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**STATISTICAL COMMISSION and UNITED
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EUROPE (UNECE)
CONFERENCE OF EUROPEAN STATISTICIANS**

**UNITED NATIONS CONFERENCE
ON TRADE AND DEVELOPMENT
(UNCTAD)**

**INTERNATIONAL TELECOMMUNICATION
UNION (ITU)**

**UNESCO INSTITUTE FOR
STATISTICS (UIS)**

**ORGANISATION FOR ECONOMIC
CO-OPERATION AND DEVELOPMENT (OECD)**

**STATISTICAL OFFICE OF THE
EUROPEAN COMMUNITIES
(Eurostat)**

**Joint UNECE/UNCTAD/UIS/ITU/OECD/EUROSTAT Statistical Workshop:
Monitoring the Information Society: Data, Measurement and Methods
(Geneva, 8-9 December 2003)**

Event related to the World Summit on the Information Society

**SYSTEM OF INDICATORS OF INFORMATION
AND COMMUNICATION TECHNOLOGIES**

Keynote paper

Mr. Farid Matuk, Instituto Nacional de Estadística e Informática, Peru

* Due to the late submission, this paper could not be translated.



System of Indicators of Information and Communication Technologies

Background

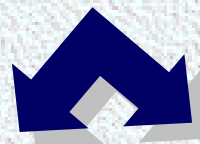
Regional
Meetings



Conference of Iberoamerican Authorities on
Informatics (CAIBI)

Florianopolis Declaration (Brazil)

Third meeting of the Summits of the
Americas



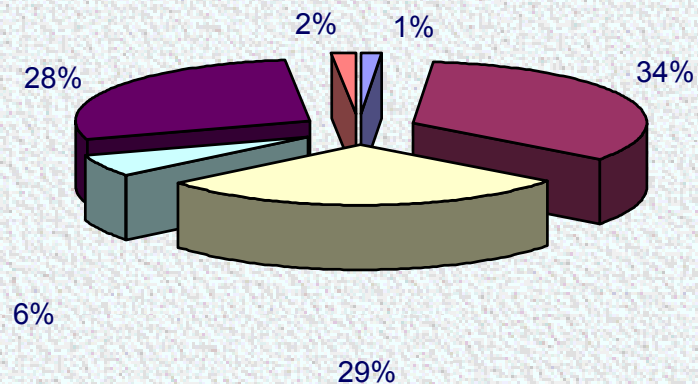
Need of a united
information system for
data management

Indicators
comparability between
countries

Background: Some statistics

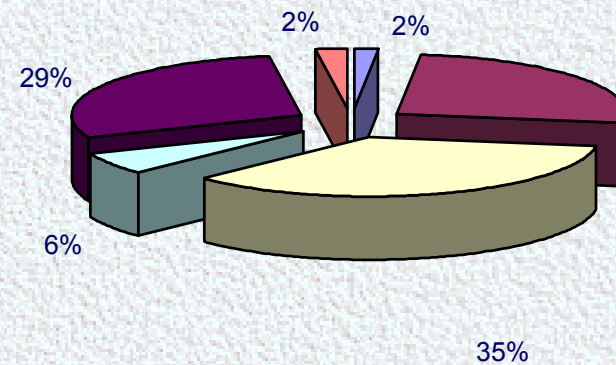
Internet Users - Year 2002

(Total 591.6 millions)



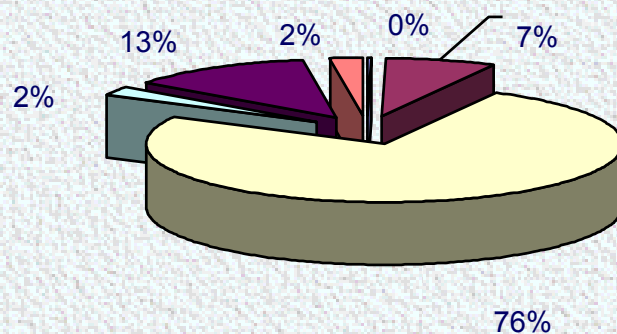
Number of PC's - Year 2002

(Total : 544 millions)



Number of Hosts- Year 2002

(Total : 145 millions)



Background: Peru

- INEI Initiatives: Offset the 2000 information technology problems

✓ Technical recommendations

✓ Information compilation
of computer infrastructure
along the whole country



Nationals Household surveys.

2000 Annual Economic Survey

IV Survey of Information Technology
Resources of Public Administration
(September 2001 – April 2002)

Background: Peru

- National institutions participating in working group support the concepts, methodology and technical formulation and implementation of Information and Communication Technologies indicators.

INEI	Socioeconomic statistics, households surveys, economic surveys, public administration surveys
MINEDU	Statistics of technology in education
MTC	Statistic of public services and concessions
OSIPTEL	Statistics and indicators of telecommunications
SBS	Statistics of banking service
SUNAT - SUNAD	Statistics of imports and exports on technical and communications equipment
ANR	Statistic of graduates on technological careers
CONASEV	Business that negotiate in stock markets

Methodology

- Work methodology proposed by the Ibero-American Science and Technology Indicators Network.

2 components:



Theoretical Framework to measure Knowledge Society:
Unite concepts to facilitate complementary work



Economic Agents: development under the new paradigm-
change in generation , management and transmission of
information

Methodology: Indicators Matrix of Knowledge Society

Telecommunications		Information Technology and high aggregated value services		
	Infrastructure	Capacities	Investment/ Efforts	Applications
Companies				
Households				
Government				
Other institutions				
Education		Science and Technology		

Indicators System Proposal

	Infrastructure	Capacities/ Uses/ Applications	Investment/ Expenditure/ Consumption
Companies	Computers Workstations (% of employers with direct access), Email (% of employers with direct access), Wireless communication, Internet, Extranet	Service type offered by internet (8), Employers (Complete/ partial and women/men)	
Households	Computers Internet Access Telephone Access to public telephones Mobile phone TV (Standard, cable, satellite) Radio	Use of the computer (3) Use of Internet (3) Place of use (6)	Expenditure in mobile phone Expenditure in fixed phone Expenditure in public phone



INEI INSTITUTO NACIONAL DE ESTADÍSTICA E INFORMÁTICA

Proposal: Indicators System

Infrastructure		Capacities/ Uses/ Applications	Investment/ Expenditure/ Consumption
Government	Computer equipment (mainframes, workstations, personal computers) Email (% of computers over all) Intranet, Extranet Red/ information security Software licenses	Employers	
Universities and other institutions		Teaching personal Development areas of graduates Schools with graduate studies in information Technology National enrollment	Investment and expenditure in information technology



Indicators System Proposal: Specification sheet

1. Statistics/ Indicator: Name of the statistical variable or indicator
2. Definition: Variable and indicators in technical terms
3. Algorithm: Description of the indicator formula
4. Description: Detailed explanation of the variable or indicator
5. Metadata
 - Source
 - Thematic coverage
 - Geographic coverage
 - Analysis unit
 - Disaggregation variable
 - Periodicity
 - Measurement unit
6. Other references and observations

Indicators System : Some numbers...

Household Indicators



**National Household
Survey (1998-2002)**

- Total Households interviewed (2002): 19,684
- Inference: National, urban, rural, 24 states, coast (urban/rural), mountain (urban/rural), jungle (urban/rural), Metropolitan Lima and Callao
- Informers: Head of the family, housewife, collectors, persons of 12 years old or older, community authorities or representatives

Indicators System : Some numbers...

114. This household have:
(Choose one or more alternatives)

- | | |
|--------------------|---|
| Telephone? | 1 |
| Celular Phone? | 2 |
| Beeper? | 3 |
| Internet? | 4 |
| None of the above? | 5 |

606. During the last month,
you or other person in this
household got:

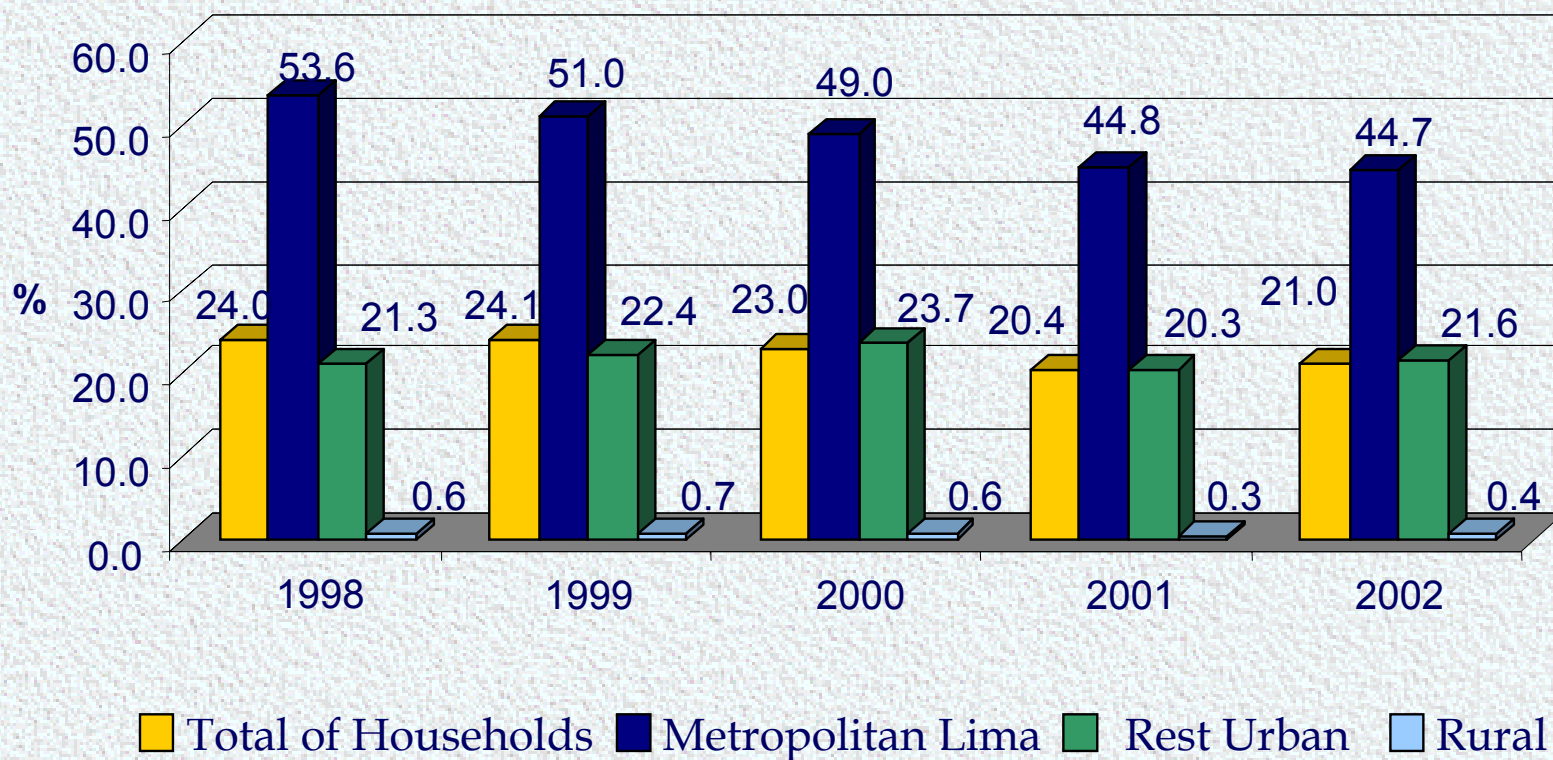
Internet public service? Yes No

612. This household have:

Computer? Yes No

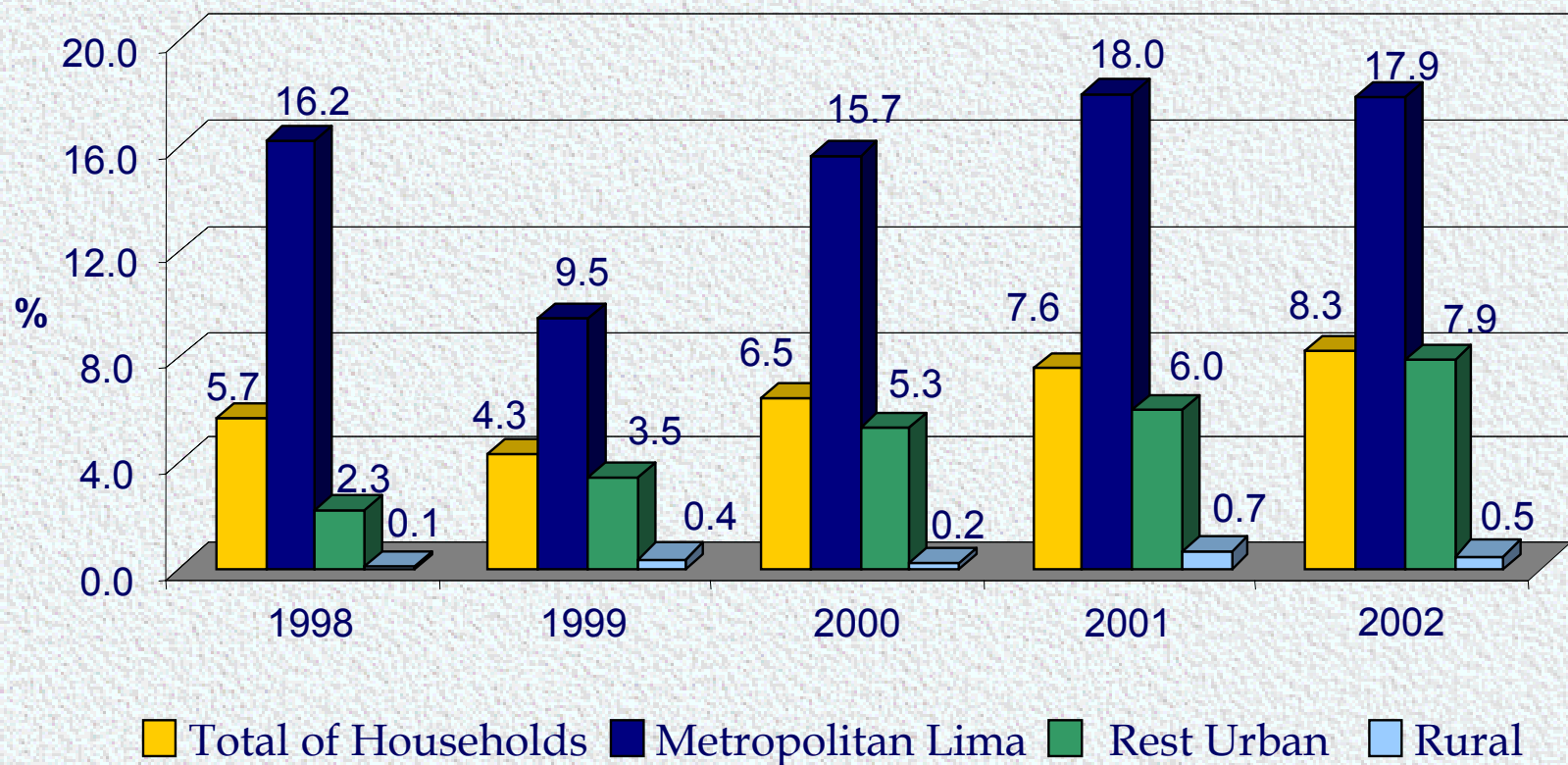
Indicators System : Some numbers...

Households with telephone



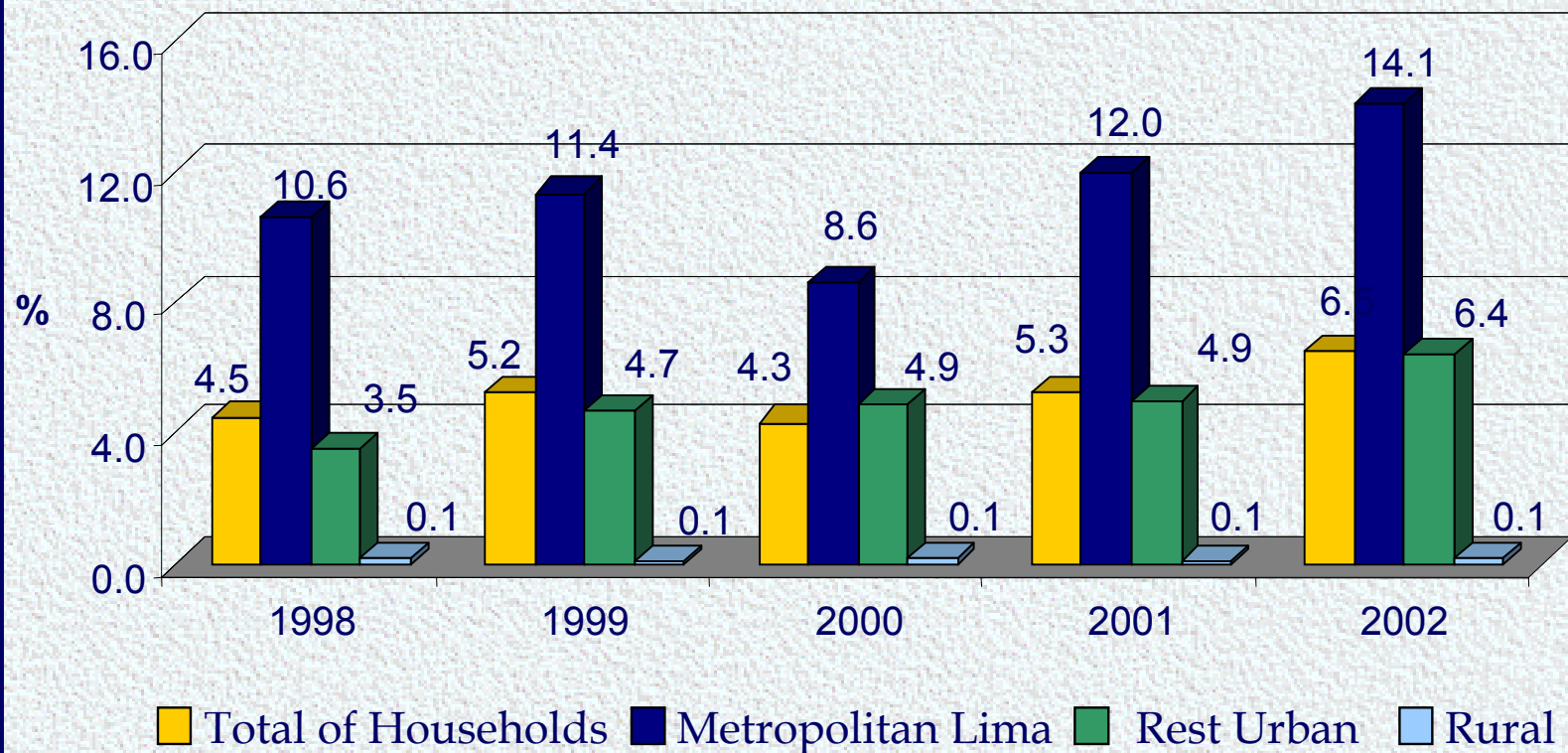
Indicators System : Some numbers...

Households with celular phone

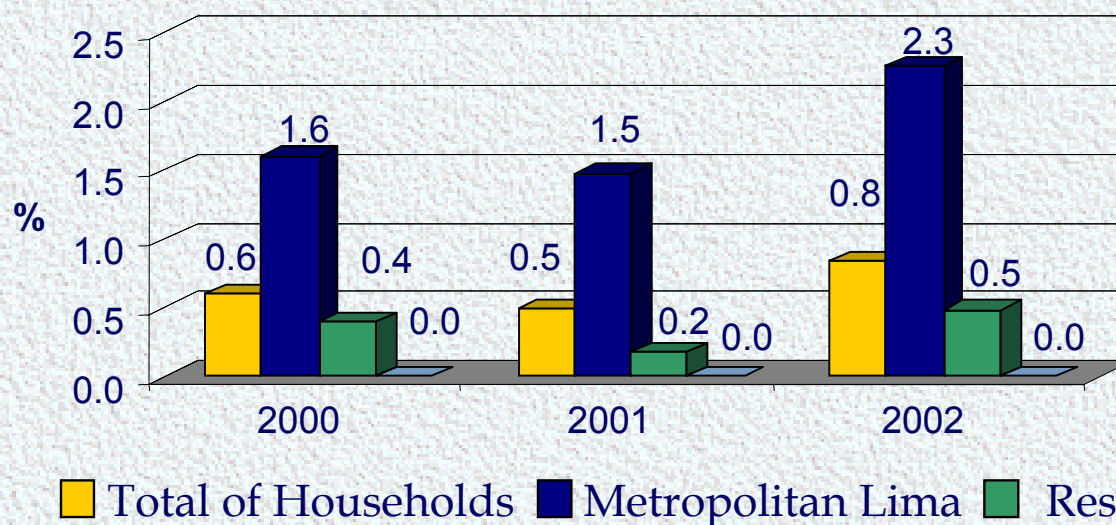


Indicators System : Some numbers...

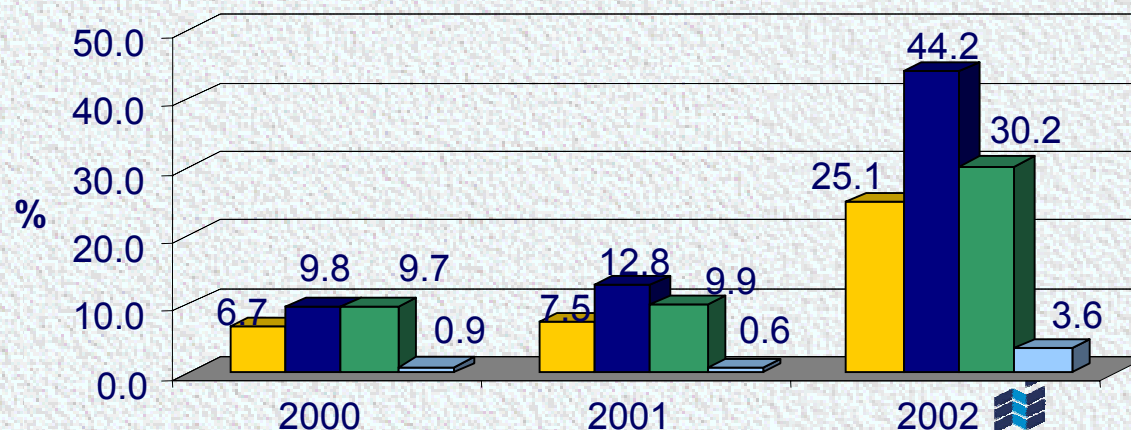
Households with computer



Indicators System : Some numbers...



Use of internet public service



Indicators System : Some numbers...

612. This household have:

Television (Black and white): Yes No

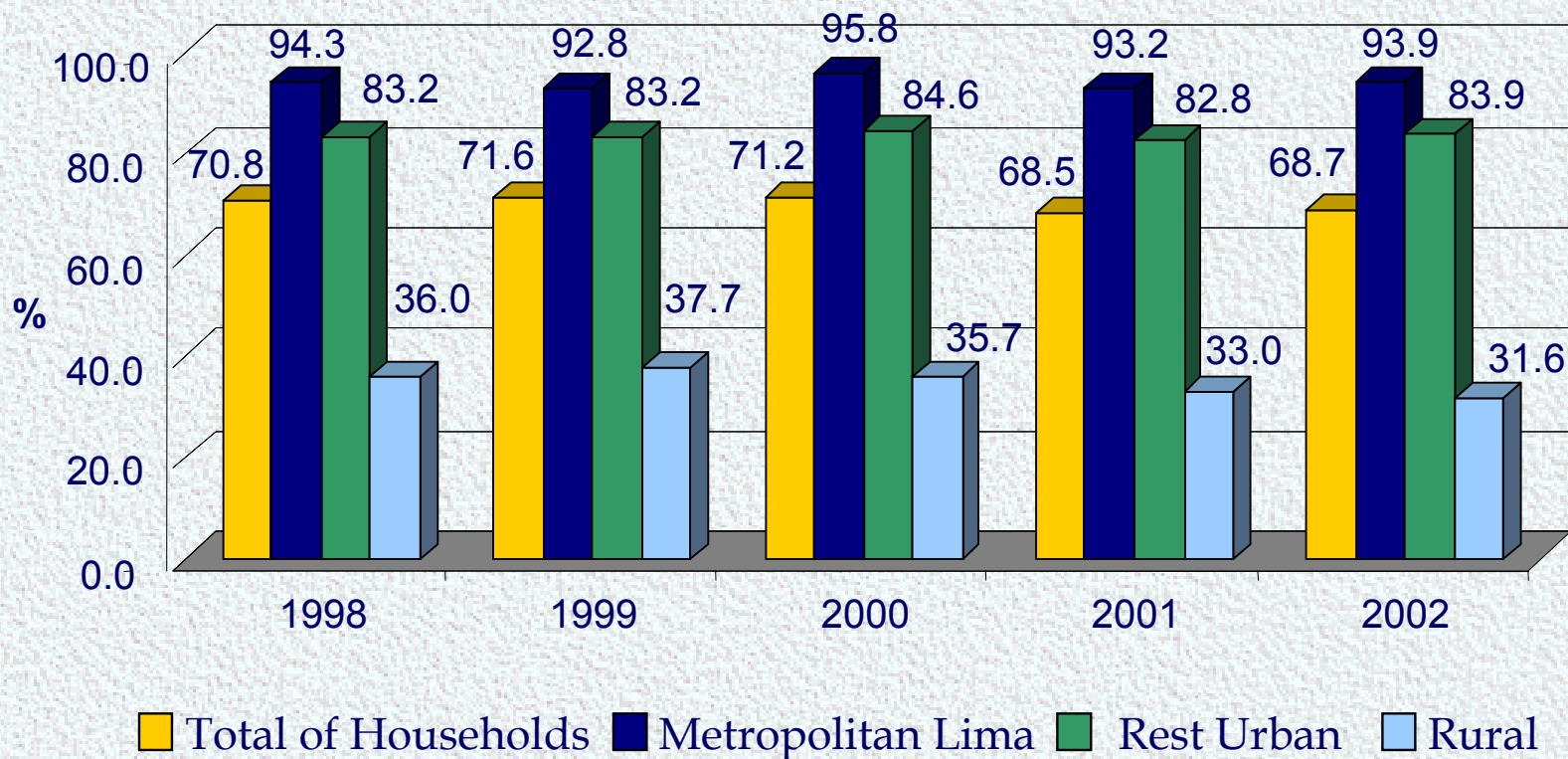
Television (color) Yes No

606. During the last month, you or
other person in this household got:

Cable television? Yes No

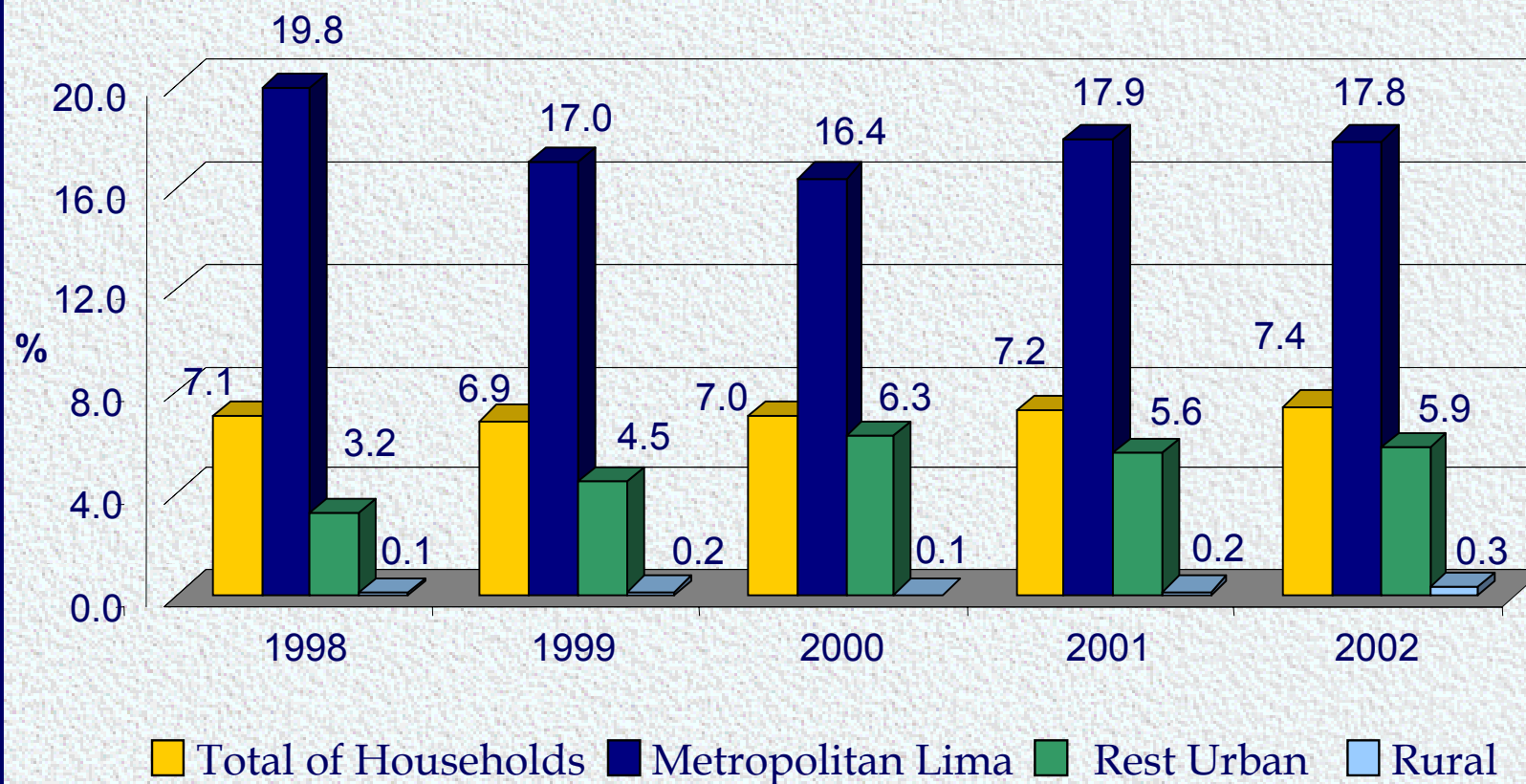
Indicators System : Some numbers...

Households with television



Indicators System : Some numbers...

Households with cable television



Indicators System : Some numbers...

617. The expenditure during the last month for the use of ... was:

Telephone S/. _____

Celular phone S/. _____

604. During the last month, you or other person in this household used:

Public telephone? Yes No

How much did you spend? S/. _____

Indicators System : Some numbers...

Telephone Expenditure (US\$)

	1998	1999	2000	2001	2002
Telephone	32.6	34.7	28.0	28.9	28.1
Metropolitan Lima	34.6	37.3	29.7	30.5	29.9
Urban	28.4	30.1	25.6	26.3	25.1
Rural	29.6	21.4	21.6	20.8	22.8
Celular phone	27.5	17.6	17.8	15.4	15.8
Metropolitan Lima	27.7	17.2	19.8	17.1	18.8
Urban	26.5	18.5	13.5	11.5	10.9
Rural	27.9	16.8	8.9	13.7	9.9
Public phone	4.6	4.2	4.6	4.5	4.2
Metropolitan Lima	3.7	3.8	3.5	4.1	3.6
Urban	5.5	4.4	5.7	5.1	4.8
Rural	5.2	5.7	5.0	4.8	4.9

Final remarks

- There is a need of an indicator system that allows supervise the development of Information and Communication Technologies and to evaluate its impact in the economy.
- National Institutes of Statistics, Ministries and other institutions have to incorporate on its traditional measurement instruments, elements that aloud to have more information of Information and Communication Technologies.
- A process of harmonization of variables, indicators and instruments measurement is needed in order to establish comparability between countries.
- Its recommended that the CEA country members have a permanent workgroup, as well as cooperation toward the less developed countries in that matter.