**n = 19,115**

<b>Occupation</b>	<b>Urban</b>	<b>Peri-urban / Slum</b>	<b>Rural</b>
Professional/Executive/Big business	5.9%	0.6%	0.5%
Clerical/medium business	26.7%	18.4%	12.3%
Self-employed/skilled	23.3%	24.8%	24.4%
Unskilled/landless labourer	13.2%	29.2%	37.4%
Student	11.5%	7.5%	7.8%
Homemaker	1.4%	1.0%	0.7%
Retired	9.9%	6.1%	3.9%
Unemployed (able to work)	5.3%	7.6%	9.0%
Unemployed (unable to work)	2.7%	4.8%	3.8%

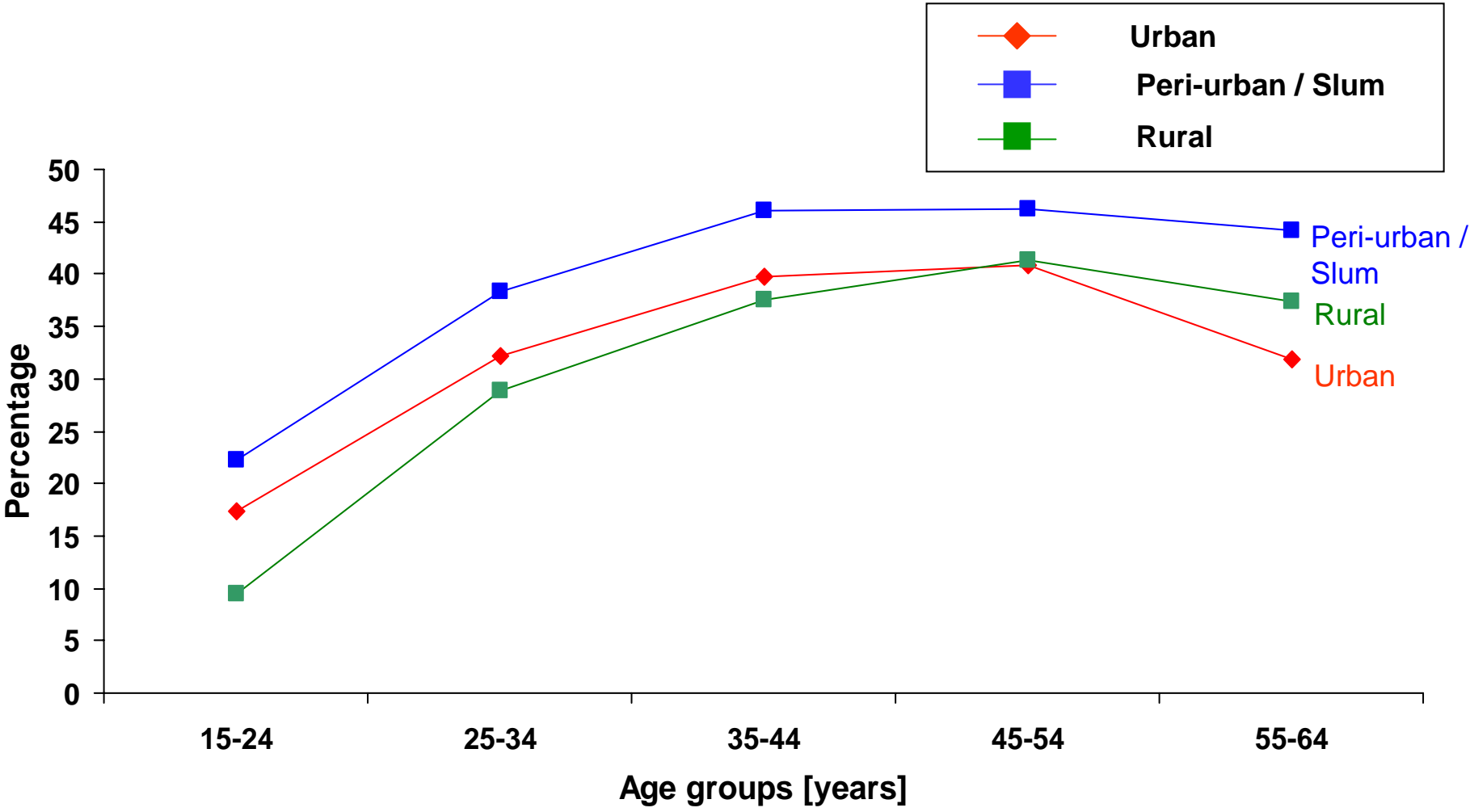
***Employment categories in the female population***  
**n = 19,944**

<b>Occupation</b>	<b>Urban</b>	<b>Peri-urban / Slum</b>	<b>Rural</b>
Professional/Executive/Big business	1.1%	0.2%	0.2%
Clerical/medium business	3.5%	3.6%	1.7%
Self-employed/skilled	3.0%	4.0%	3.9%
Unskilled/landless labourer	3.1%	10.7%	17.7%
Student	7.7%	4.3%	4.9%
Homemaker	78.0%	72.6%	66.7%
Retired	1.4%	0.9%	0.7%
Unemployed (able to work)	1.4%	2.5%	2.2%
Unemployed (unable to work)	0.8%	2.2%	1.8%

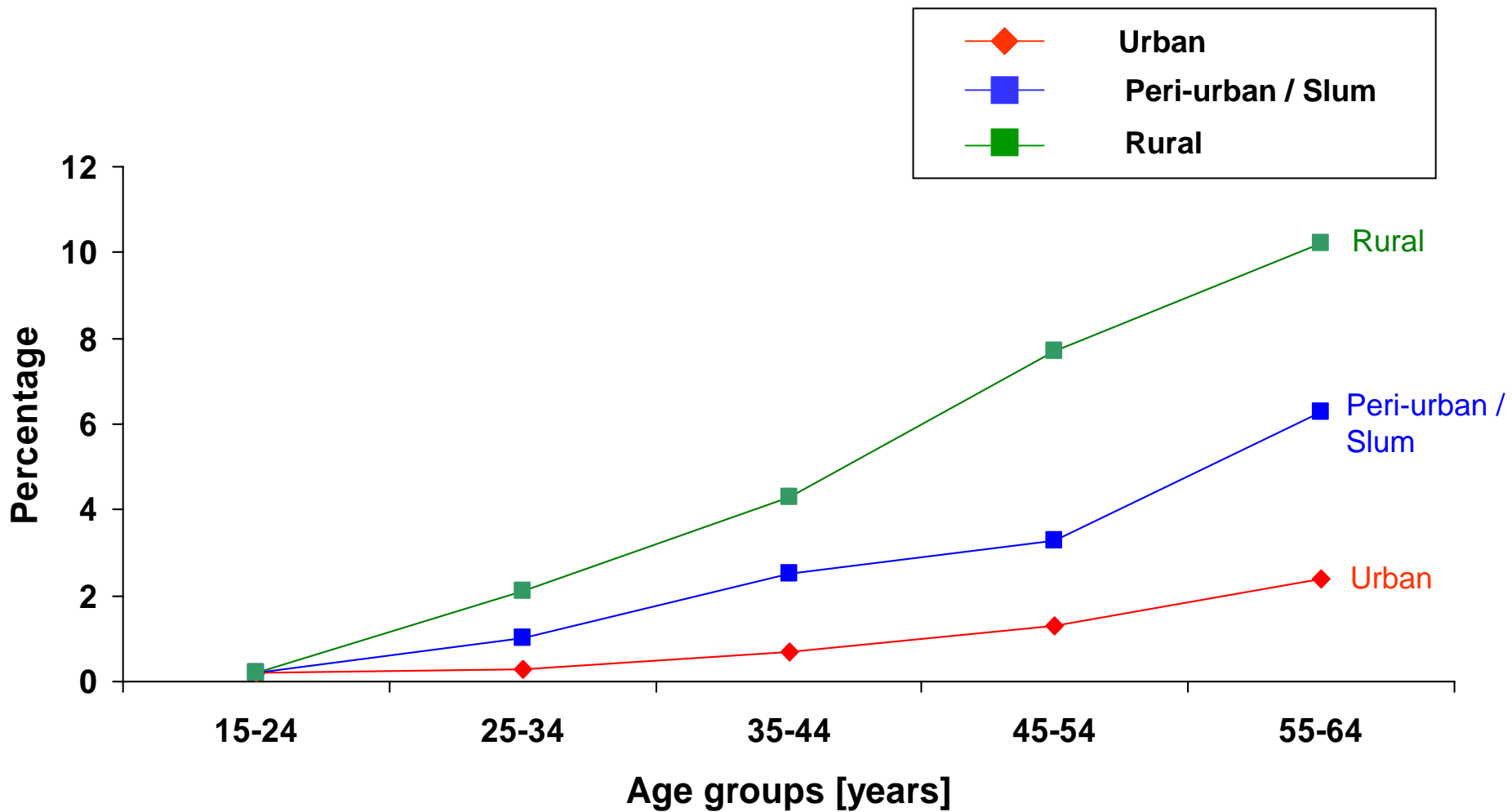
# PREVALENCE OF SMOKING - CURRENT USERS: By residence and Gender



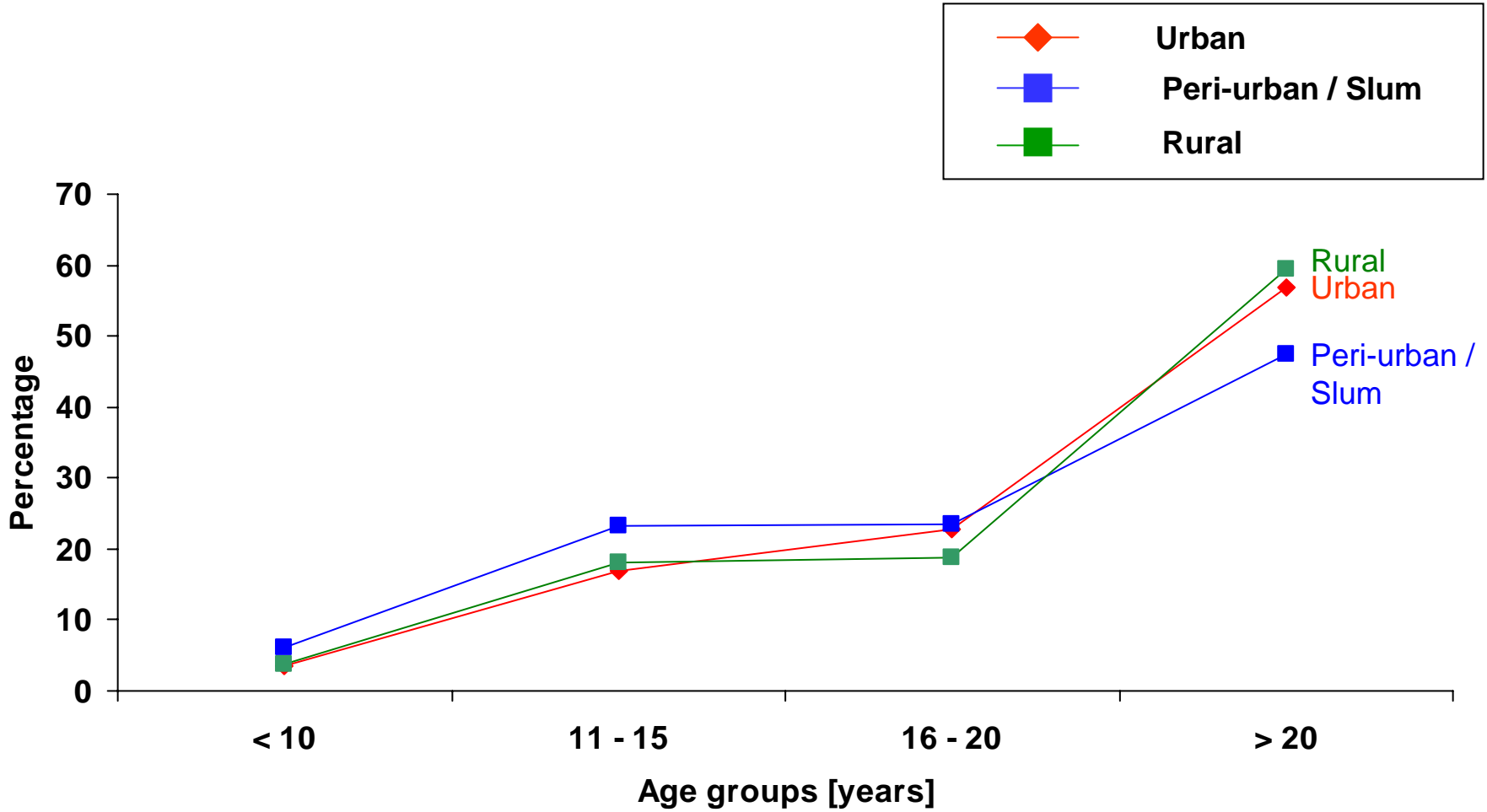
# AGEWISE PREVALENCE OF SMOKING - CURRENT USERS: Male



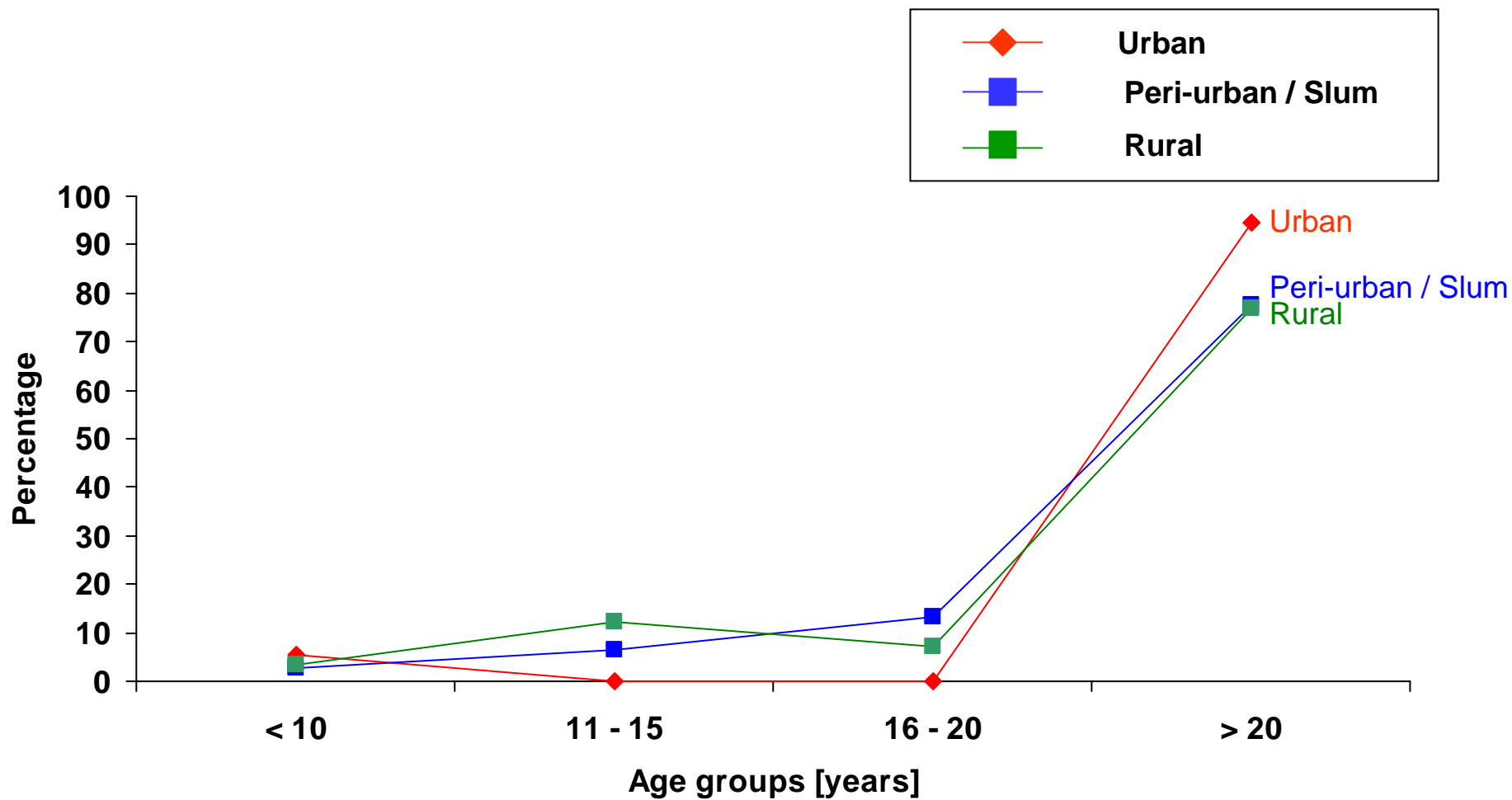
# AGEWISE PREVALENCE OF SMOKING - CURRENT USERS: Female



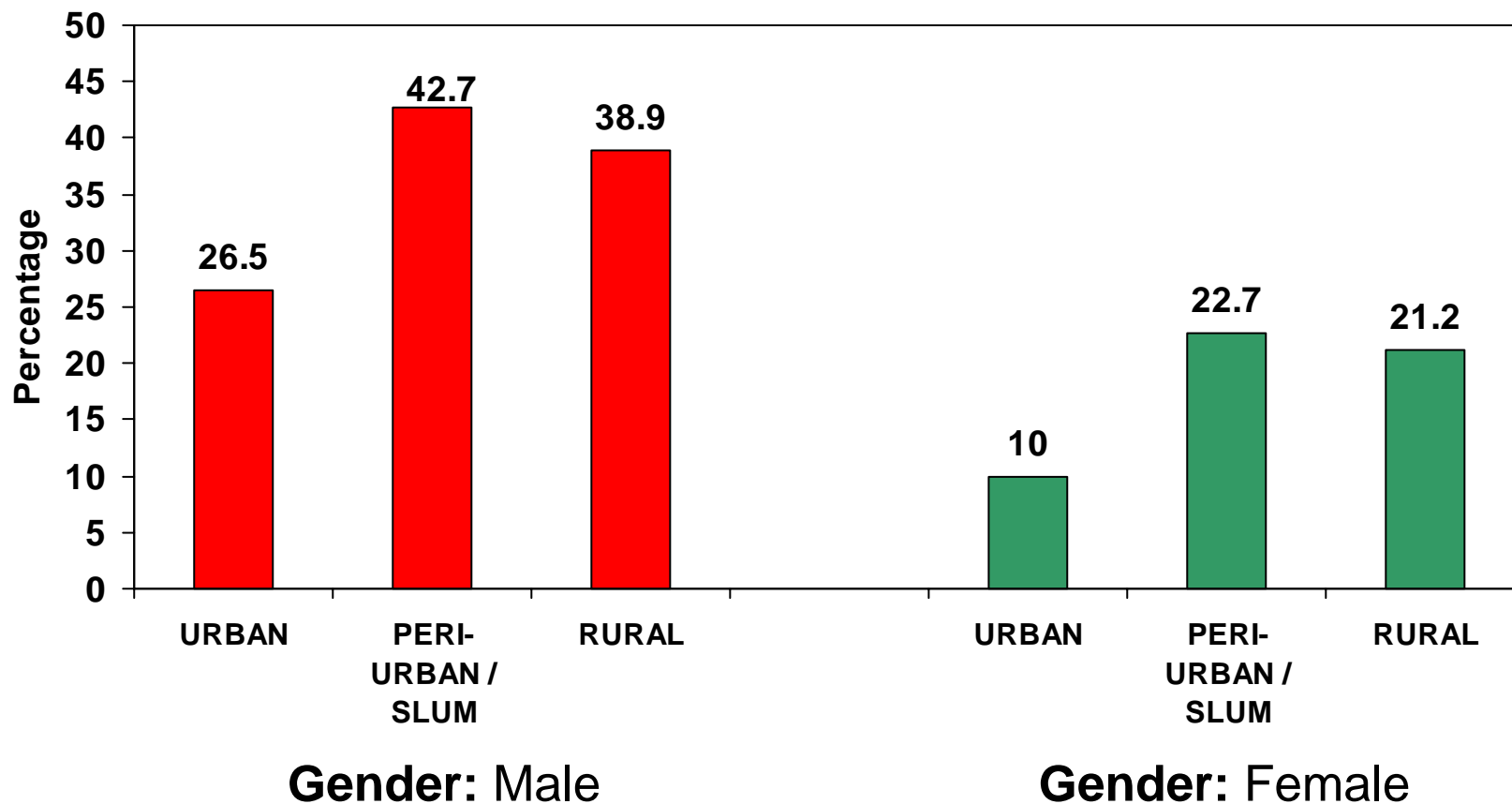
# AGE STARTED SMOKING - CURRENT USERS: Male



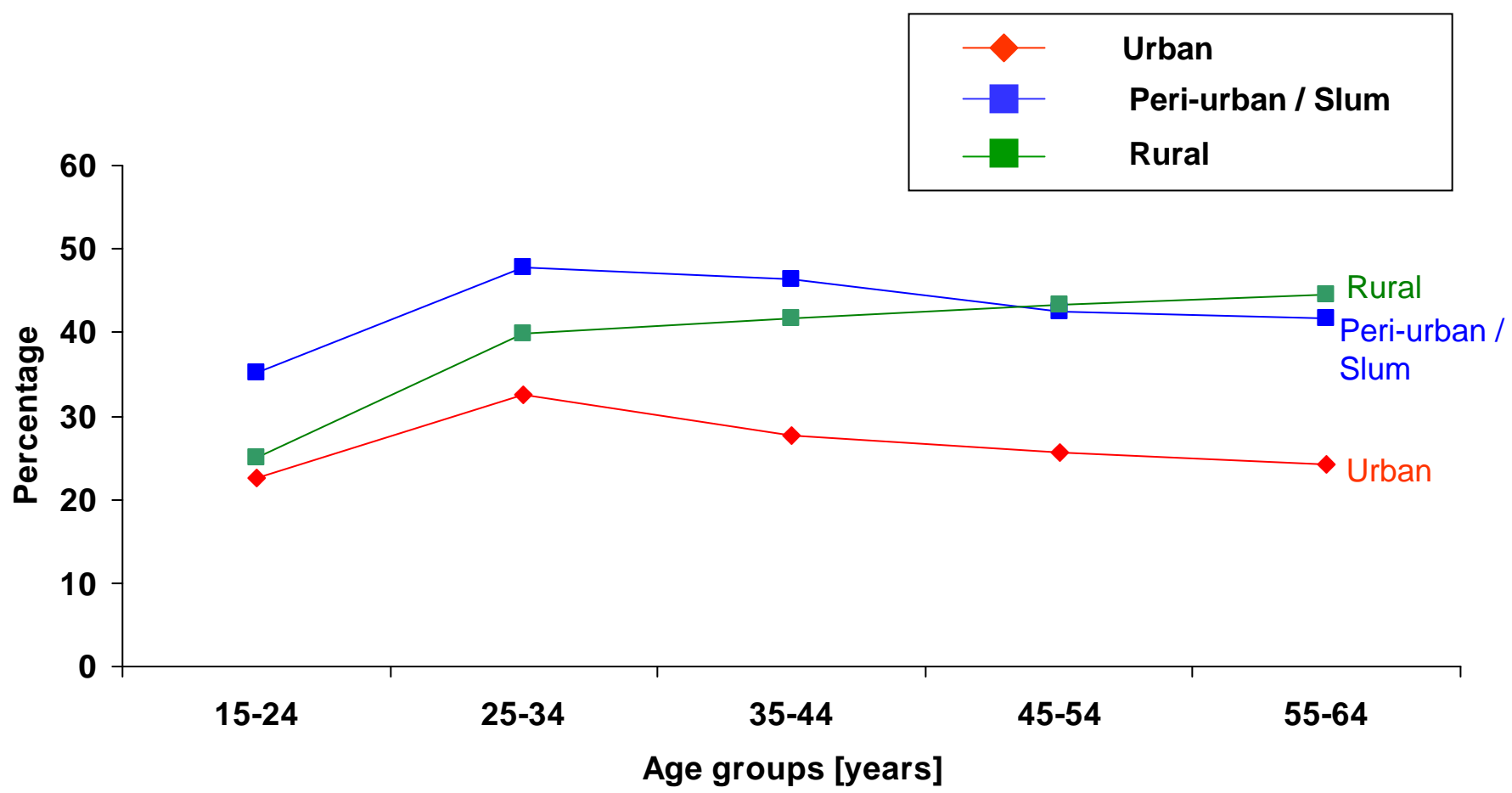
# AGE STARTED SMOKING - CURRENT USERS: Female



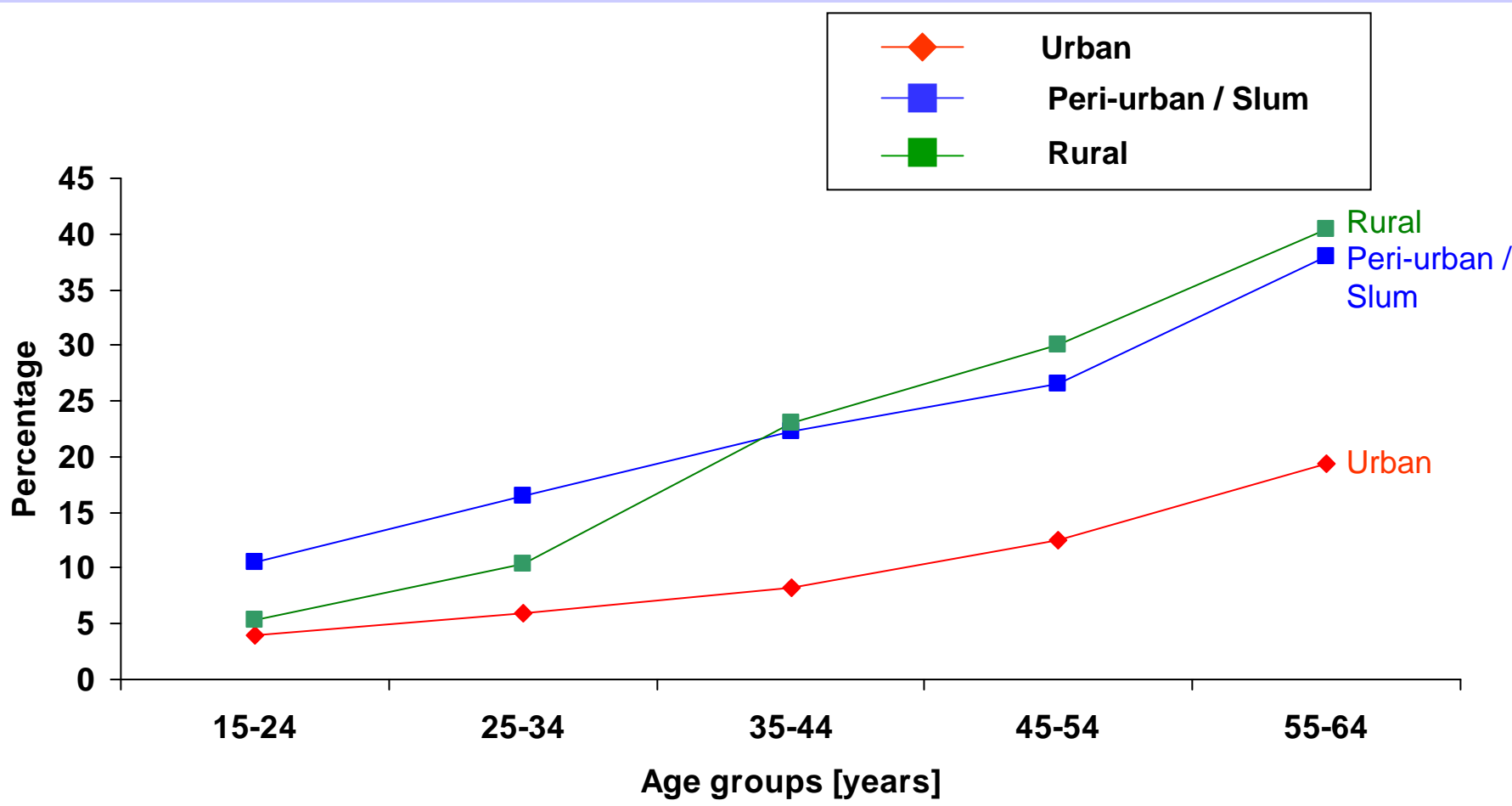
# PREVALENCE OF SMOKELESS TOBACCO USAGE - CURRENT USERS: By residence and Gender



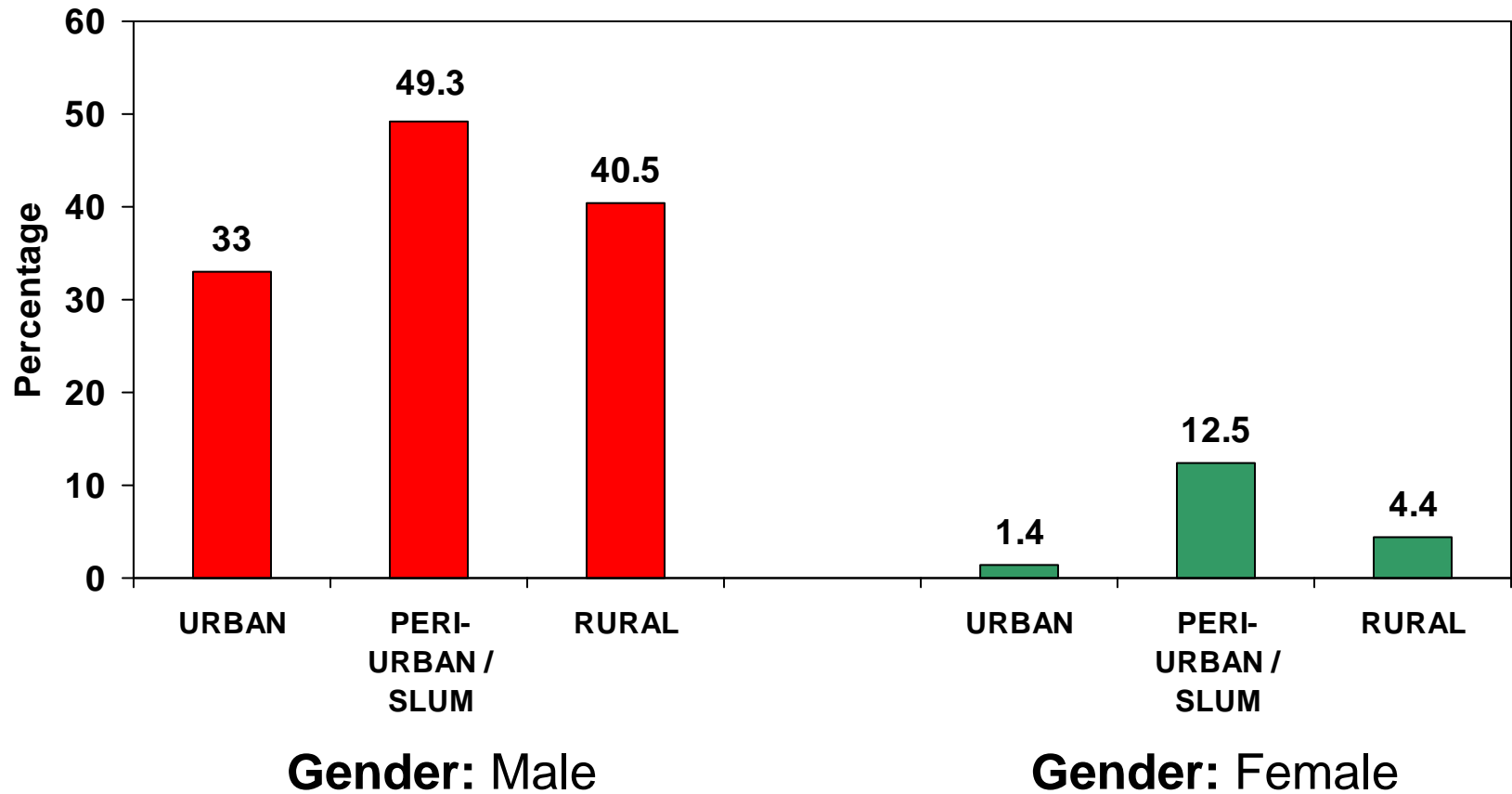
# AGEWISE PREVALENCE OF SMOKELESS TOBACCO USERS - CURRENT USERS: Male



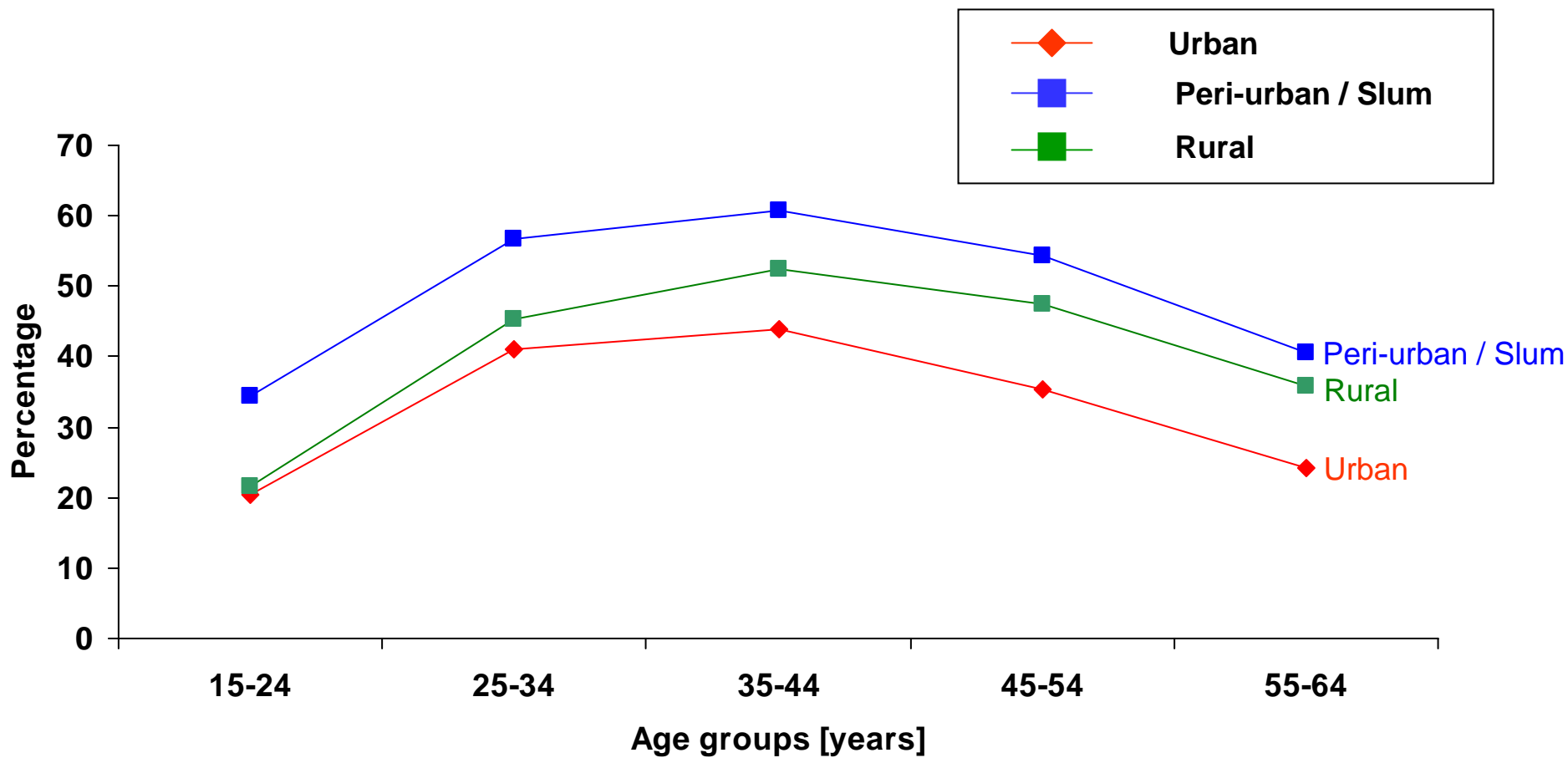
# AGEWISE PREVALENCE OF SMOKELESS TOBACCO USERS - CURRENT USERS: Female



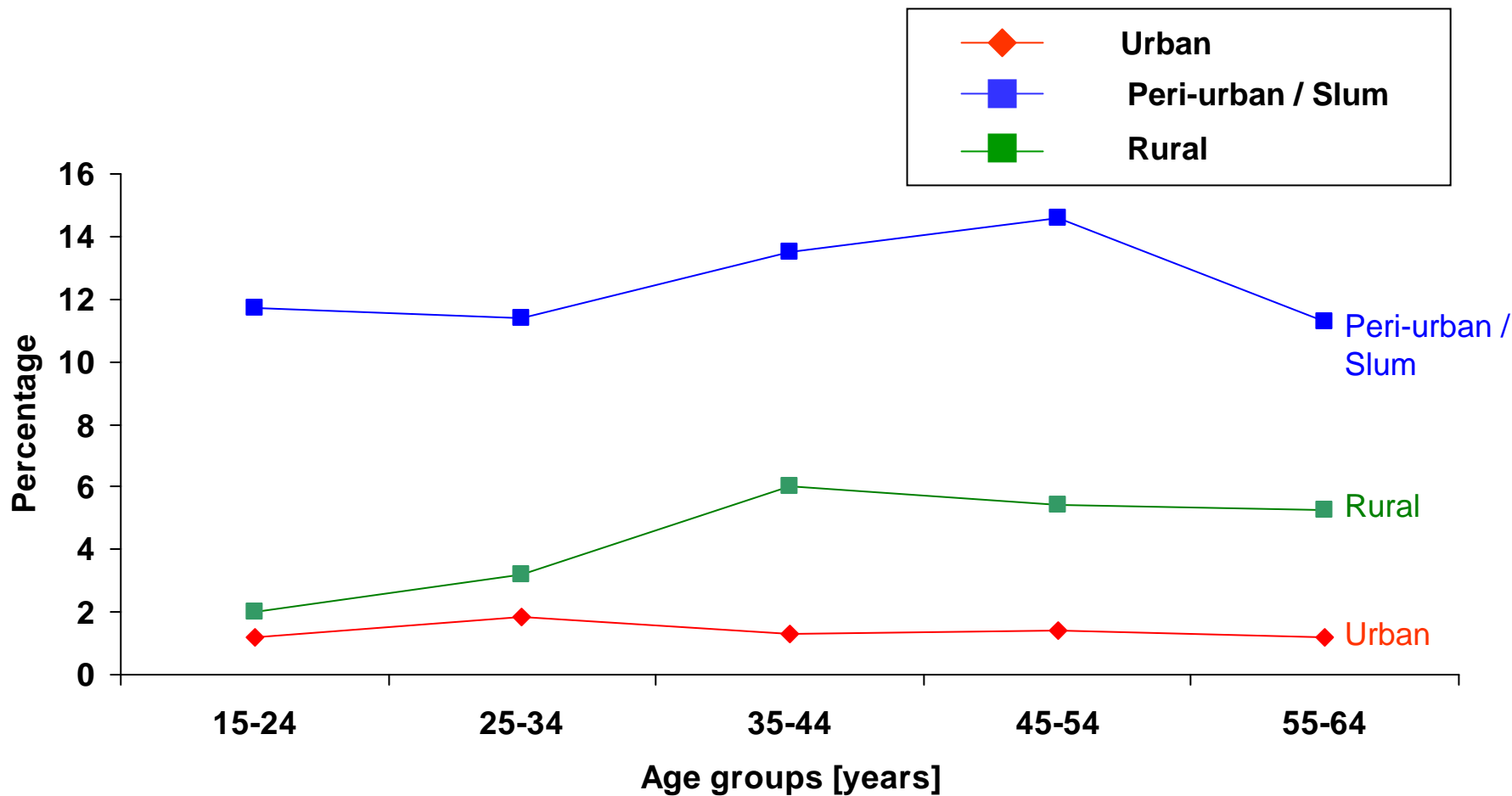
# PROPORTION OF ALCOHOL CONSUMERS - CURRENT USERS: By residence and Gender



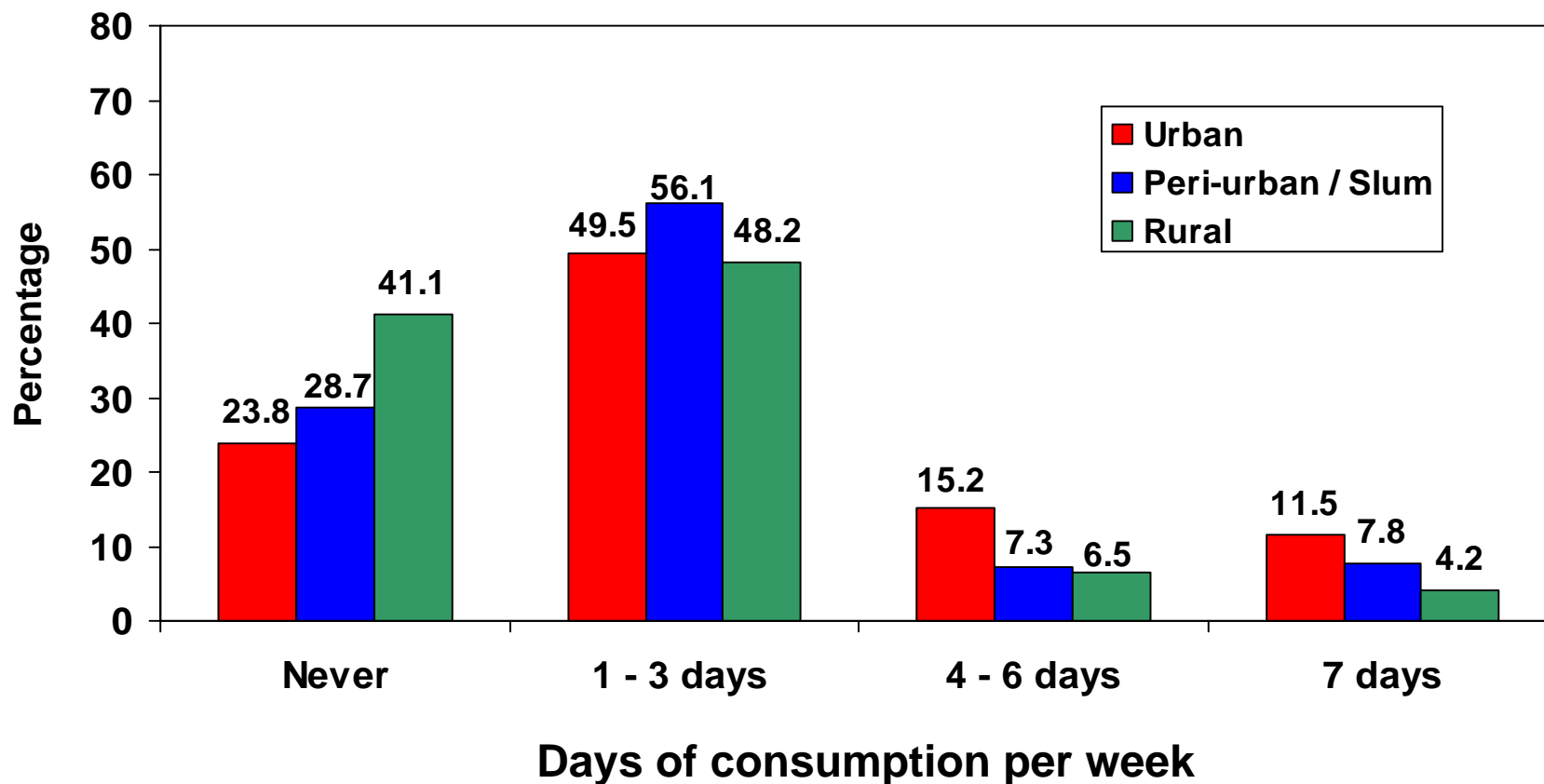
# AGEWISE PREVALENCE OF ALCOHOL CONSUMERS - CURRENT USERS: Male



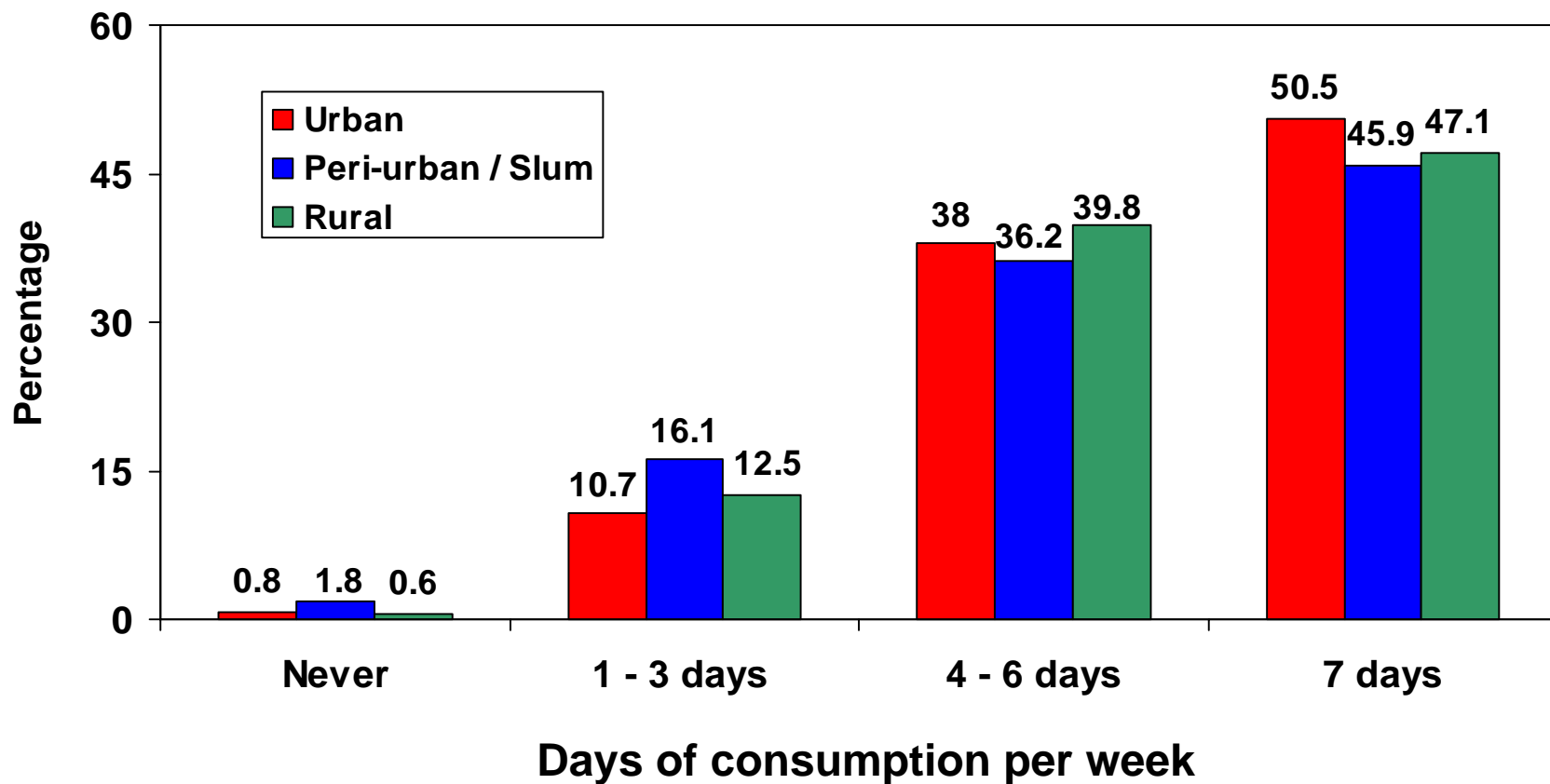
# AGEWISE PREVALENCE OF ALCOHOL CONSUMERS - CURRENT USERS: Female



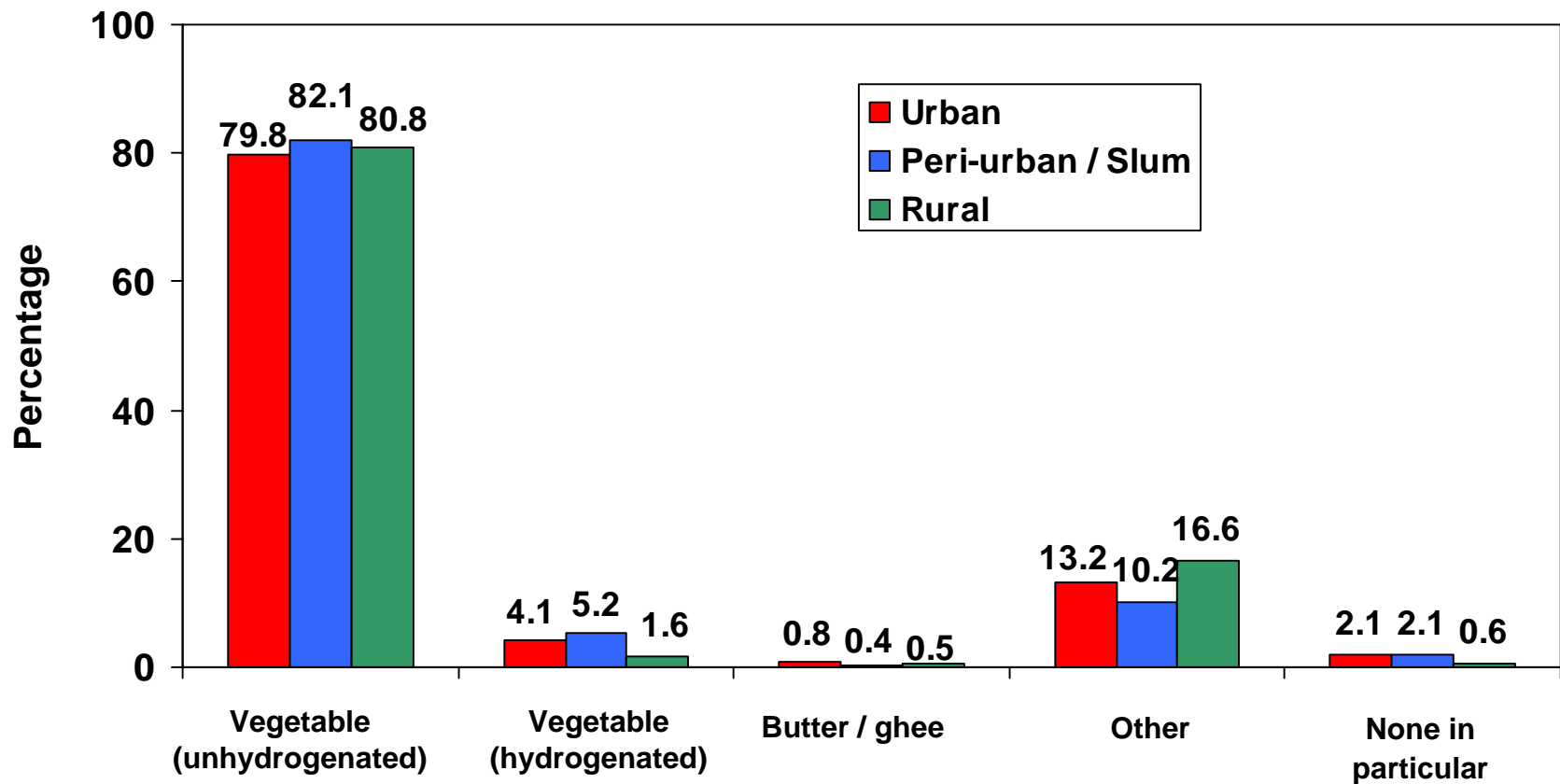
# FRUIT CONSUMPTION PATTERN : By residence



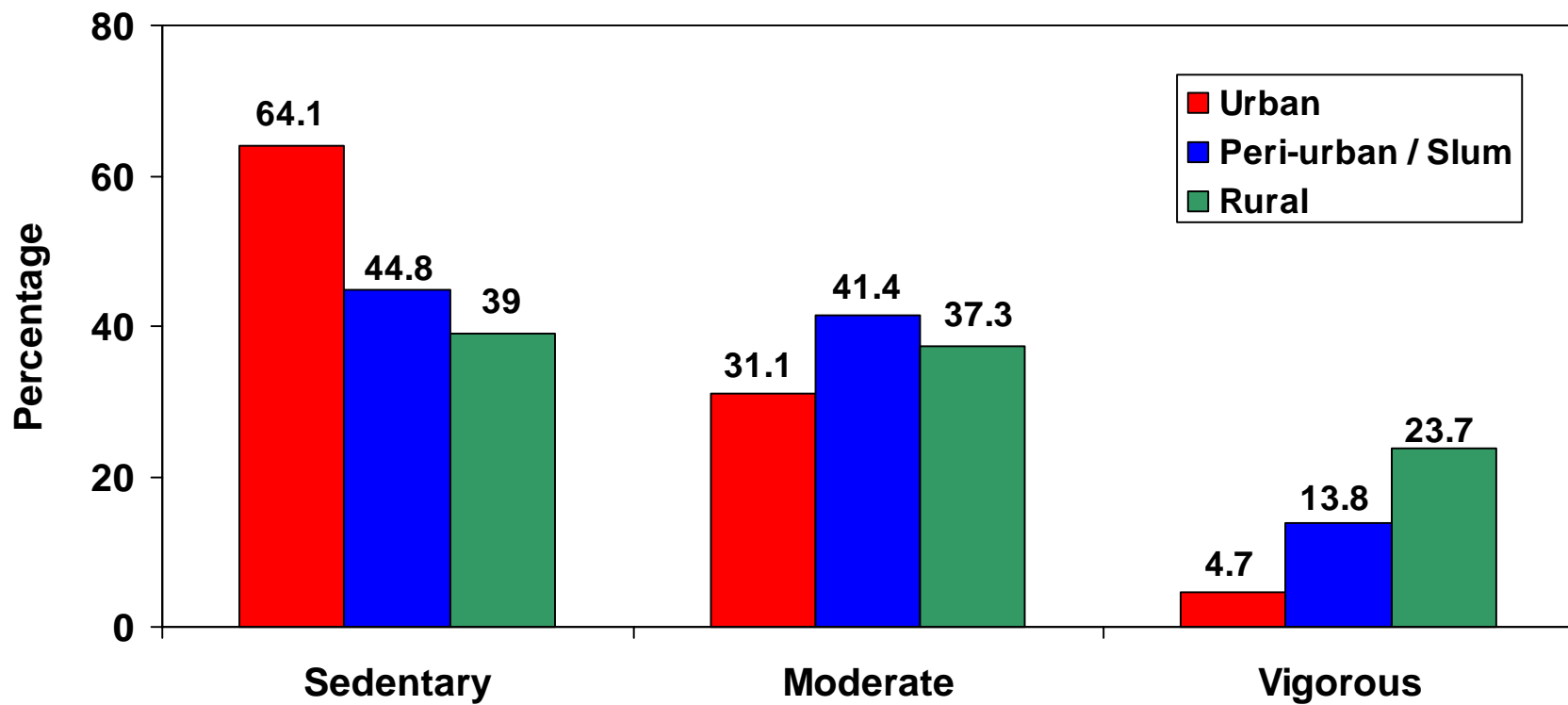
# VEGETABLE CONSUMPTION PATTERN : By residence



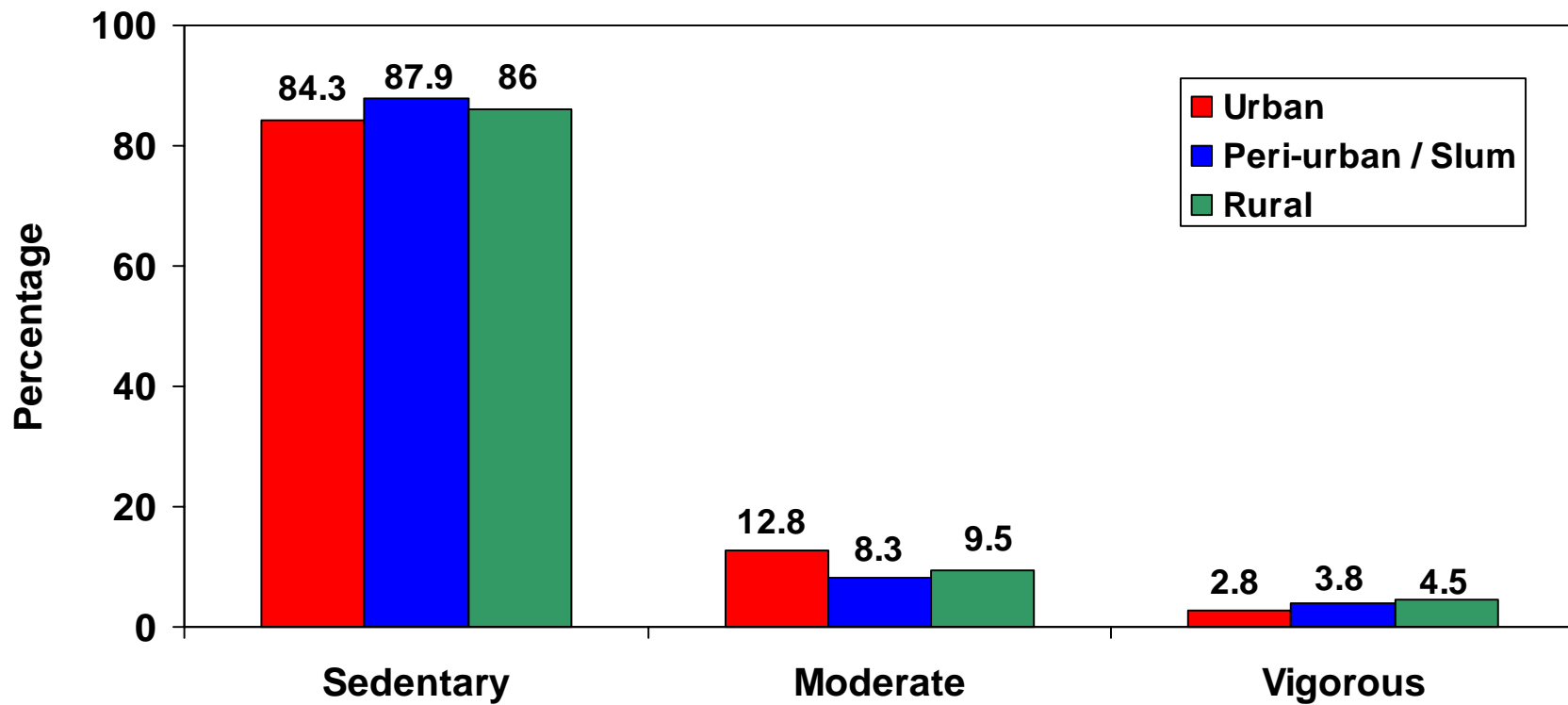
# OIL CONSUMPTION PATTERN : By residence



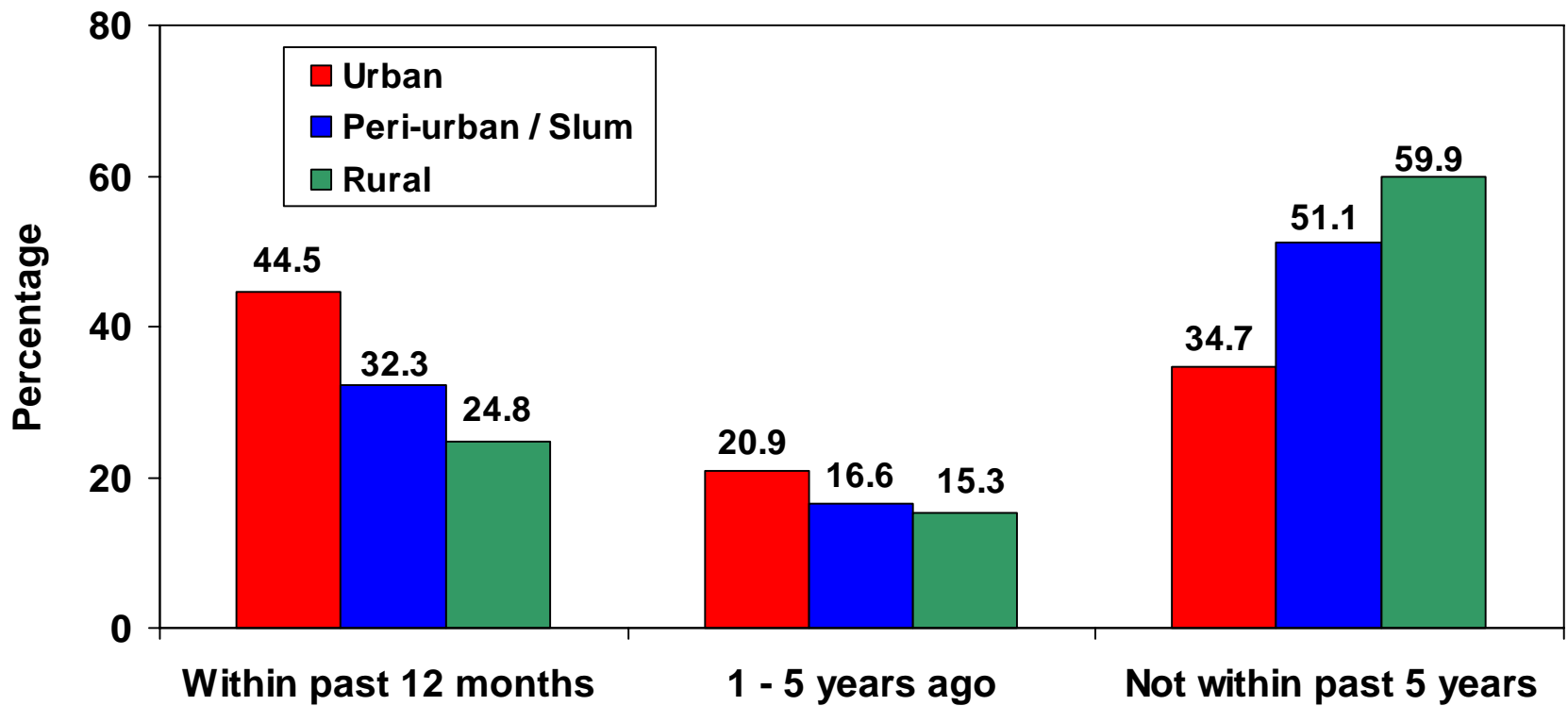
# JOB RELATED PHYSICAL ACTIVITY : By residence



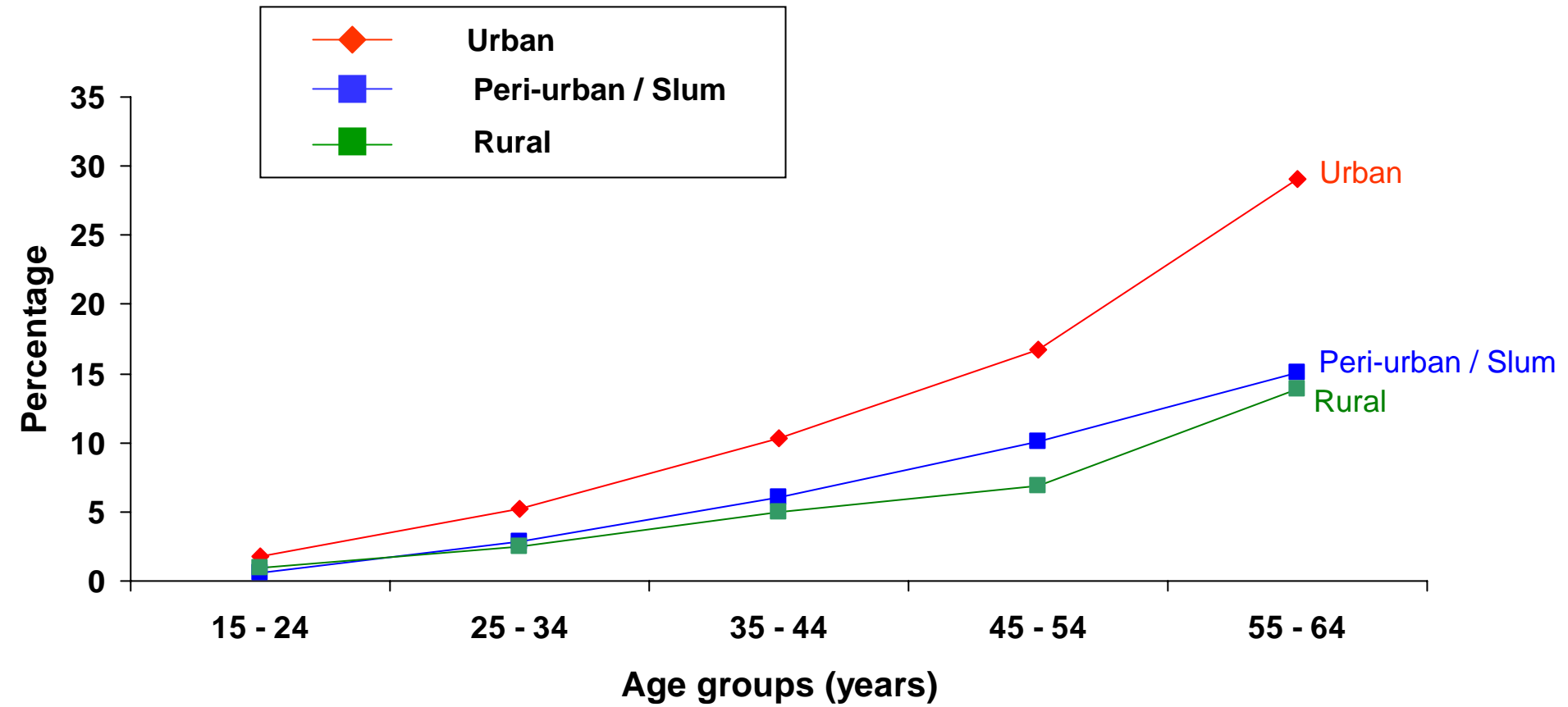
# LEISURE TIME PHYSICAL ACTIVITY : By residence



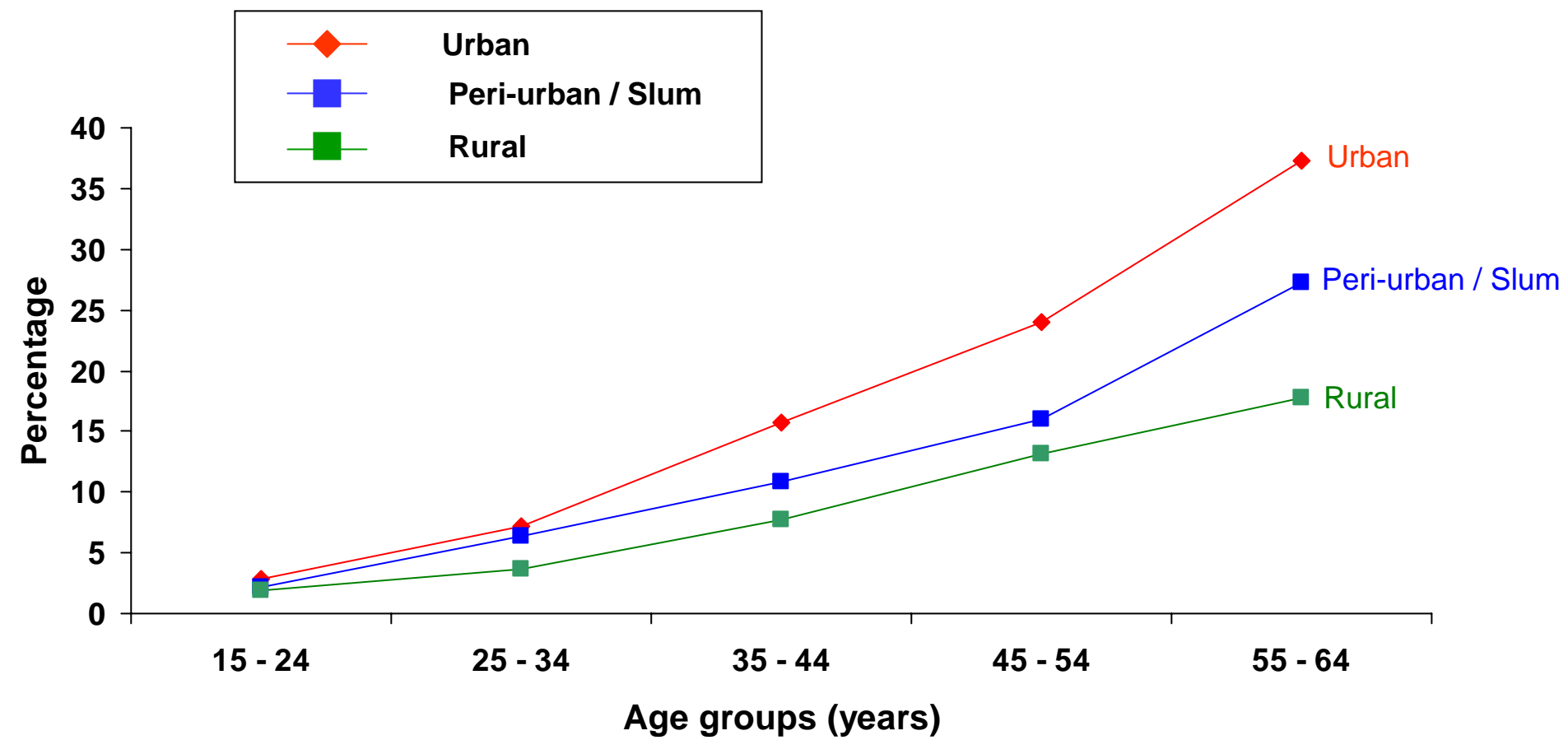
# HISTORY OF MEASUREMENT OF BLOOD PRESSURE : By residence



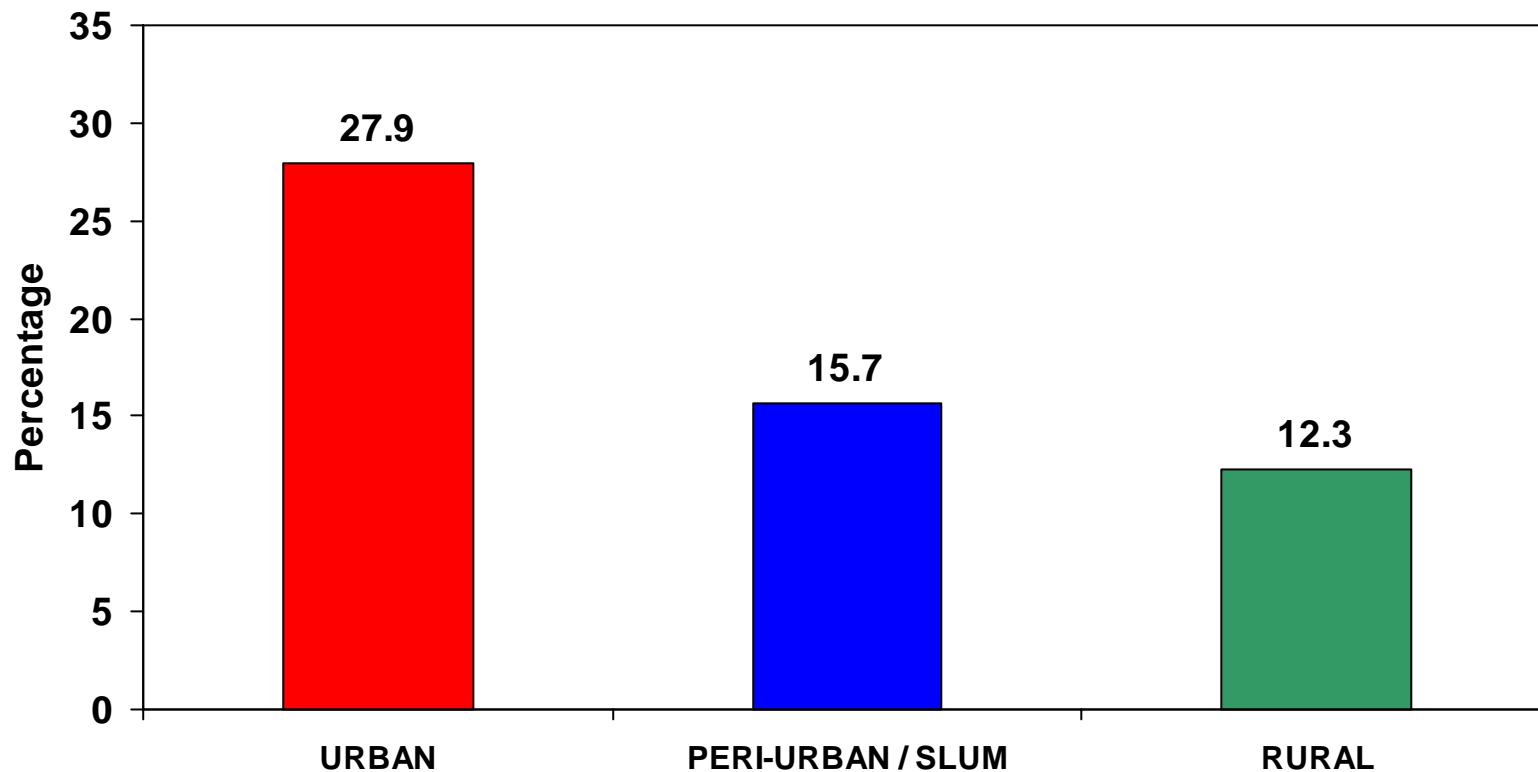
# AGEWISE PREVALENCE RATES OF HYPERTENSION[SELF REPORTED]: Male



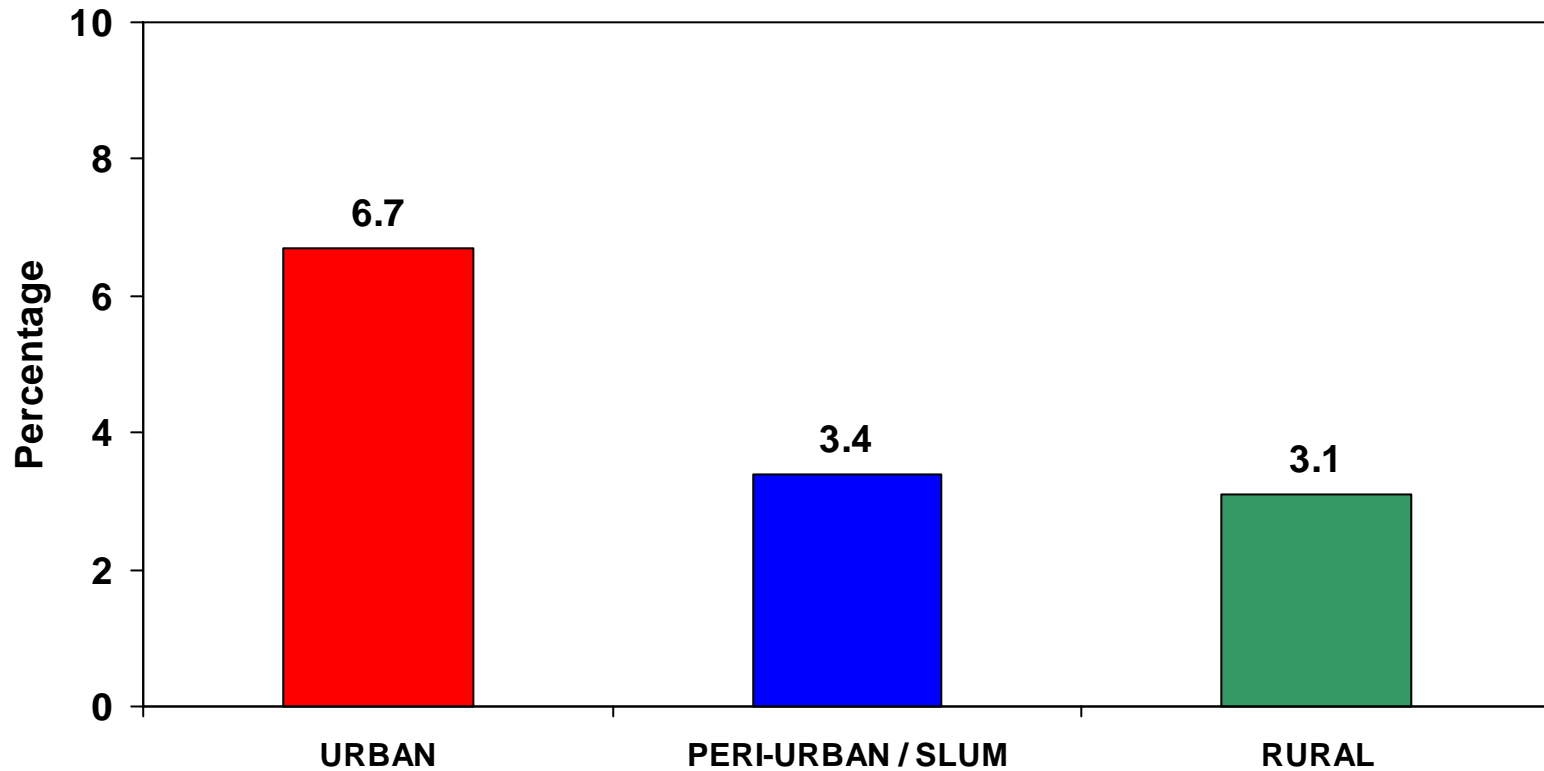
# AGEWISE PREVALENCE RATES OF HYPERTENSION[SELF REPORTED] : Female



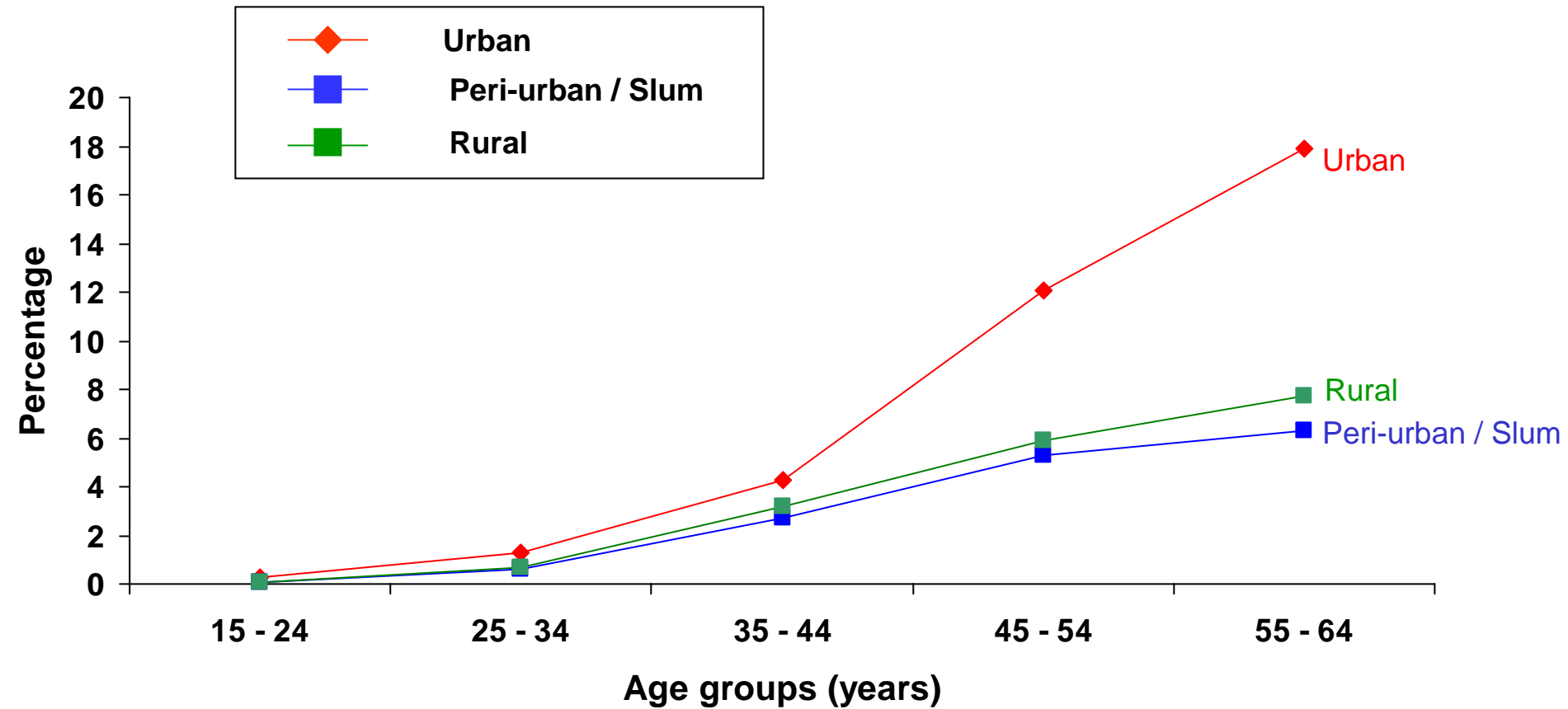
# HISTORY OF MEASUREMENT OF BLOOD SUGAR IN THE PAST 12 MONTHS: By residence



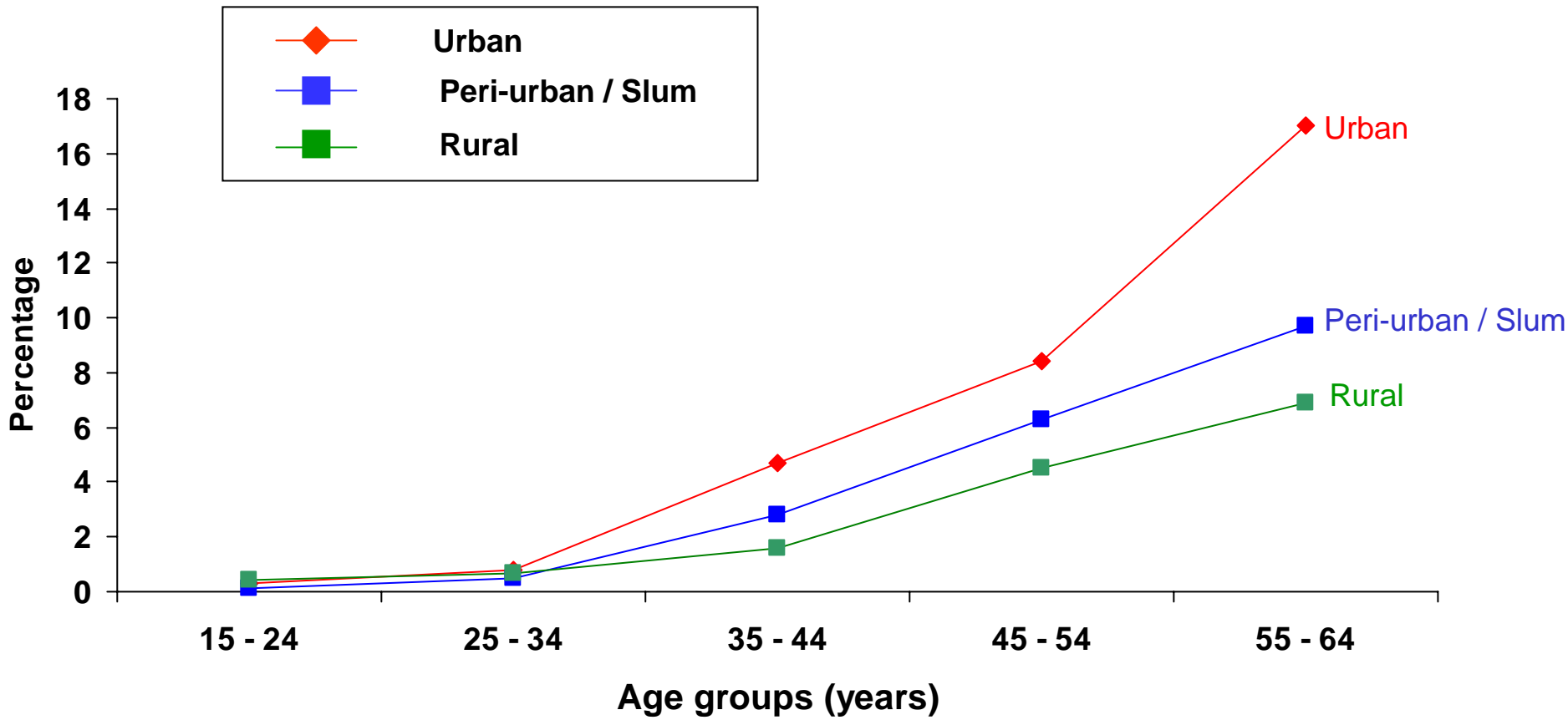
# PREVALENCE OF DIABETES [SELF REPORTED] : By residence



# AGEWISE PREVALENCE RATES OF DIABETES [SELF REPORTED] : Male

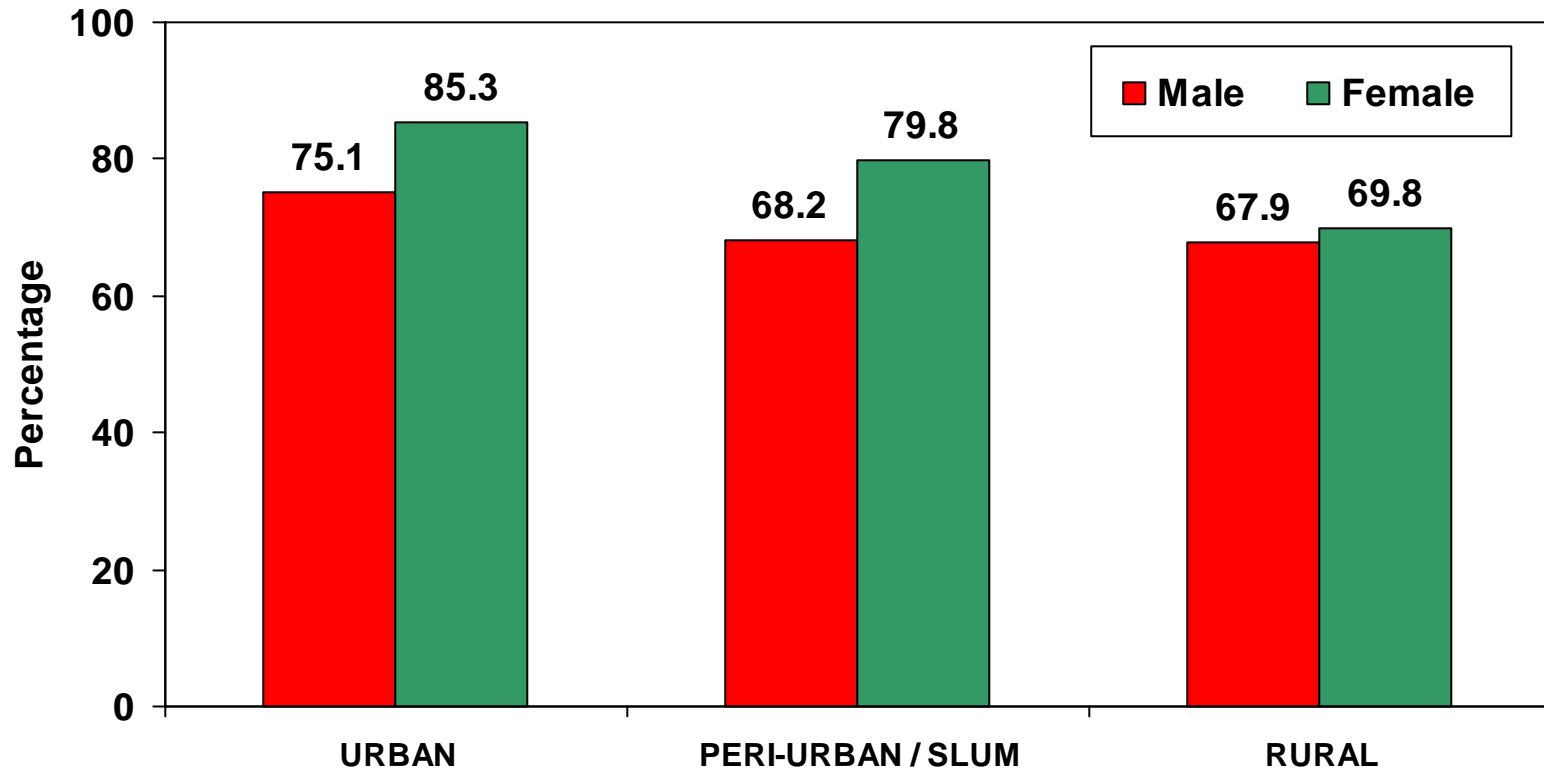


# AGEWISE PREVALENCE RATES OF DIABETES[SELF REPORTED] : Female



# TREATMENT OF DIABETES – among self reported diabetic subjects :

## By residence and gender



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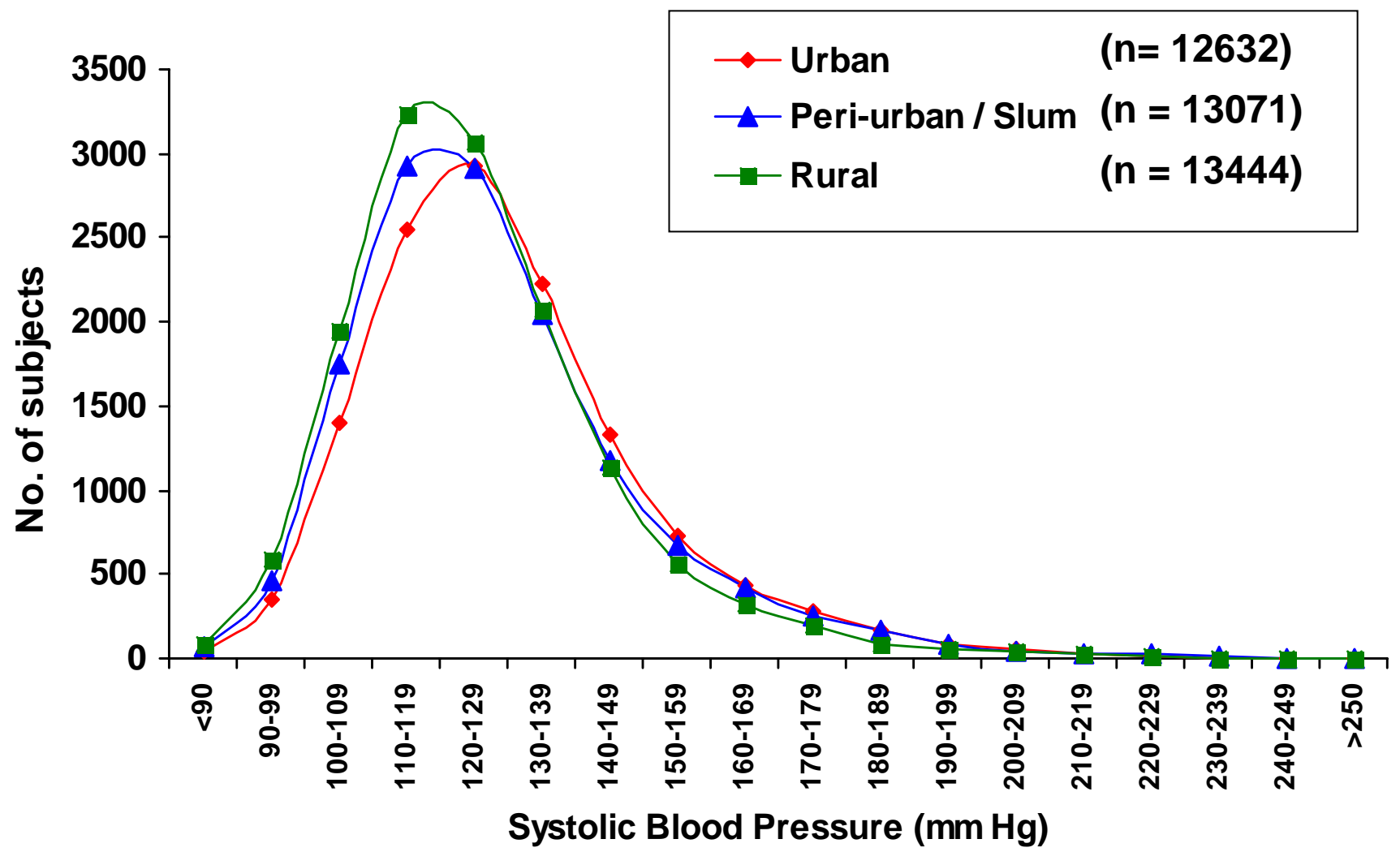
# STEP 2

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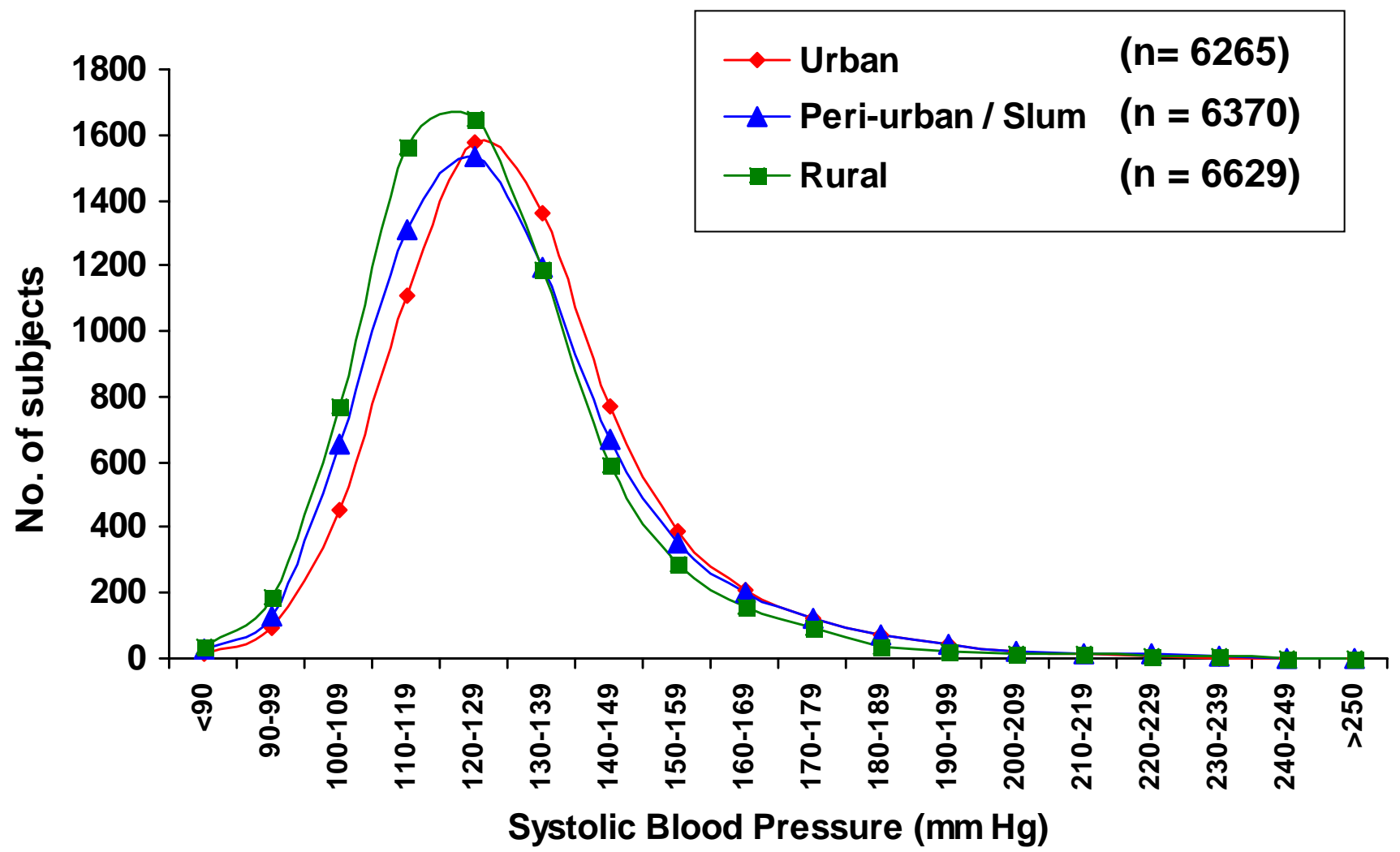
## ***Mean values of Blood pressure : By residence***

	<b>Urban</b>	<b>Peri-urban / Slum</b>	<b>Rural</b>
<b>Systolic blood pressure</b>	129 ± 21	128 ± 21	125 ± 19
<b>Diastolic blood pressure</b>	80 ± 12	79 ± 12	77 ± 12

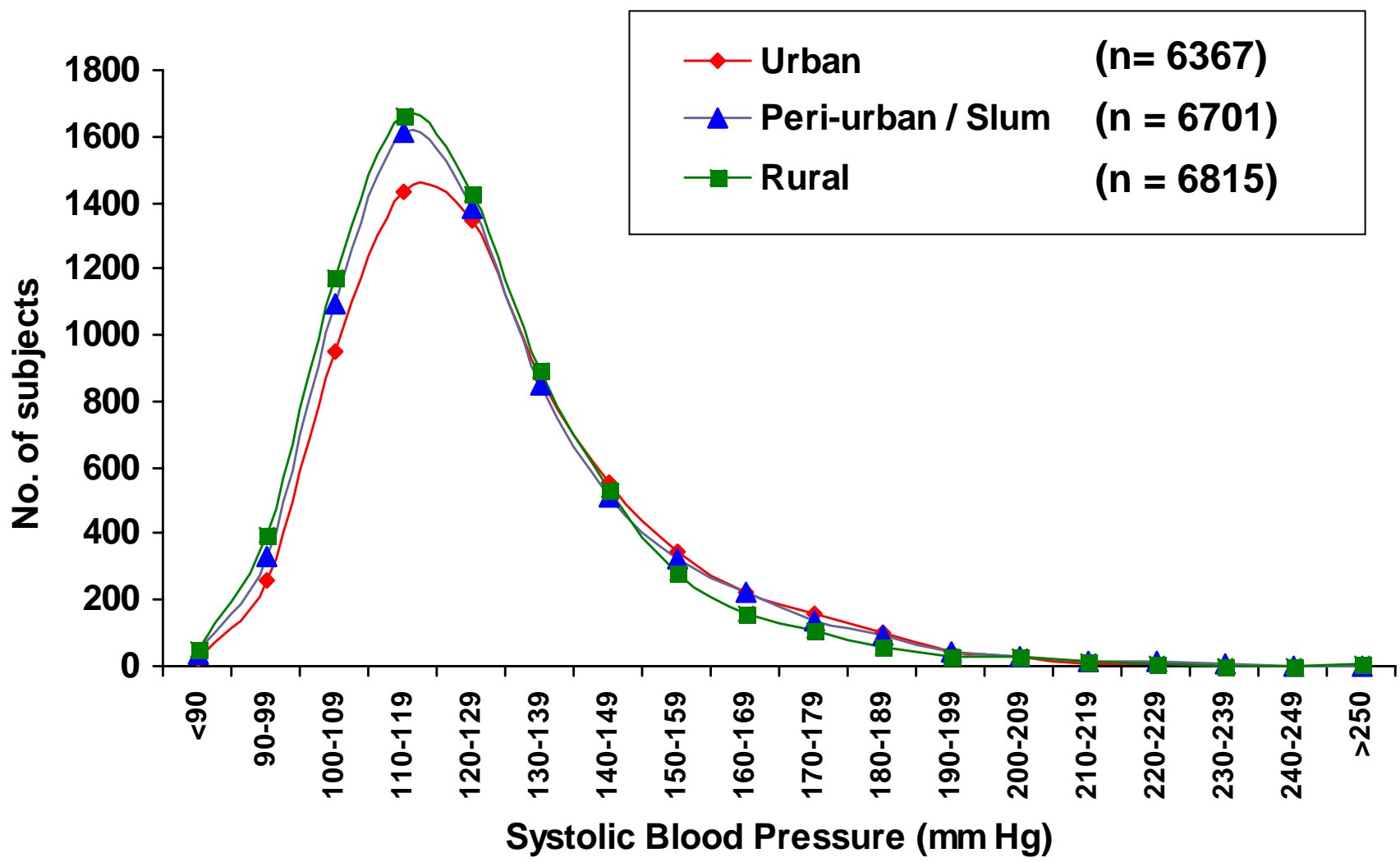
# DISTRIBUTION OF SYSTOLIC BLOOD PRESSURE : By residence



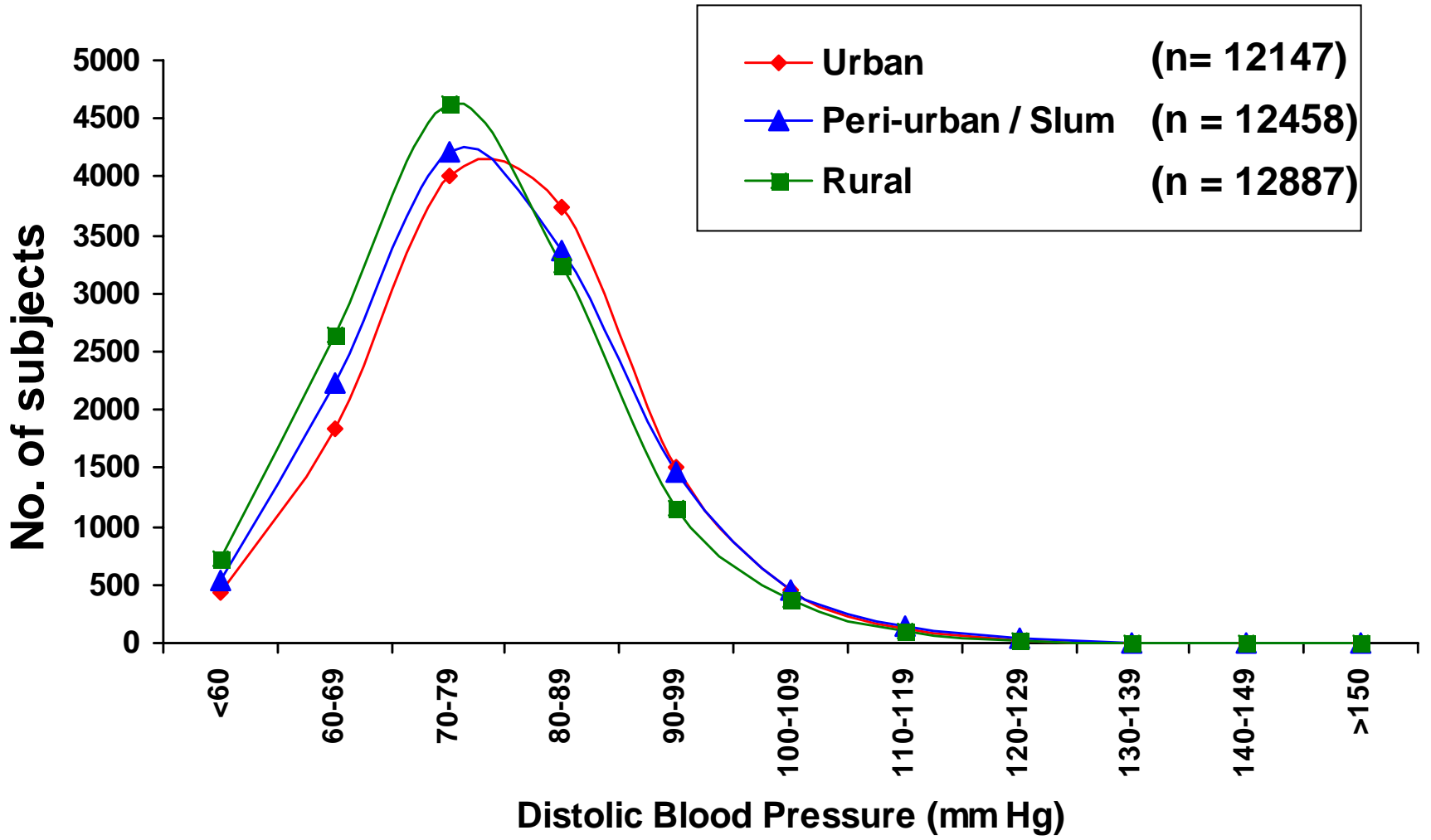
# DISTRIBUTION OF SYSTOLIC BLOOD PRESSURE : Male



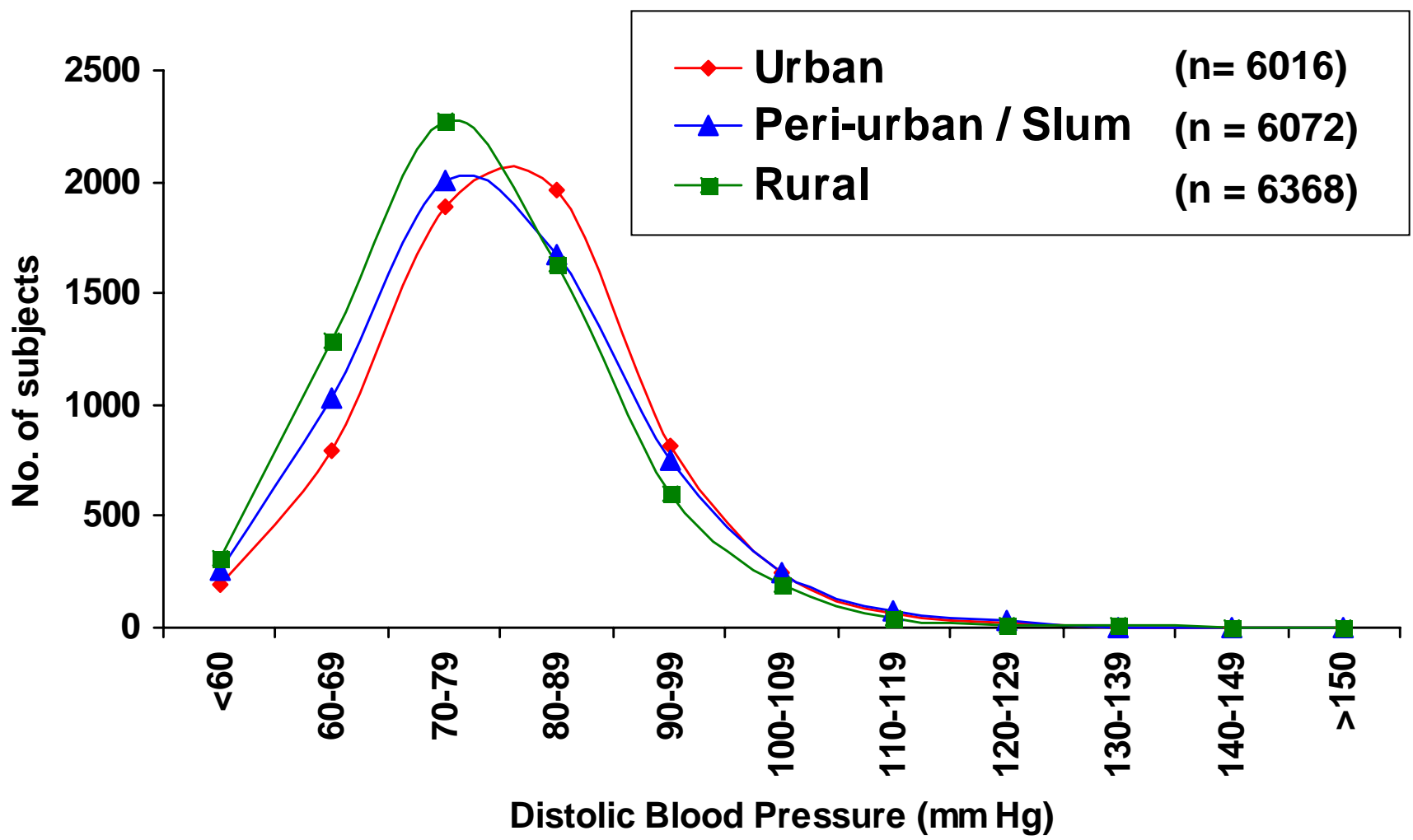
# DISTRIBUTION OF SYSTOLIC BLOOD PRESSURE : Female



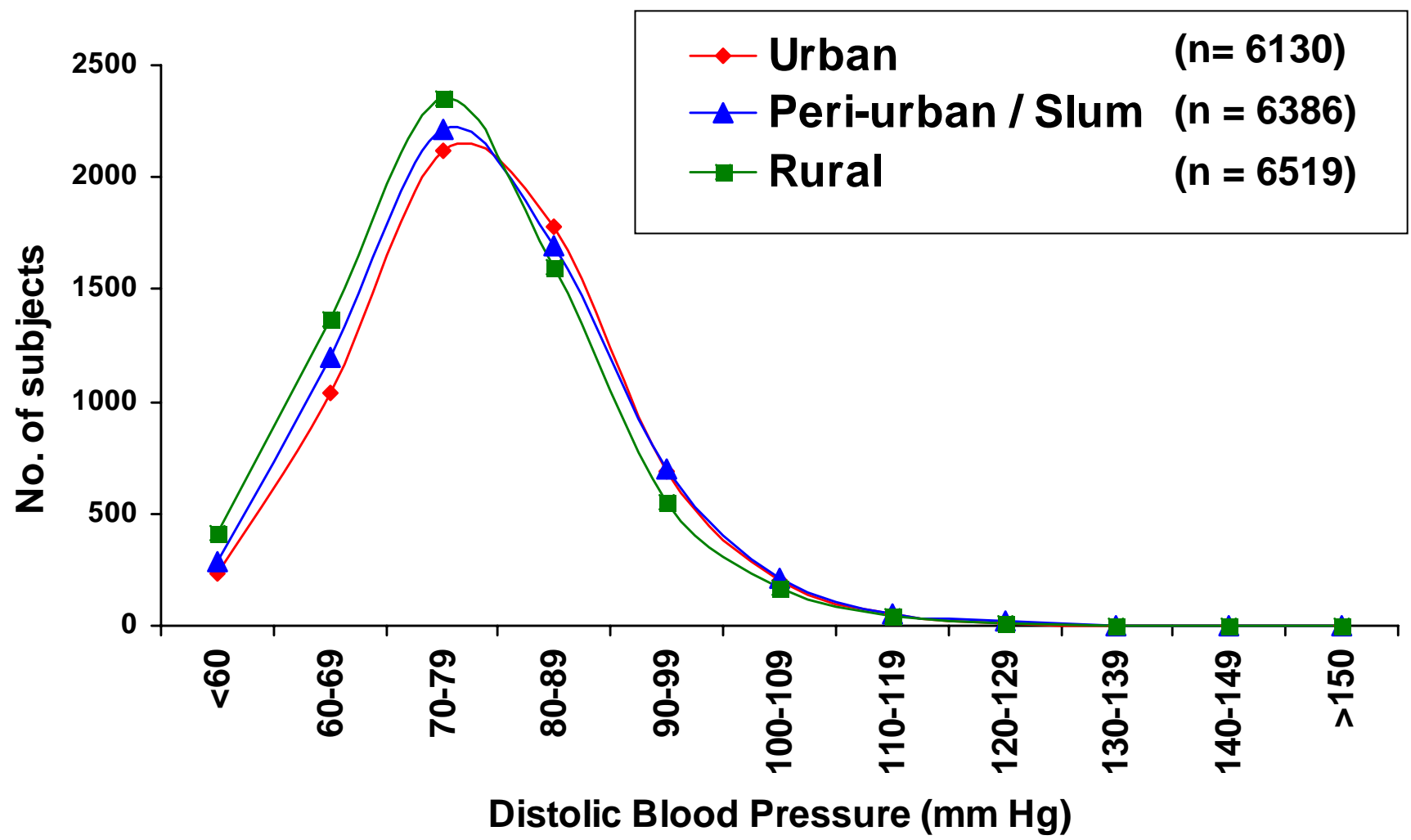
# DISTRIBUTION OF DIASTOLIC BLOOD PRESSURE : By residence



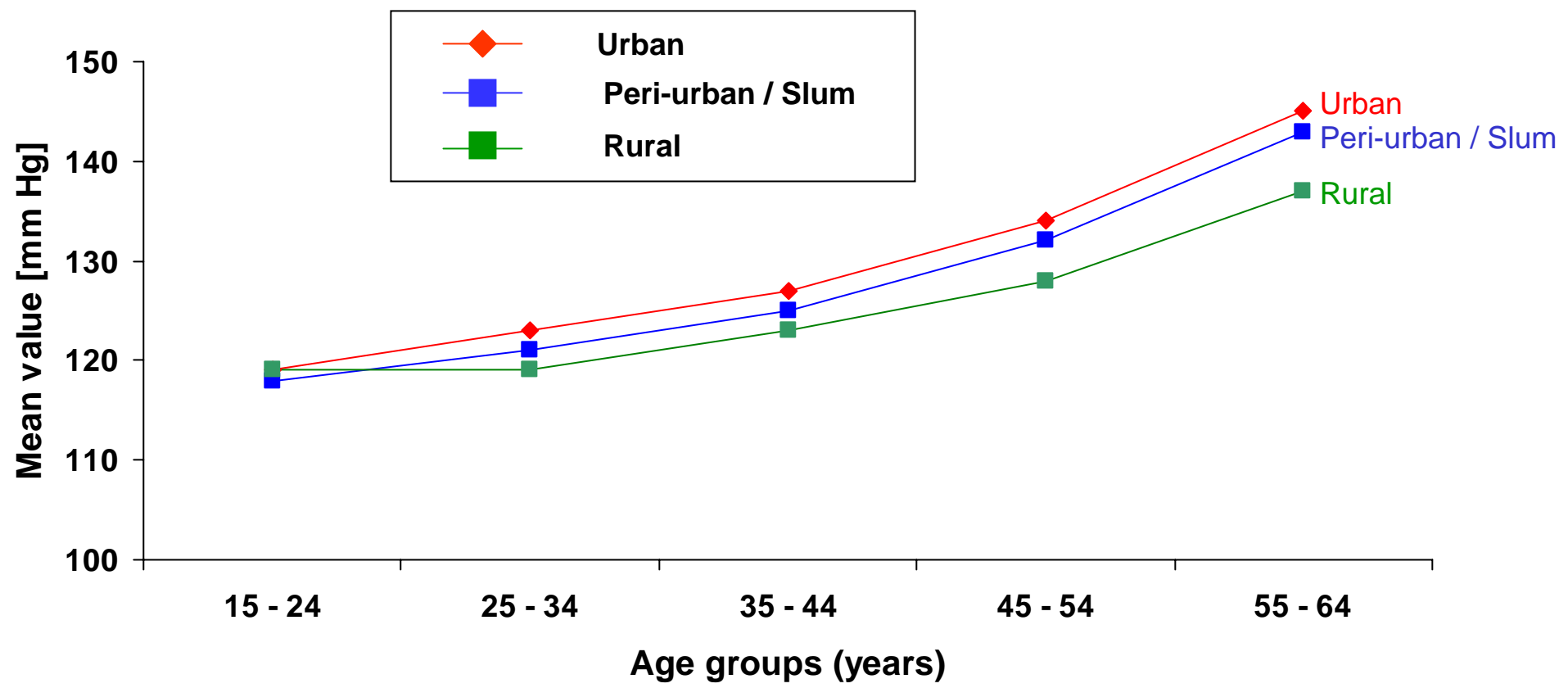
# DISTRIBUTION OF DIASTOLIC BLOOD PRESSURE : Male



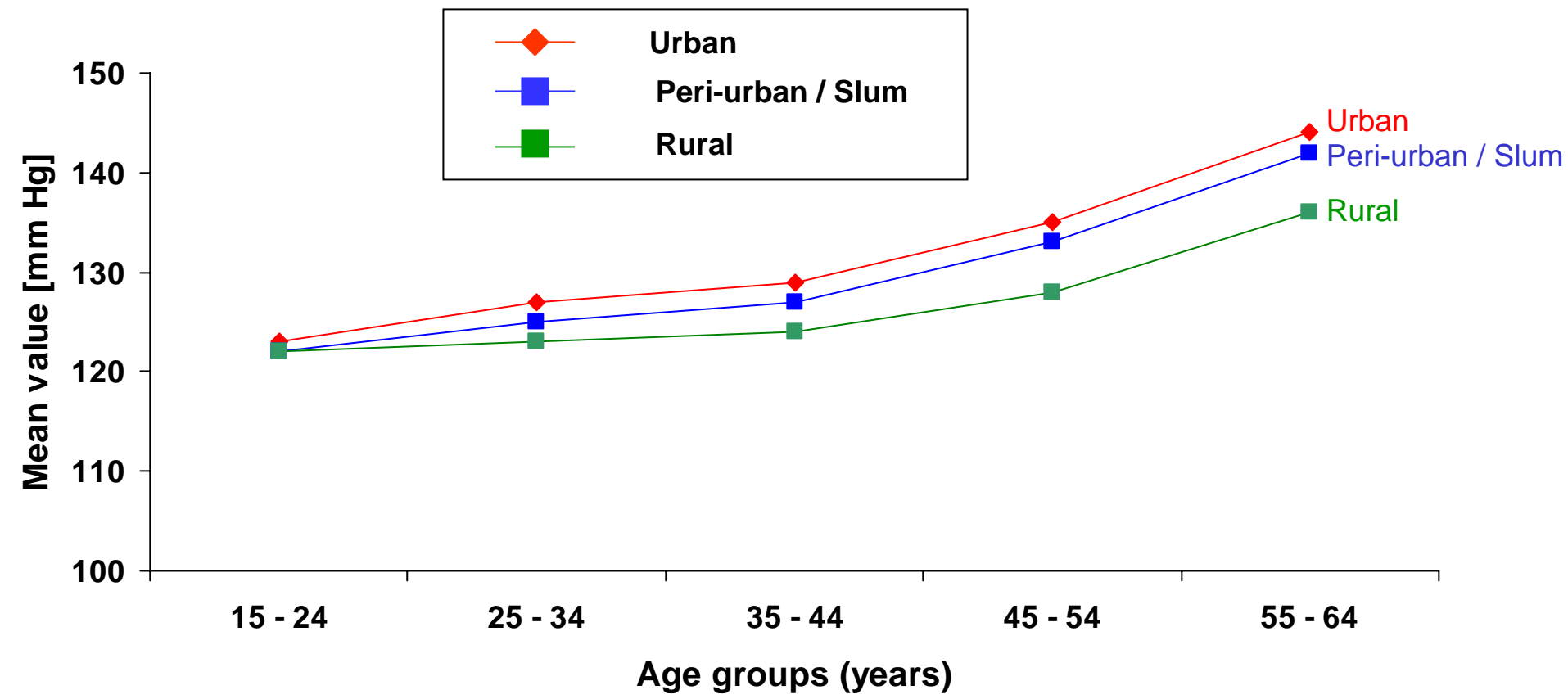
# DISTRIBUTION OF DIASTOLIC BLOOD PRESSURE : Female



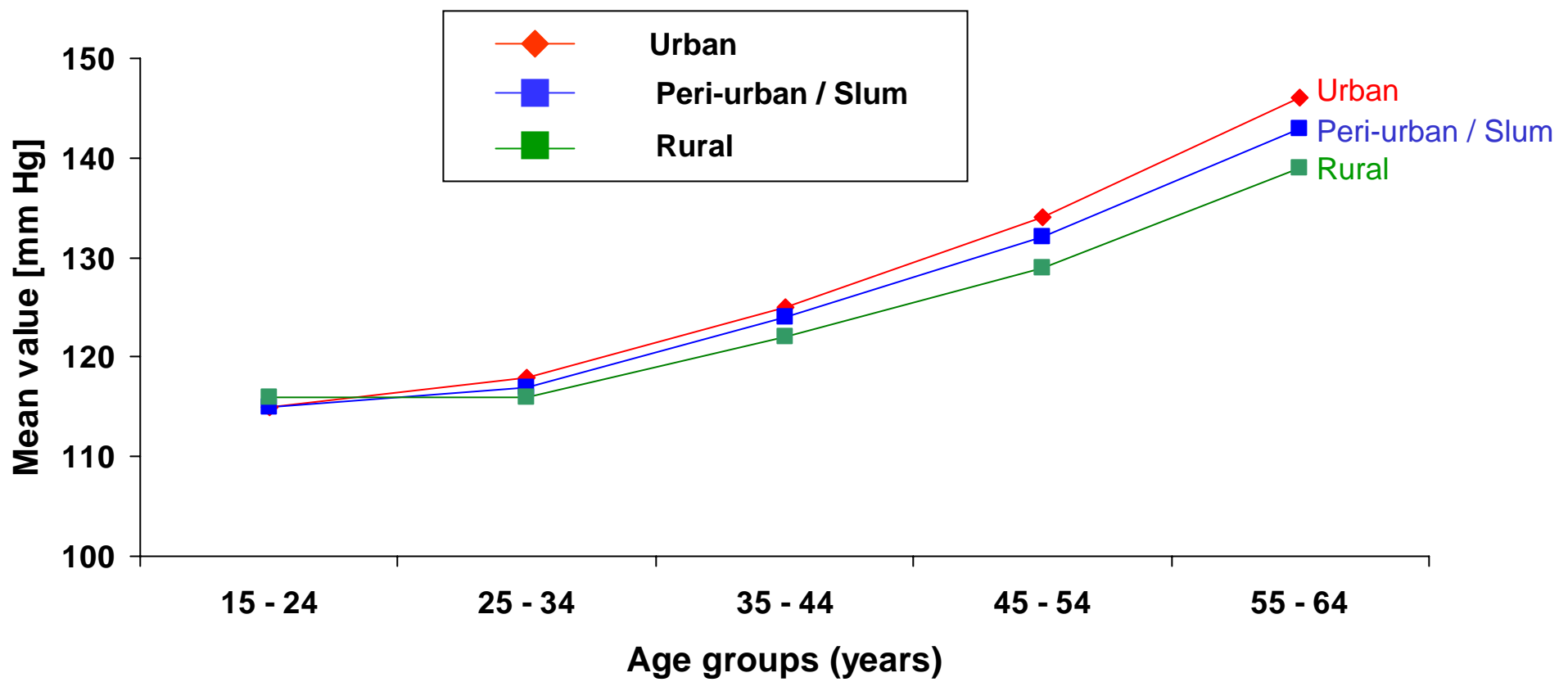
# AGEWISE MEAN VALUES OF SYSTOLIC BLOOD PRESSURE : By residence



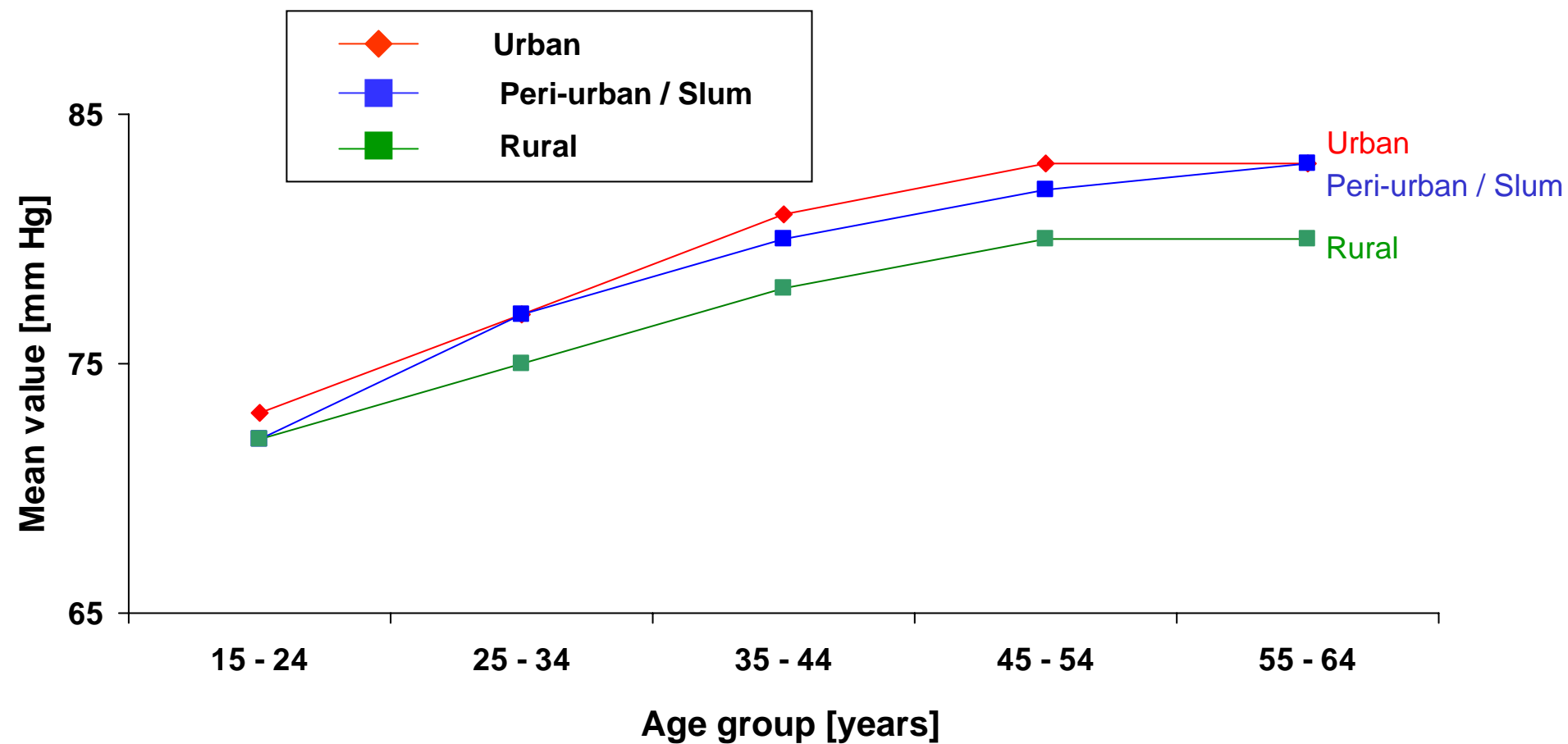
# AGEWISE MEAN VALUES OF SYSTOLIC BLOOD PRESSURE : Male



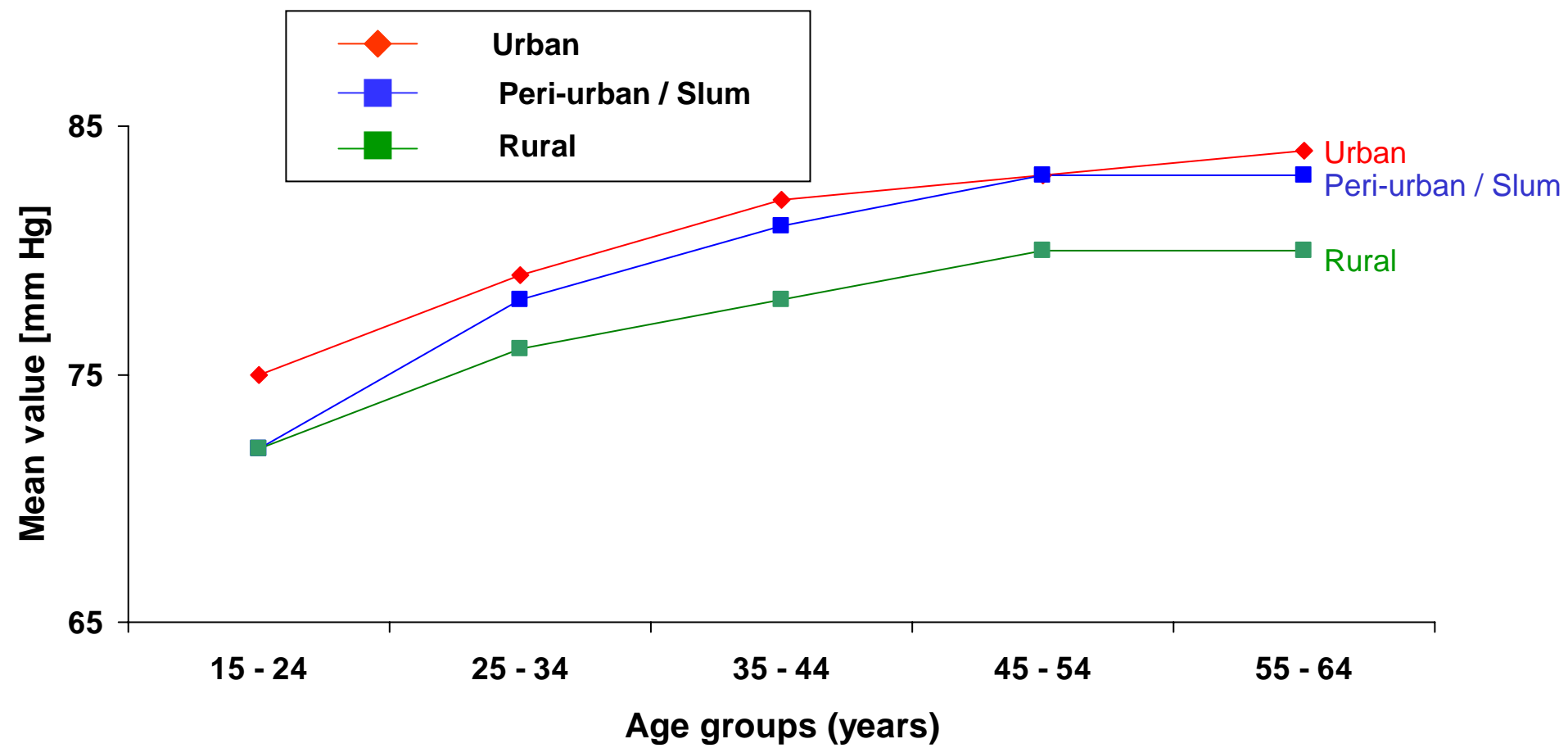
# AGEWISE MEAN VALUES OF SYSTOLIC BLOOD PRESSURE : Female



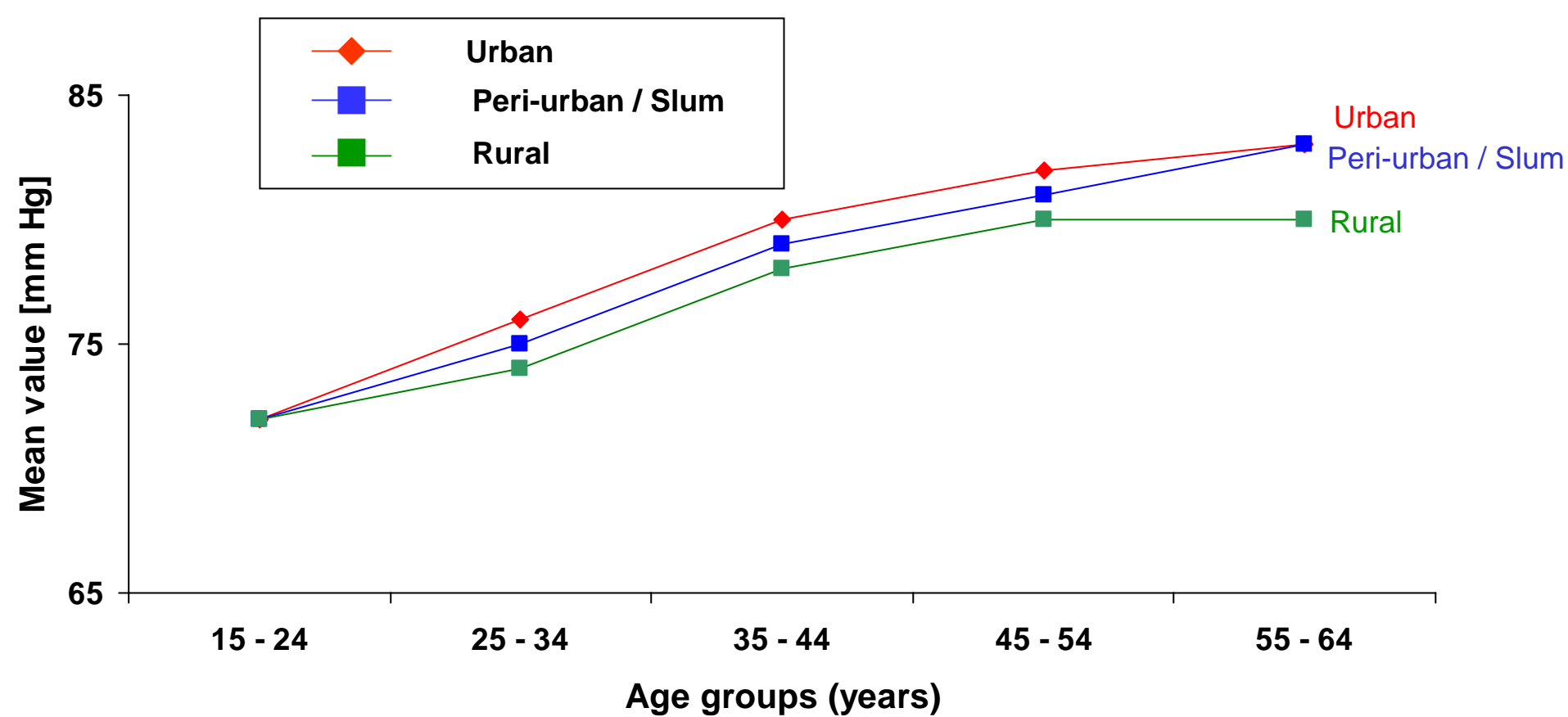
# AGEWISE MEAN VALUES OF DIASTOLIC BLOOD PRESSURE: By residence



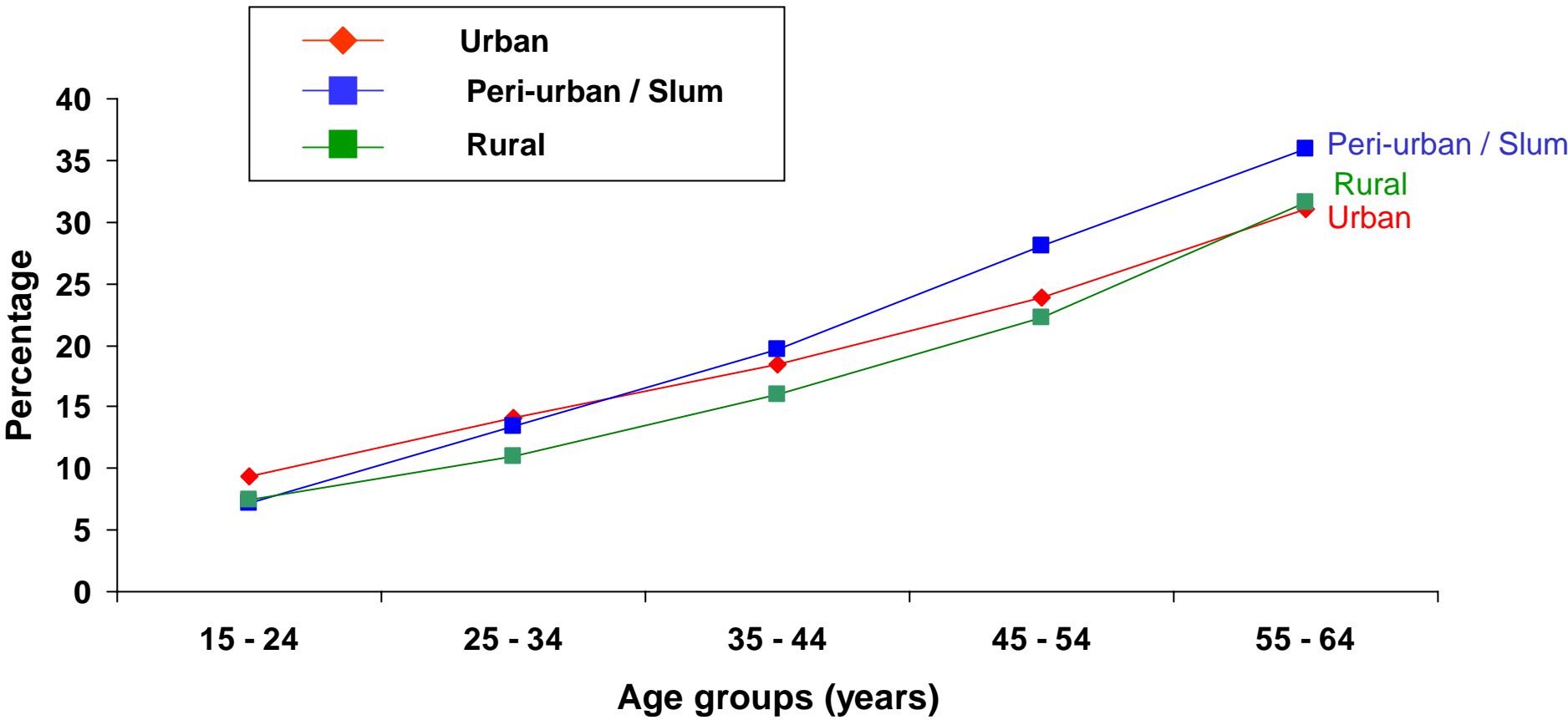
# AGEWISE MEAN VALUES OF DIASTOLIC BLOOD PRESSURE : Male



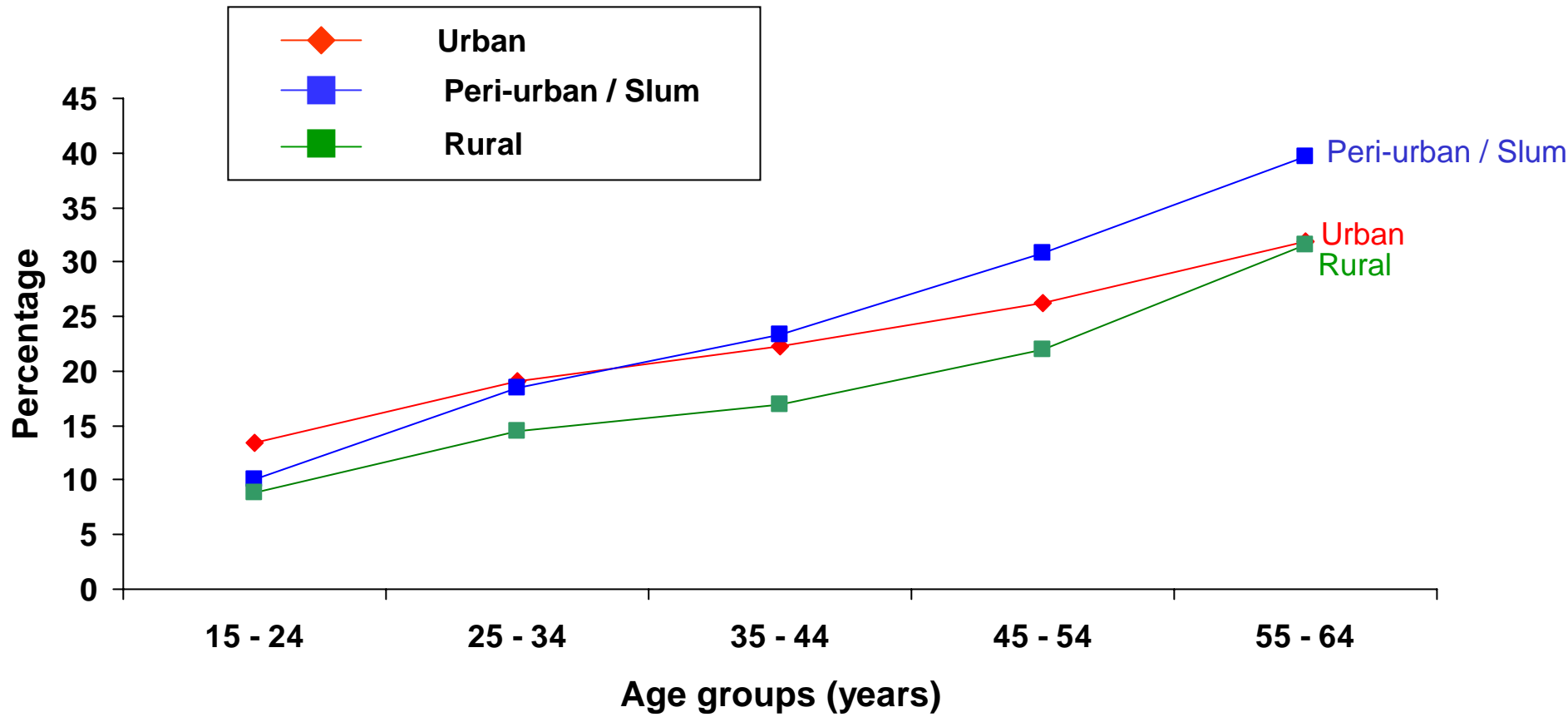
# AGEWISE MEAN VALUES OF DIASTOLIC BLOOD PRESSURE : Female



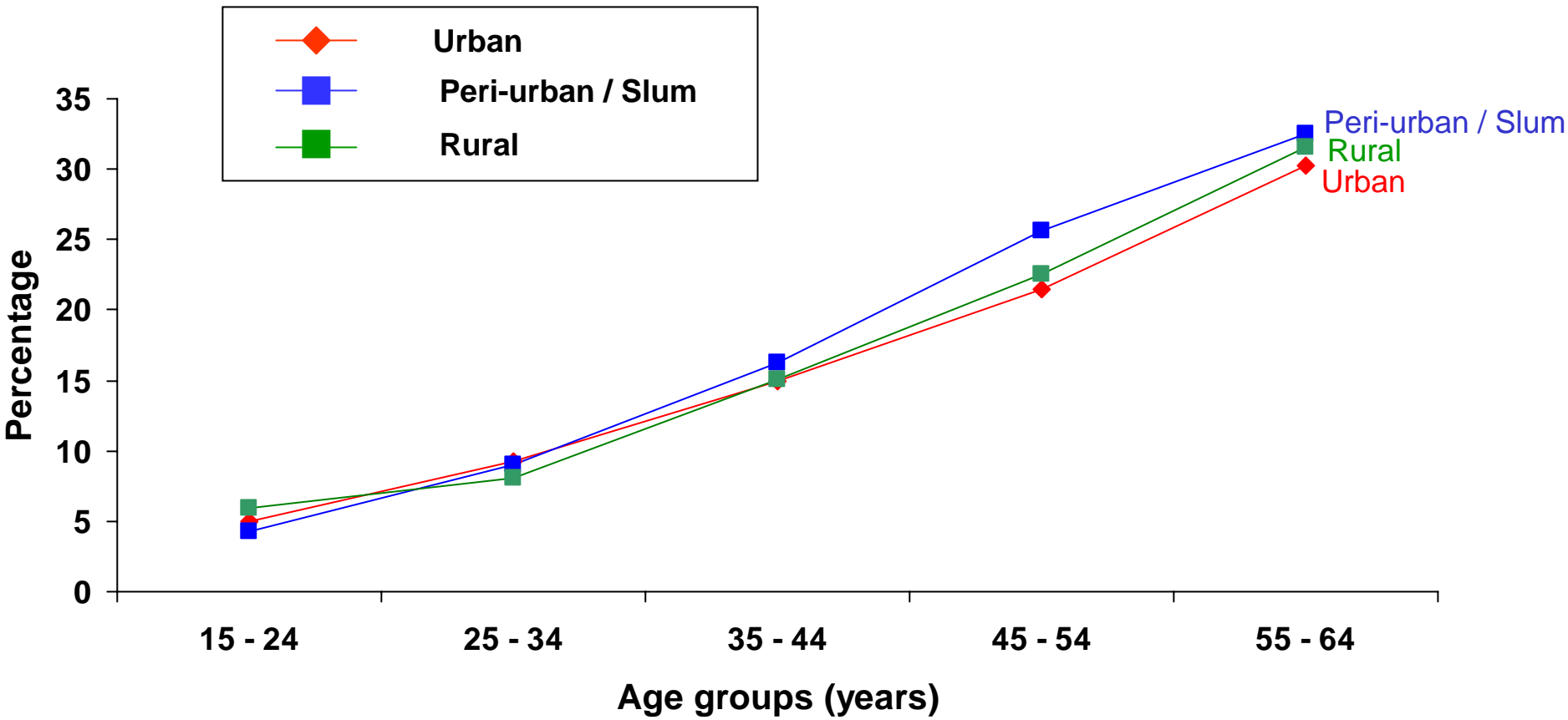
# AGEWISE PREVALENCE RATES OF HYPERTENSION [DETECTED DURING EXAMINATION] : By residence



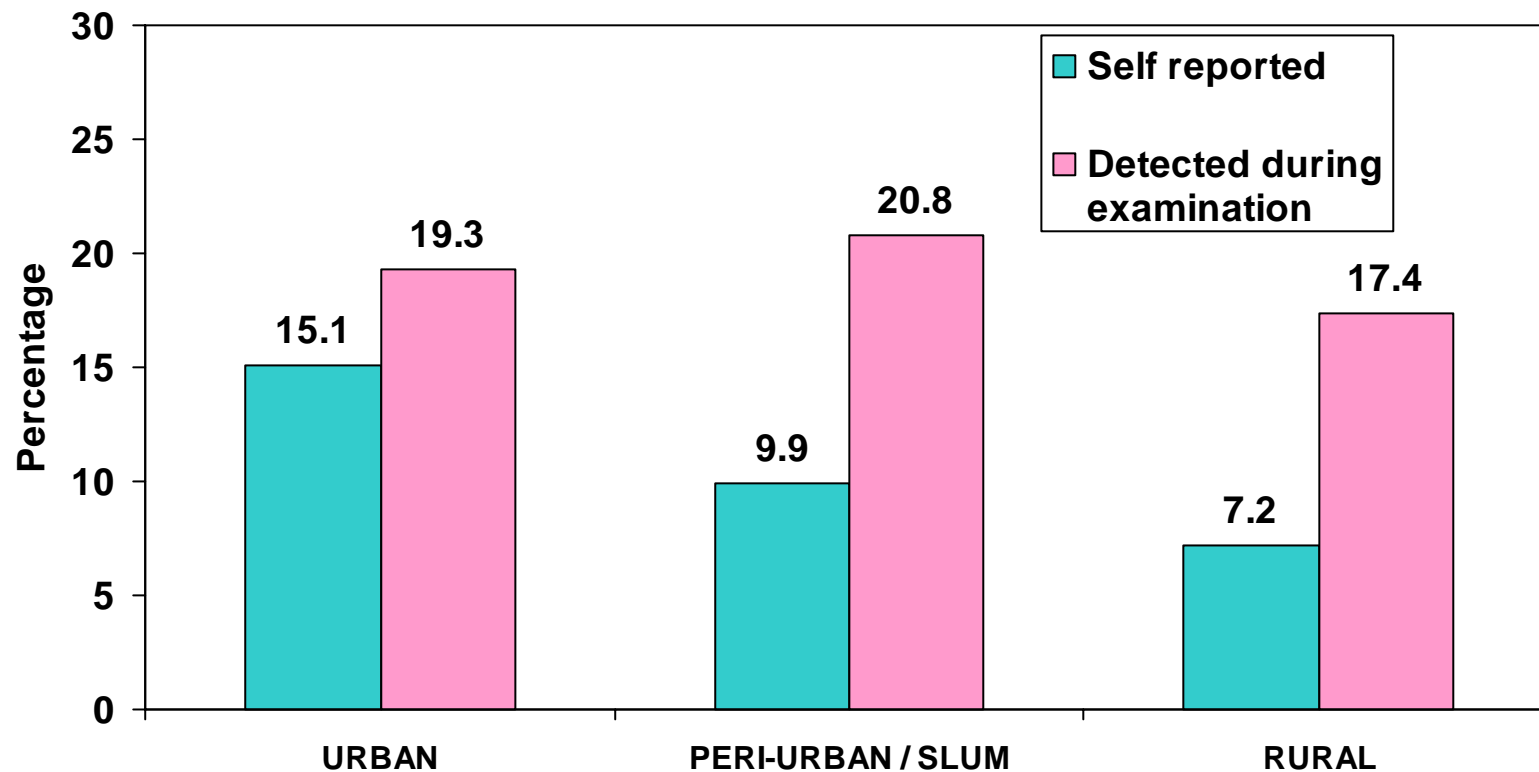
# AGEWISE PREVALENCE RATES OF HYPERTENSION [DETECTED DURING EXAMINATION] : Male



# AGEWISE PREVALENCE RATES OF HYPERTENSION [DETECTED DURING EXAMINATION] : Female



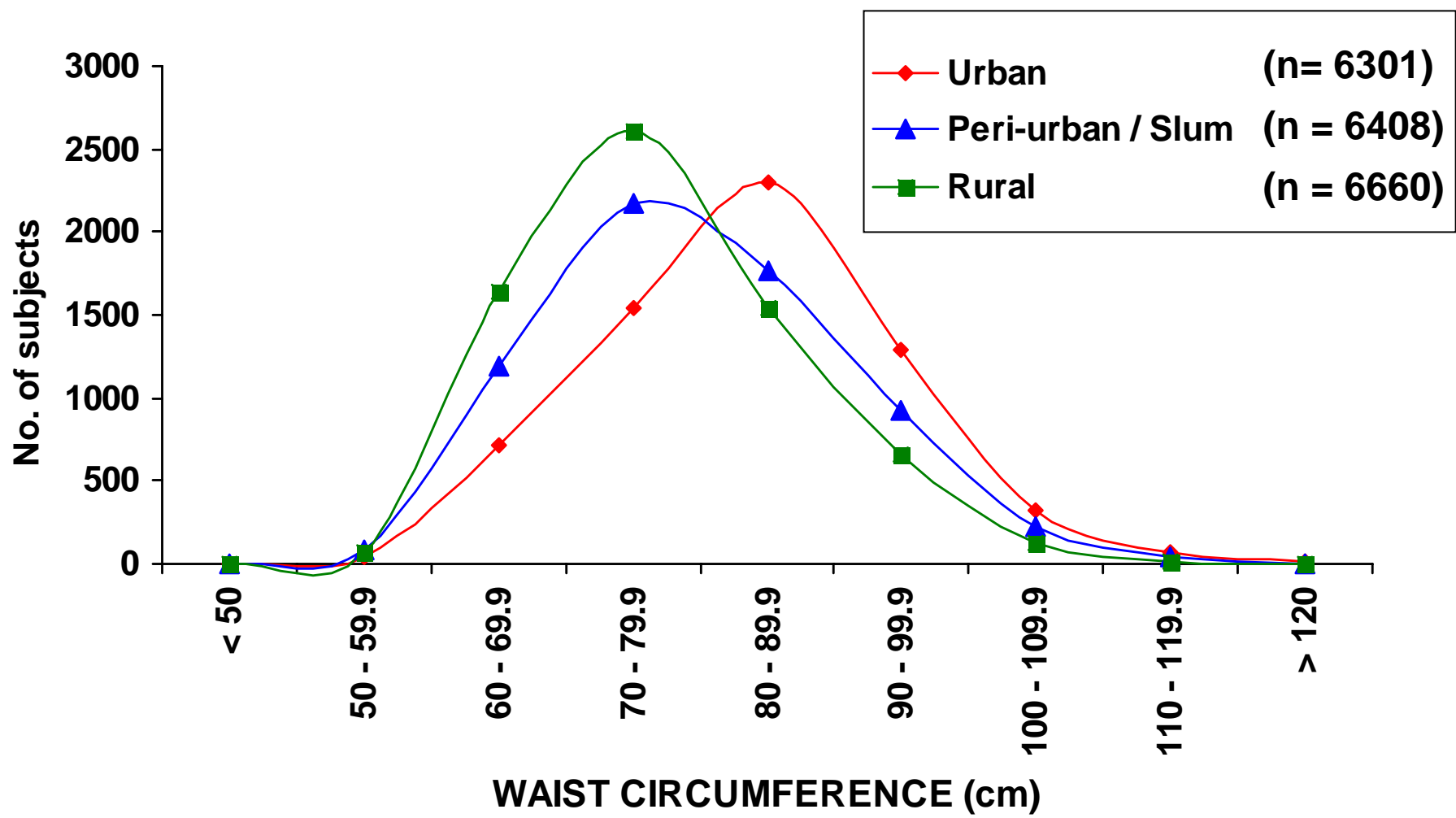
# PREVALENCE OF HYPERTENSION : By residence



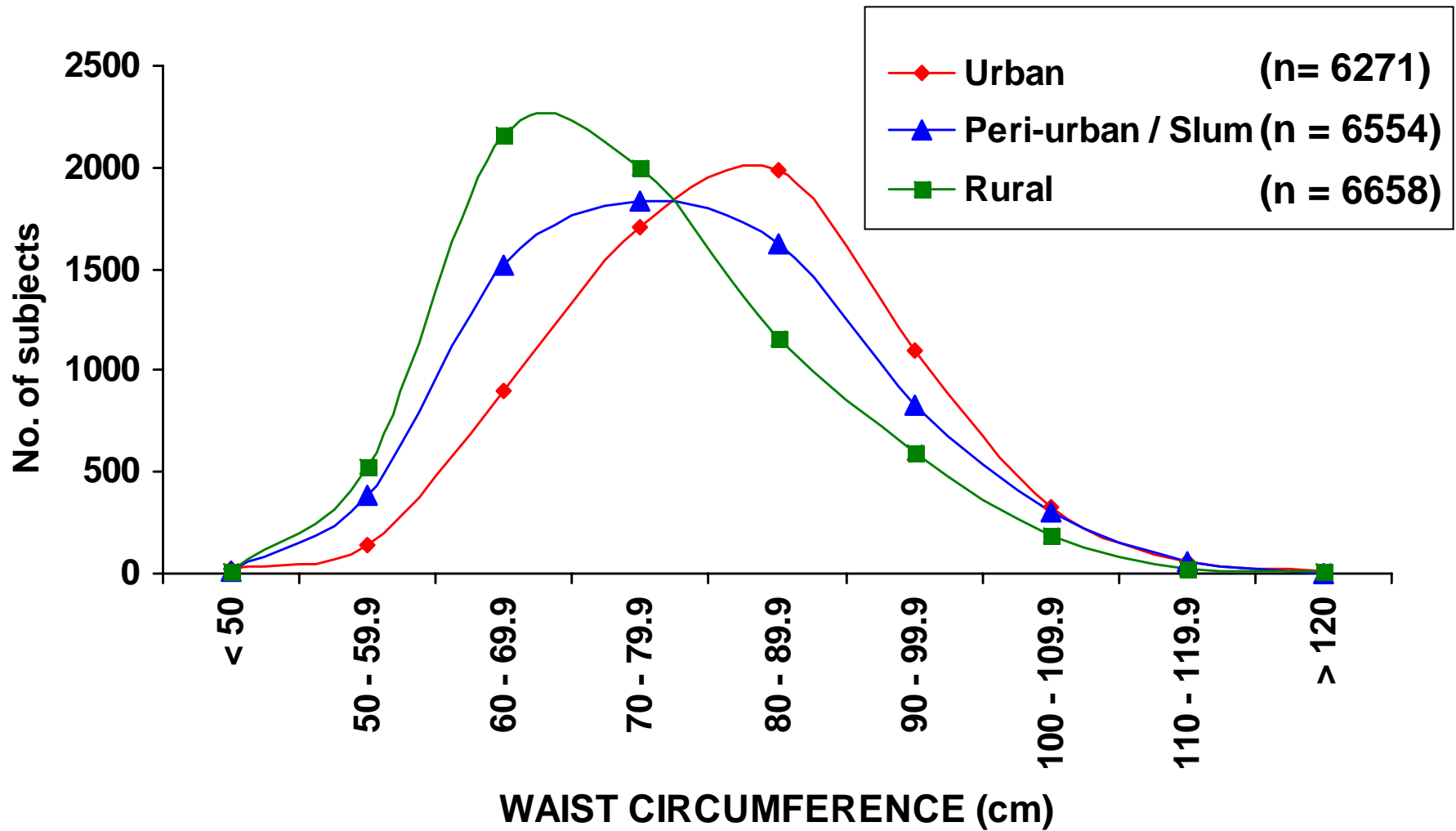
## ***Mean values of waist circumference : By residence***

	<b>Urban</b>	<b>Peri-urban / Slum</b>	<b>Rural</b>
<b>Male</b>	83.0 ± 11.1	79.4 ± 11.1	77.0 ± 10.1
<b>Female</b>	81.2 ± 12.1	77.9 ± 12.8	74.4 ± 12.0
<b>Overall</b>	82.1 ± 11.6	78.7 ± 12.0	75.7 ± 11.2

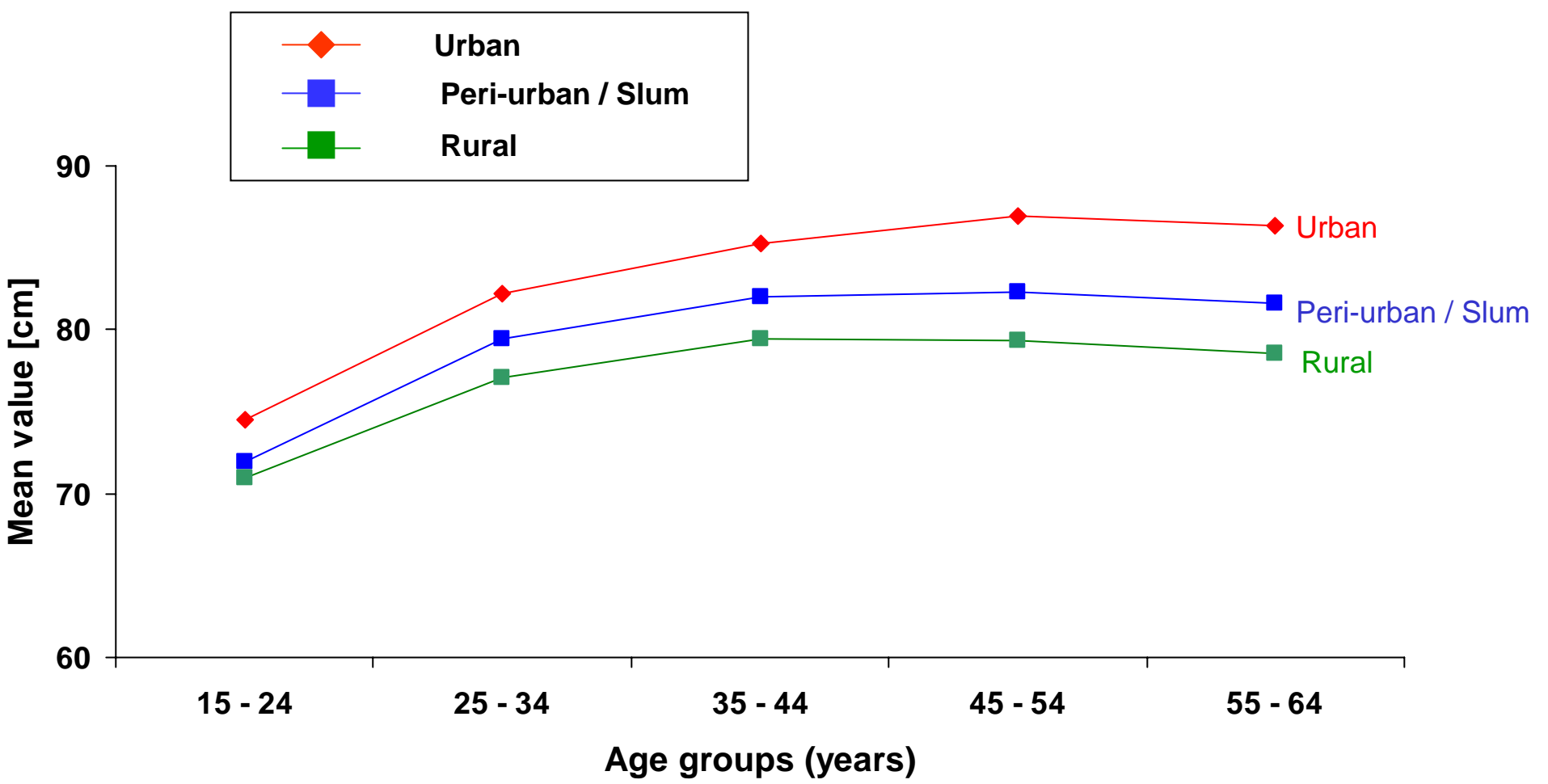
# DISTRIBUTION OF WAIST CIRCUMFERENCE : Male



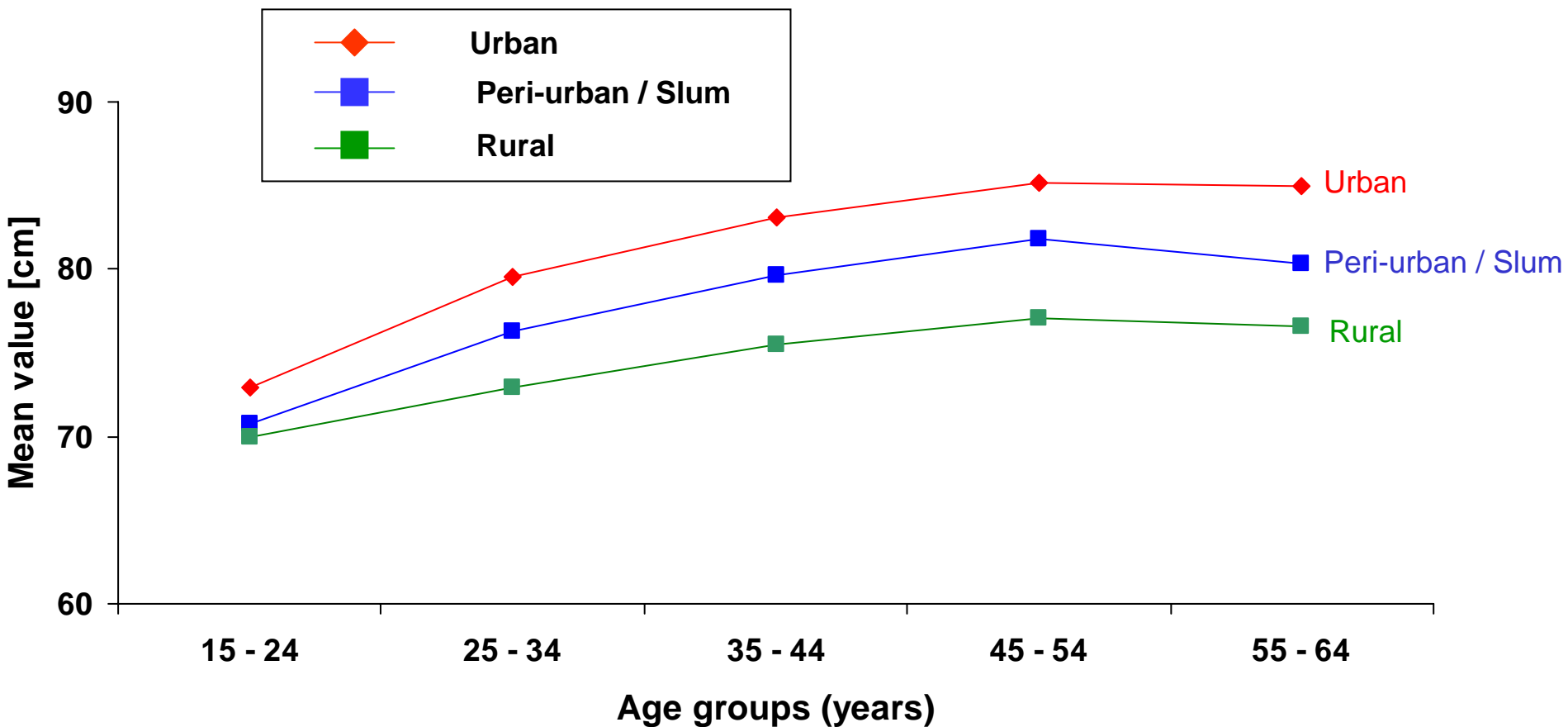
# DISTRIBUTION OF WAIST CIRCUMFERENCE : Female



# AGEWISE MEAN VALUES OF WAIST CIRCUMFERENCE : Male



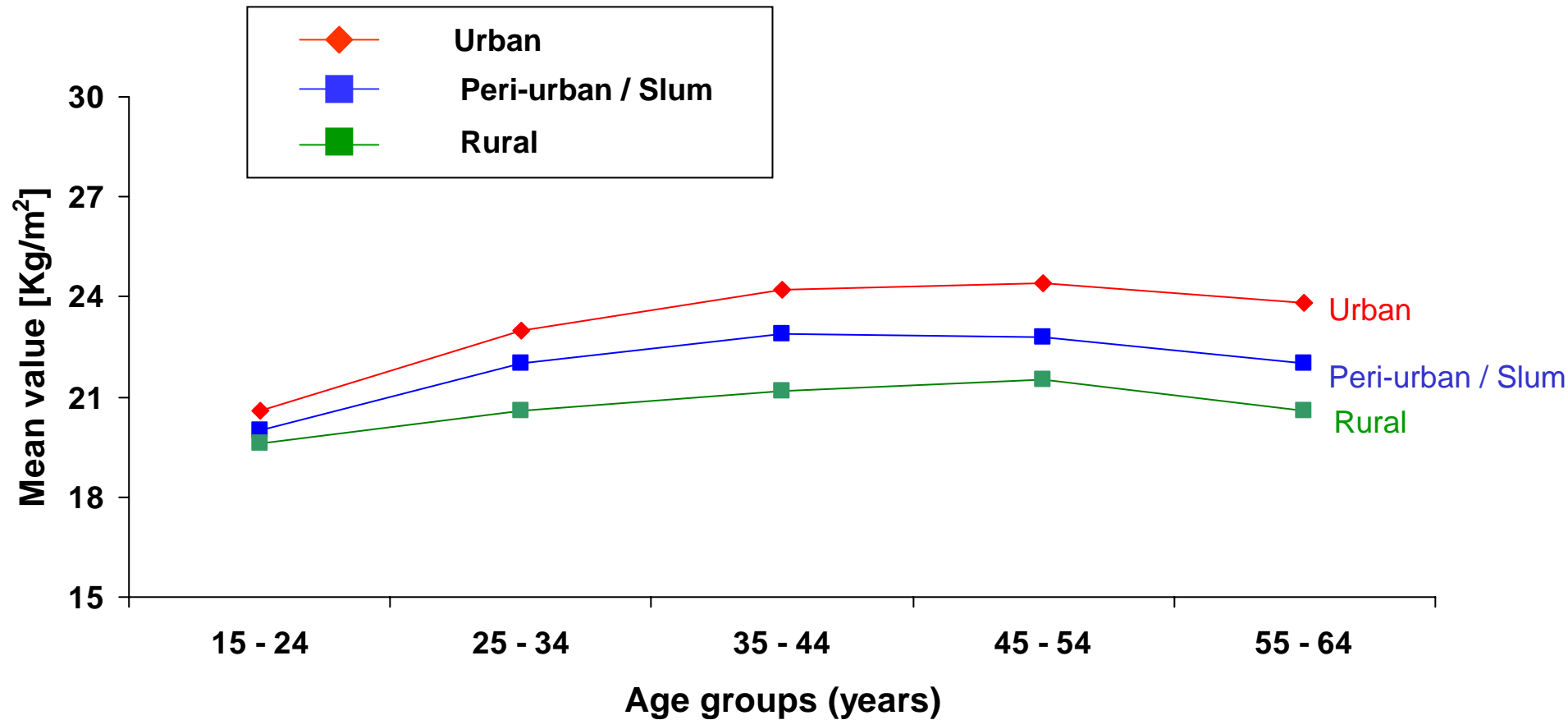
# AGEWISE MEAN VALUES OF WAIST CIRCUMFERENCE : Female



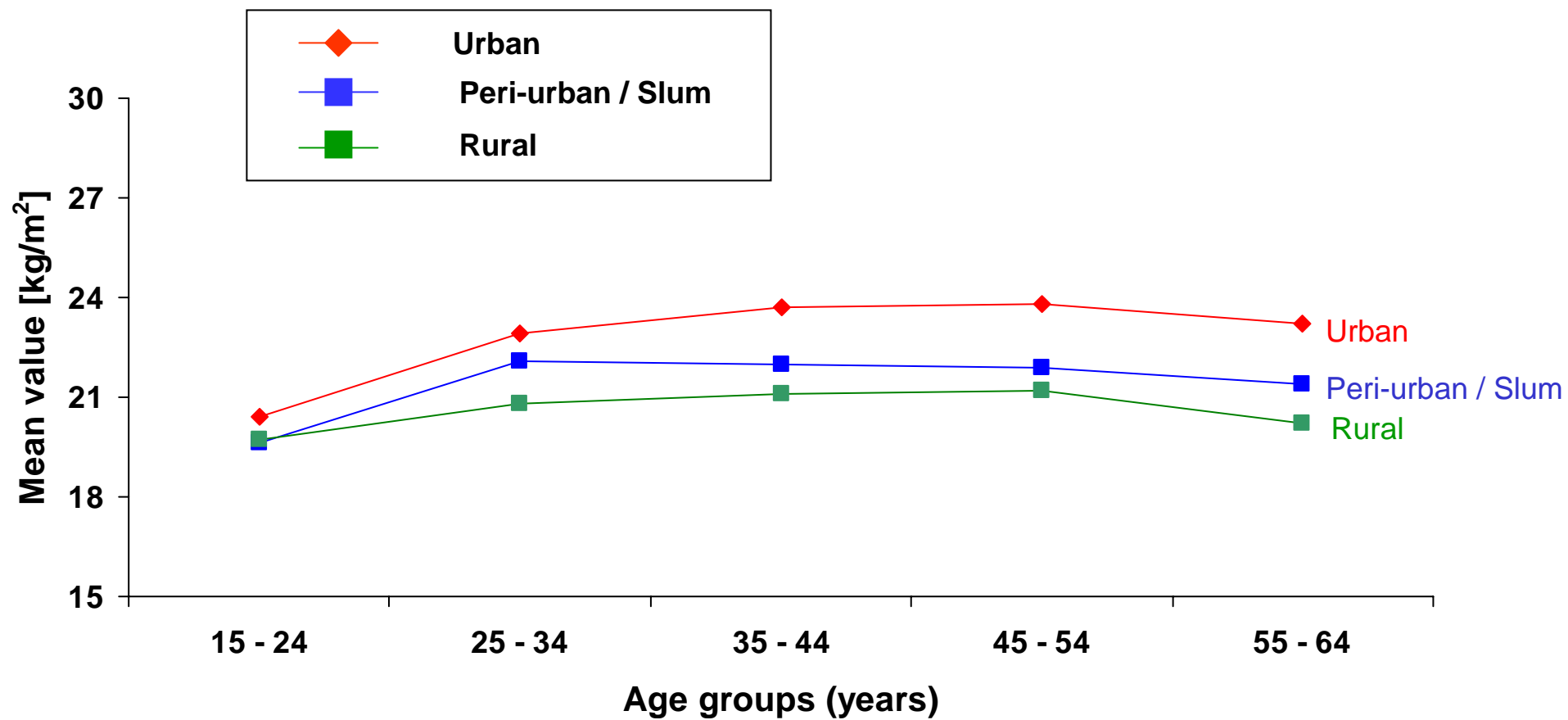
## ***Mean values of Body mass index : By residence***

	<b>Urban</b>	<b>Peri-urban / Slum</b>	<b>Rural</b>
<b>Male</b>	22.8 ± 4.0	21.4 ± 6.9	20.6 ± 11.7
<b>Female</b>	23.6 ± 4.8	22.5 ± 8.5	20.8 ± 4.3
<b>Overall</b>	23.2 ± 4.4	22.0 ± 7.8	20.7 ± 8.8

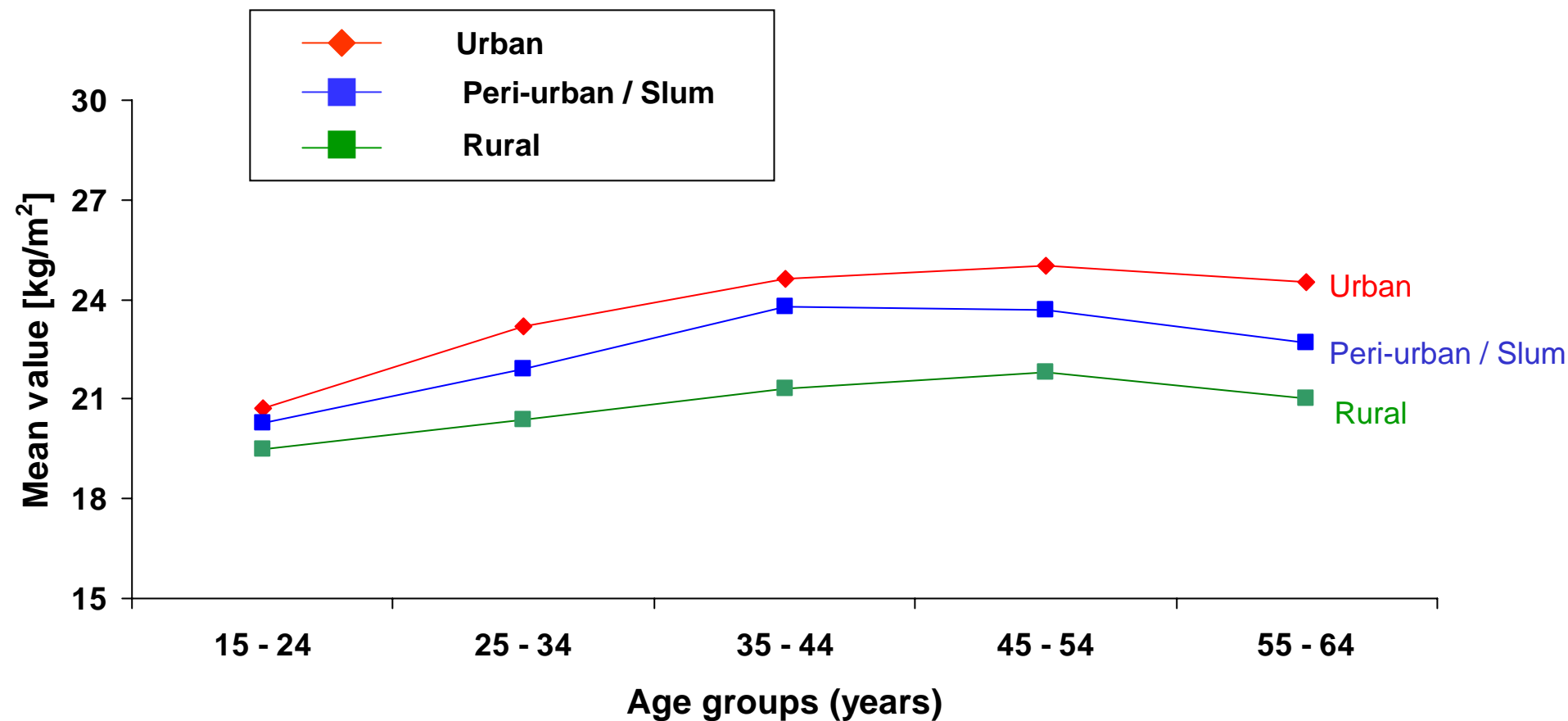
# AGEWISE MEAN VALUES OF BODY MASS INDEX : By residence



# AGEWISE MEAN VALUES OF BODY MASS INDEX : Male



# AGEWISE MEAN VALUES OF BODY MASS INDEX : Female



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