

11.943J/ESD.935

Urban Transportation, Land Use, and
the Environment in Latin America:
A Case Study Approach

18 April, 2002

Class 10:

The Santiago Metropolitan Area

The Santiago Metropolitan Area (SMA)

Latitude: $32^{\circ}56'$ –
 $34^{\circ}17'$ South

Longitude: $69^{\circ}47'$ –
 $71^{\circ}43'$ West

The National Context

Indicator	Chile	LAC	Upper Middle- Income Countries
GNI per capita (US\$ 2000)	4,600	3,680	4,620
Urban Population	86	75	76
Life Expectancy at Birth	76	70	69
Infant Mortality (per 1000 births)	10	30	28
Access to Improved Water	94%	85%	87%
Illiteracy (15+)	4	12	10
Population AAGR (94-00)	1.4	1.6	1.3

Source: World Bank, 2001. *Chile at a Glance*.

The National-Regional Context

- National Government

- Executive Branch

- Elected President – Majority of popular vote (run-off), one 6-year term
- Appointed Ministers

- Legislative Branch (Bi-cameral)

- Elected Representatives (*diputados*) – 160 from 60 electoral districtos – directly elected 4-year terms
- Elected (38), Appointed (9) and lifetime (2) Senators – directly elected serve 8-year terms

- 13 Regions, divided into Provinces

- Executive: Presidentially-appointed governors & Regional Arms of National Ministries
- Regional Councils, elected by Municipal Government Councils in form of Electoral College
- Provinces, Governor, with little power

The Local Context - Decentralization

- The Municipality - government presiding over the *comuna*
- Formally established by law in 1991
 - Local municipal elections first held in June, 1992
 - 341 municipal governments across the country
- Directly elected Mayor and Council
- Some degree of financial and local planning/investment autonomy

National-Regional-Local: T, LU & E

Area of Intervention		Government Entity		
		National	Regional	Municipal
Transportation	Infrastructure Construction & Maintenance	MINVU (SERVIU) MOPTT		Municipalities
	Planning	MINVU, MOPTT SECTRA, MIDEPLAN	SEREMOPTT SERPLAC	Municipalities
	Operations	MOPTT, METRO, EFE	SEREMOPTT UOCT	Municipalities
Land Use	Planning	MINVU MIDEPLAN	SEREMINVU GoRe SERPLAC	Municipalities
	Development	SERVIU		Municipalities (Cordesán)
Environment	Planning	CONAMA	COREMA GoRe	
	Enforcement	CONAMA MOPTT, MINSALUD	COREMA	

The RM

- Six Provinces, 52 Municipalities
- Smallest of the nation's 13 regions in size, but home to 40% of population
- Province of Santiago (32 *comunas*), Greater Santiago (34 *comunas*), the SMA (?? *comunas*)
- 90% of RM population in the 34 *comunas* of Greater Santiago

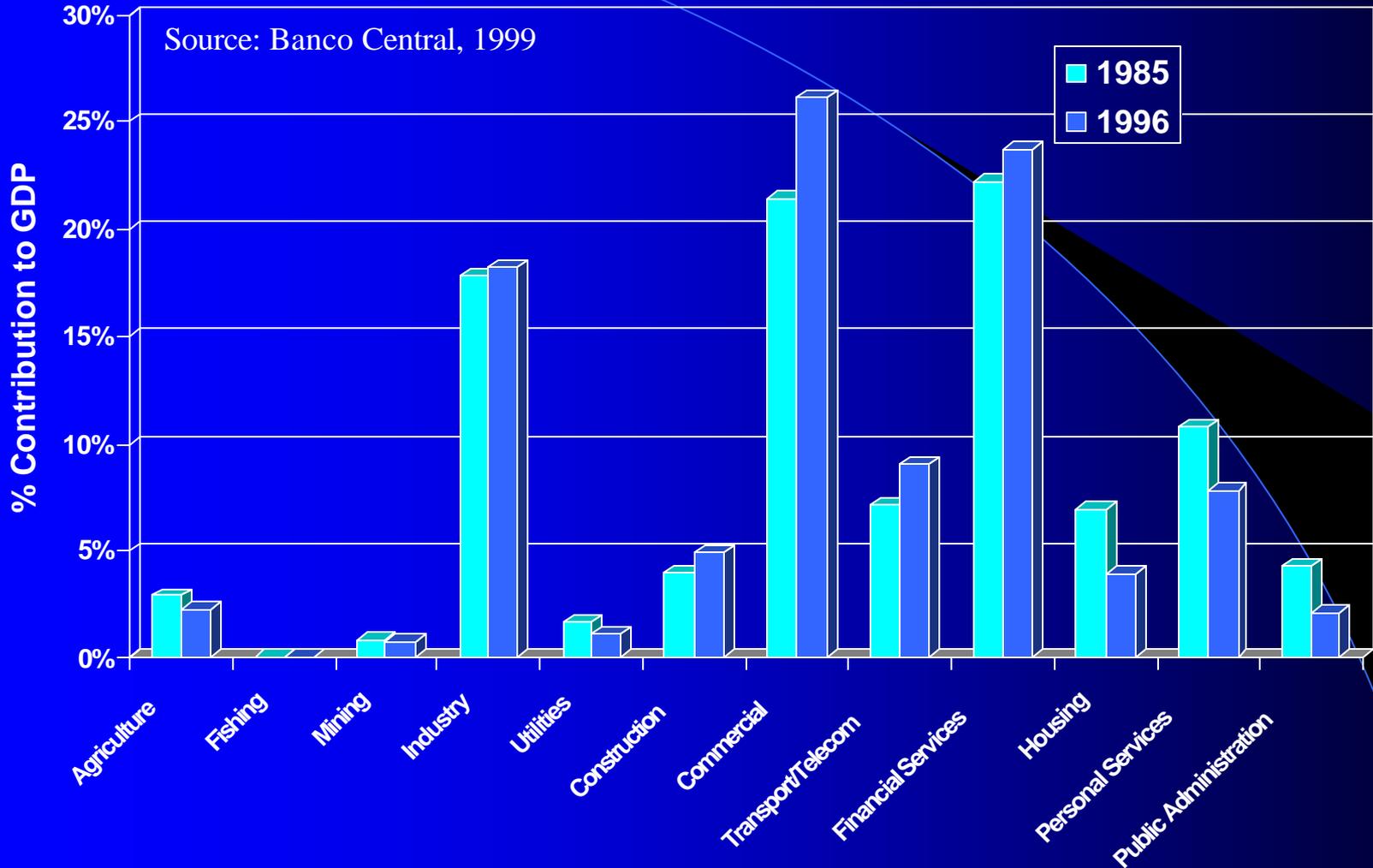
The RM Topography and Meteorology

- 2,800 km² Basin – 500 m above sea level
 - 80 kms N-S by 30 kms E-W
 - surrounded on E by the Andes (pre-cordillera peaks of 3,200 m), on W by Coastal Range (cordillera de la Costa with peaks of 2,000 m), with smaller ranges to the North and South
 - Mapocho River runs directly through Santiago, the Maipo runs just south of the SMA.
- Mediterranean Climate
 - Warm, dry, breezy in summer; cold winter, with infrequent storms.
- Thermal Inversion
 - Persists throughout the year
 - Exacerbated in fall and winter

Economy of the RM

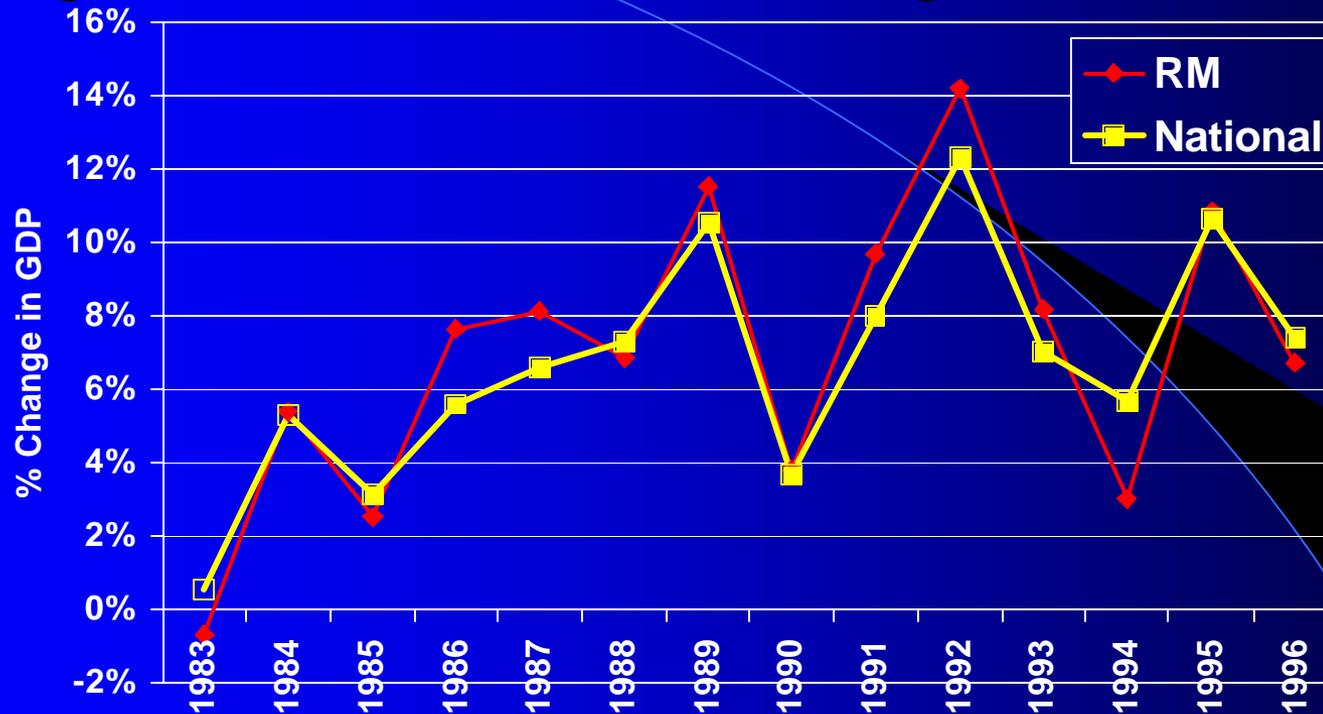
- Fundamental, continuously growing role in Chile's economy
 - Despite intentions over the years at decentralizing growth
- 1986-1996
 - RM economy AAGR: 7.9%; Nation: 6.8%
 - RM share of GDP: 42% \Rightarrow 47%
 - RM share of industrial activity: 44% \Rightarrow 52%
 - RM share of construction activity: 37% \Rightarrow 41%
 - RM share of commercial activity: 65% \Rightarrow 68%
- All banks and 46 of 47 of major economic groups HQ'ed in RM
- National center of education (universities)

Composition of RM's Economy



Employment: Government/Social Services, 28% jobs;
Industry, 23%; Commercial 20%

As goes the Nation, so goes the RM....



Since 1997 Asian crisis, etc. has cooled the national economy:

- 97-98: 3.4%; 1998-1999: -1.4%; 2000: ~5%

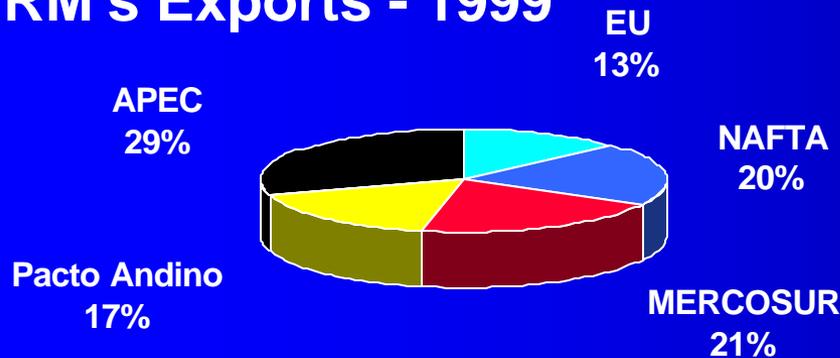
RM unemployment: 1995-98: 6.7%-7.5%; 1999-2000: 10%

Greater Santiago unemployment: ~14% (2000)

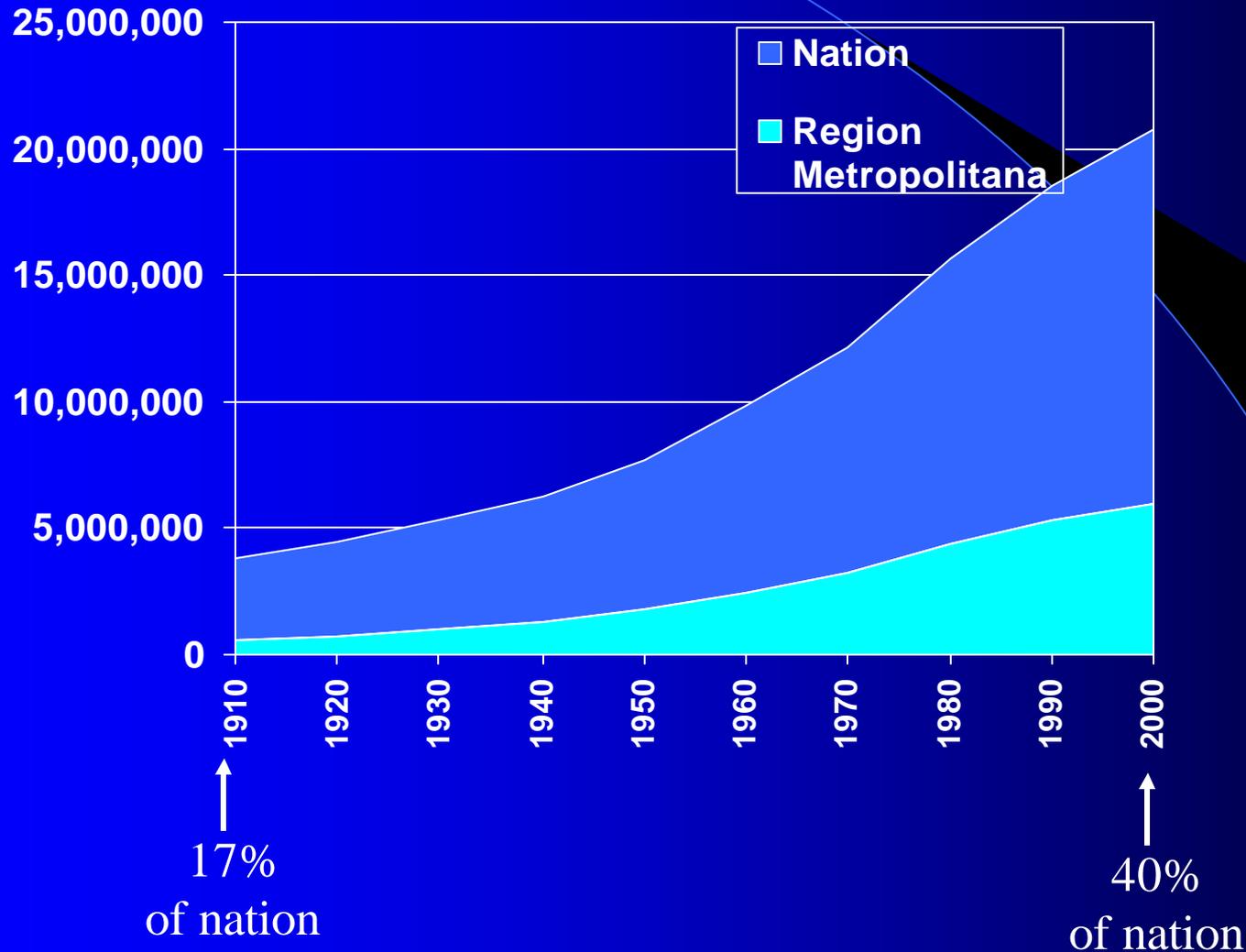
Economy and Globalization

- Certainly important, but....
 - Exports account for just 13% of RM's GDP (vs. 30% for nation)

RM's Exports - 1999



RM Population Evolution



Population Growth & Demographics

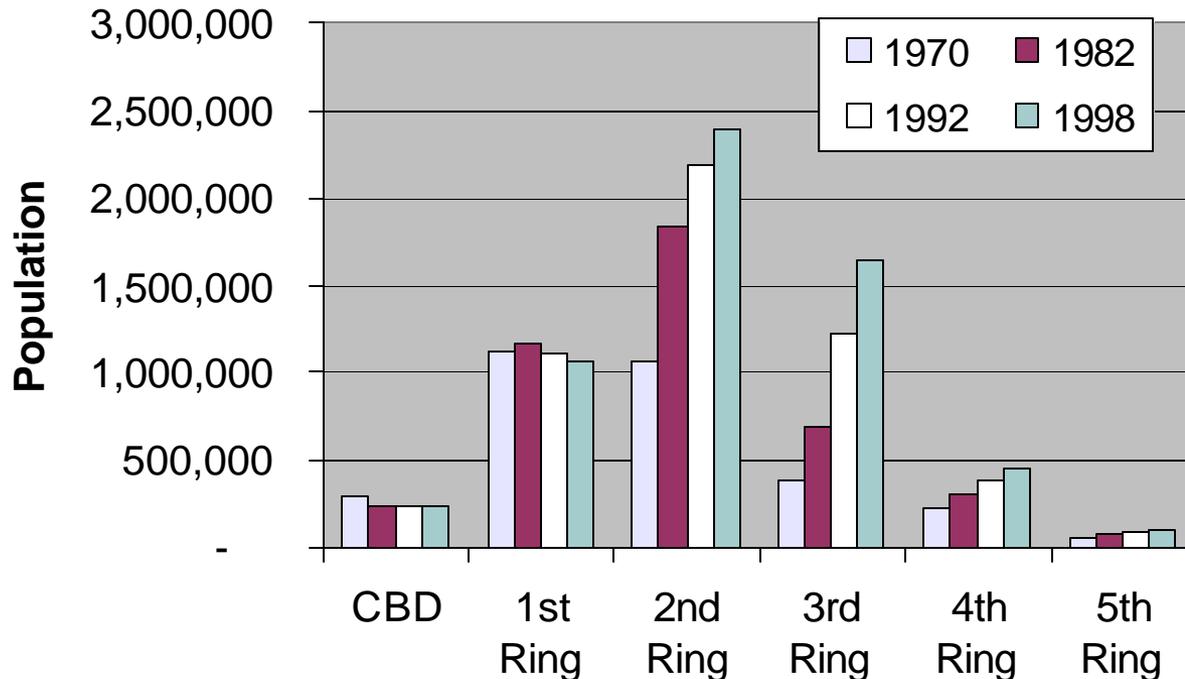
- Early 1900s: Santiago as nation's administrative center
- Mid 1940s: Import substitution policies led to industrial, financial commercial concentration in Santiago – trends that have continued...
- Recent Population Growth Trends (AAGR)

	RM	Nation
1970-1982	2.62%	2.03%
1982-1992	1.97%	1.64%

Population: Regional Distribution

- 1970: 42% of RM's population concentrated in the comuna of Santiago and 10 directly adjacent comunas
- 1992: These same comunas account for 26% of RM's population
 - 3% population decline
- Major growth in West, South, Southeast

Population Dynamics

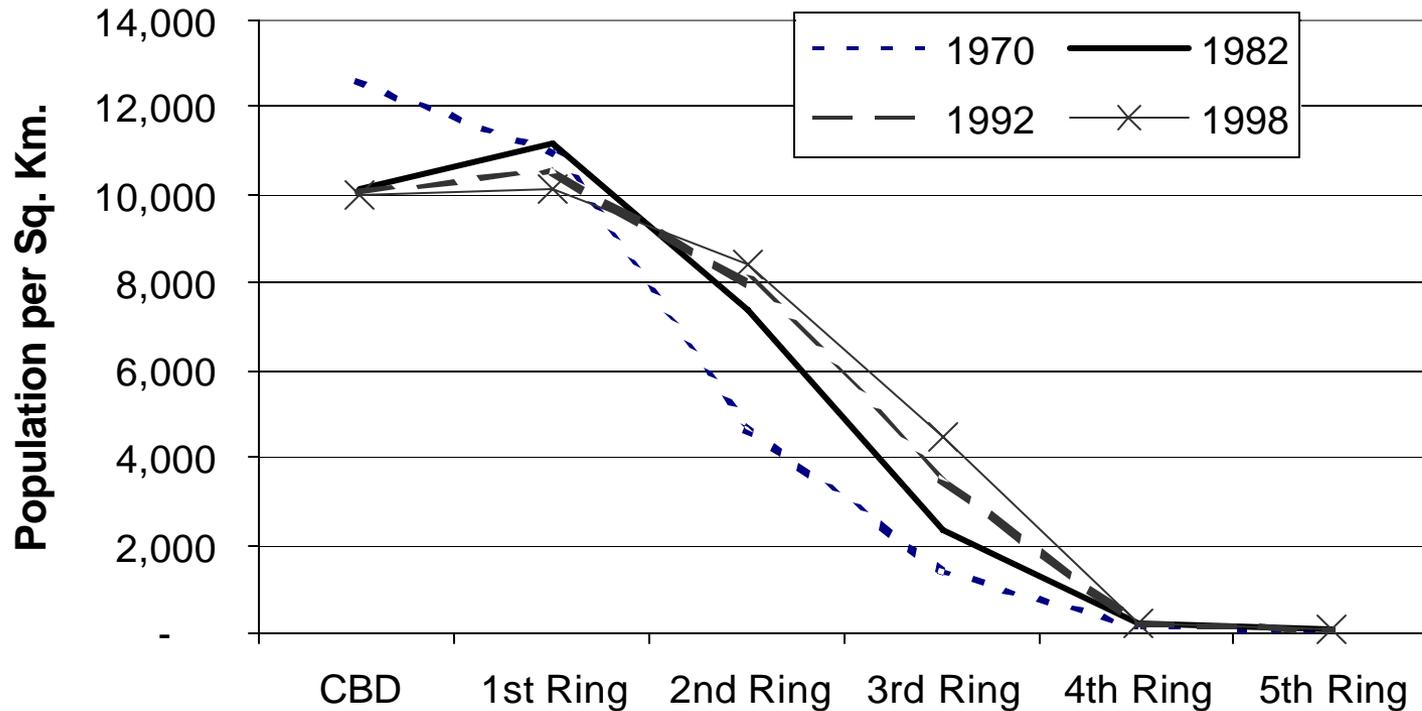


Note: Each ring is comprised of comunas within the following approximate radial distance from CBD (in km from rough geographic center of comuna) - 1st Ring, <5; 2nd Ring, 5<10; 3rd Ring, 10-15; 4th Ring, 25-45 ; 5th Ring, 50-100.

Influencing Factors

- Low peripheral land prices (Public housing projects)
- Middle and Upper Income suburbanization
- Increasing commercial and service land uses in central areas

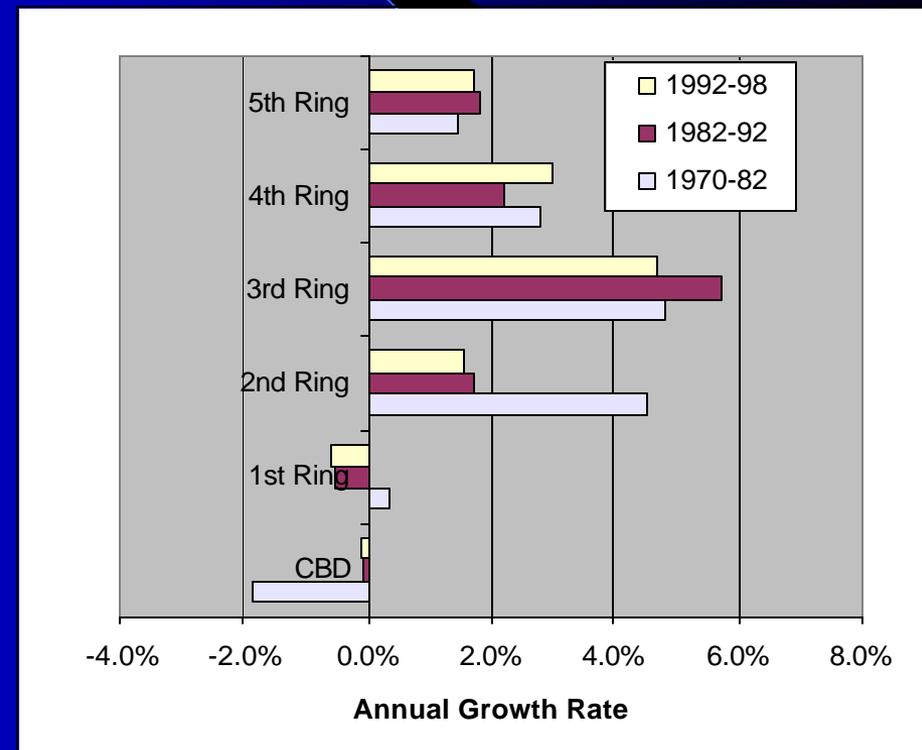
Population Dynamics: Densities



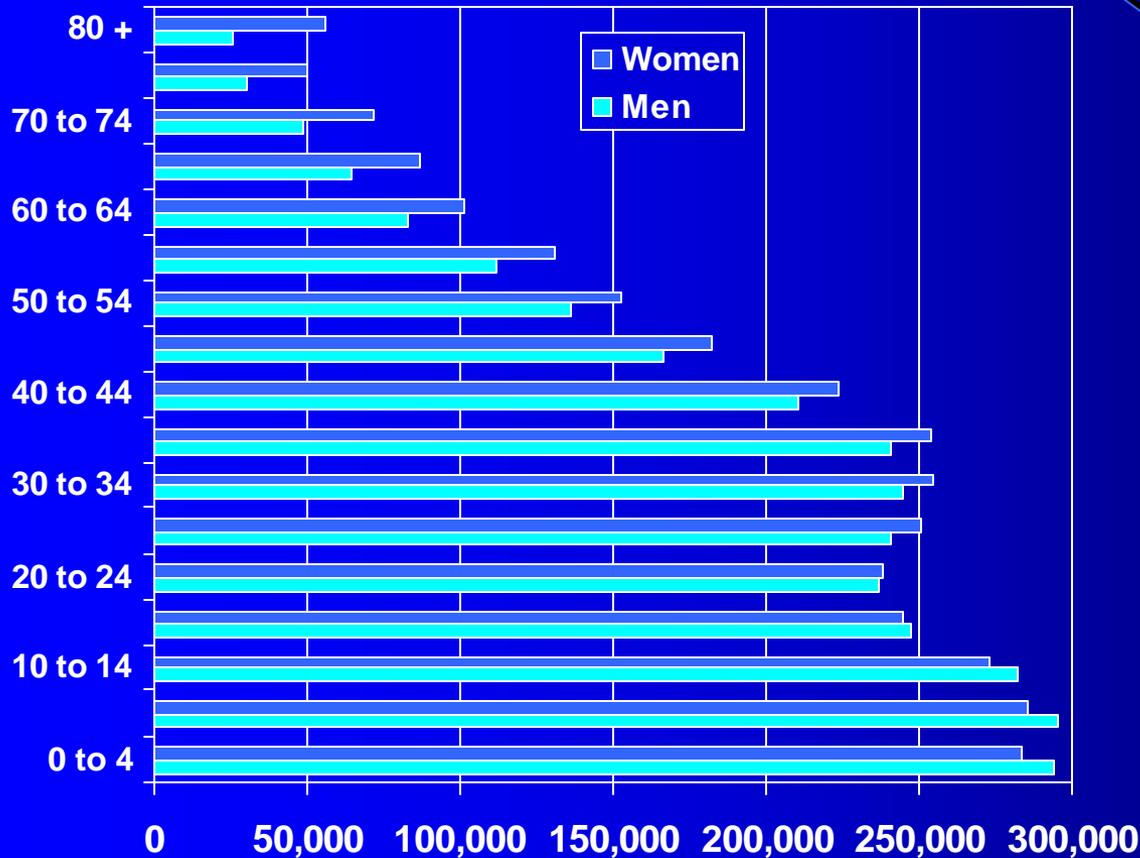
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Population Dynamics – the Future?

- RM growth expected to continue to outpace nation
- By 2020
 - AAGR 1.75%: 8.8 million
 - AAGR 1%: 7.3 million
- Where will that population reside?
 - Will recent past growth trends hold true?



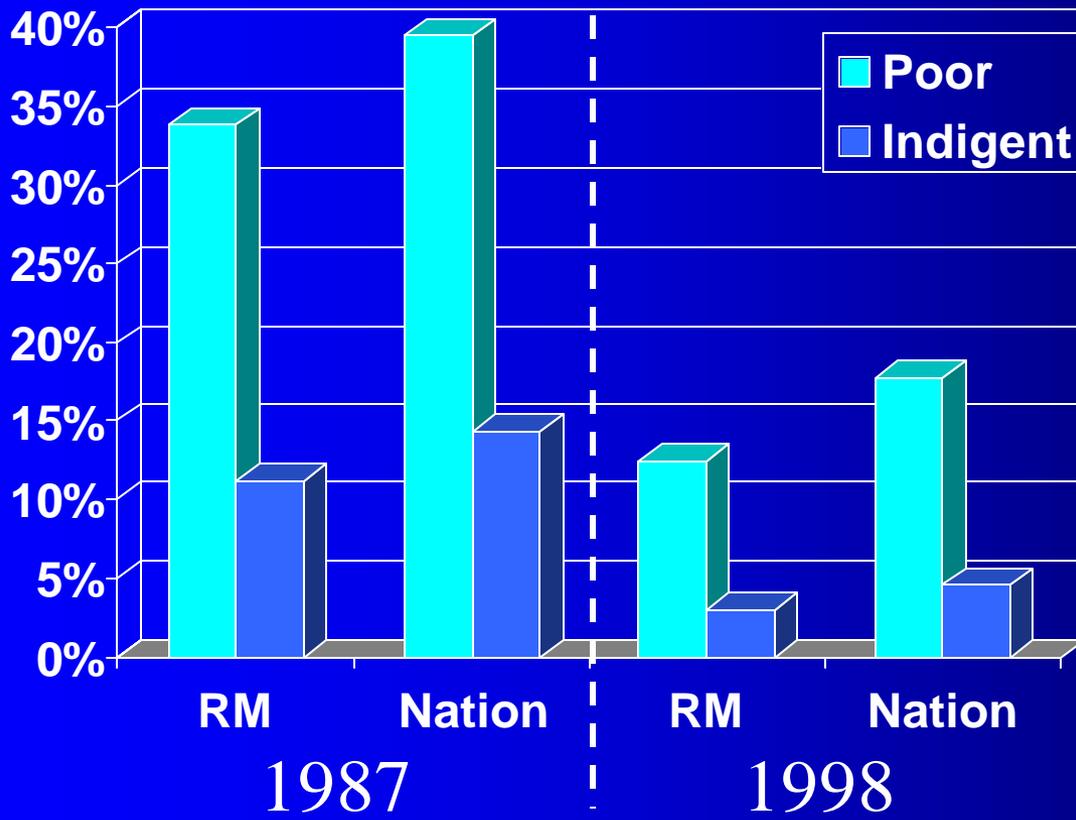
Demographics: Ages & Households



HH Size

- 1982: 4.82 persons
– 3.5 to 5.7
- 1992: 4.25 persons
– 3 to 4.8
- By 2010: 3.7

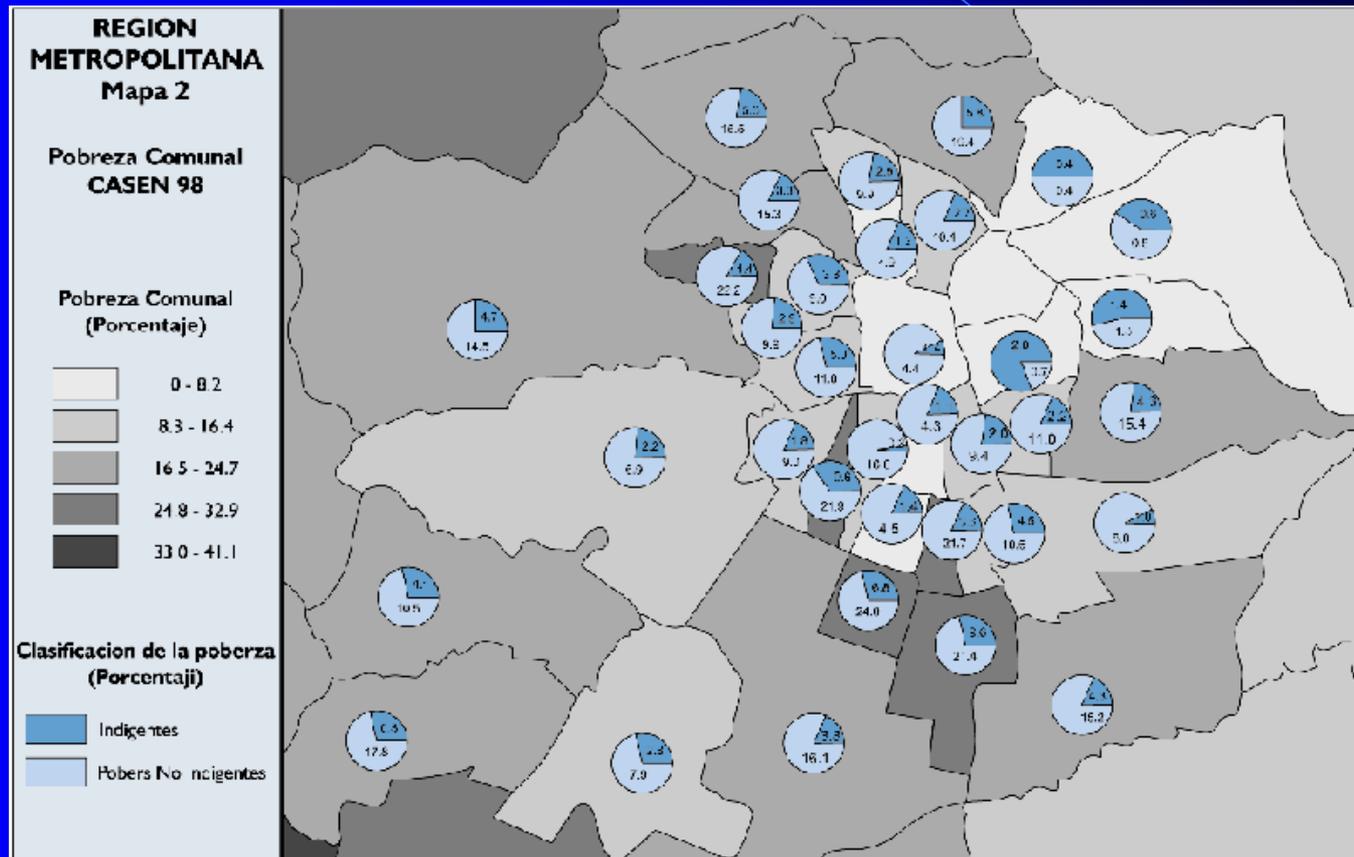
Socioeconomic Characteristics



Indigent: Annual HH Income
< \$500 (US\$1996)

Poor: Annual HH Income
< \$1000 (US\$1996)

The Segregated City-Region



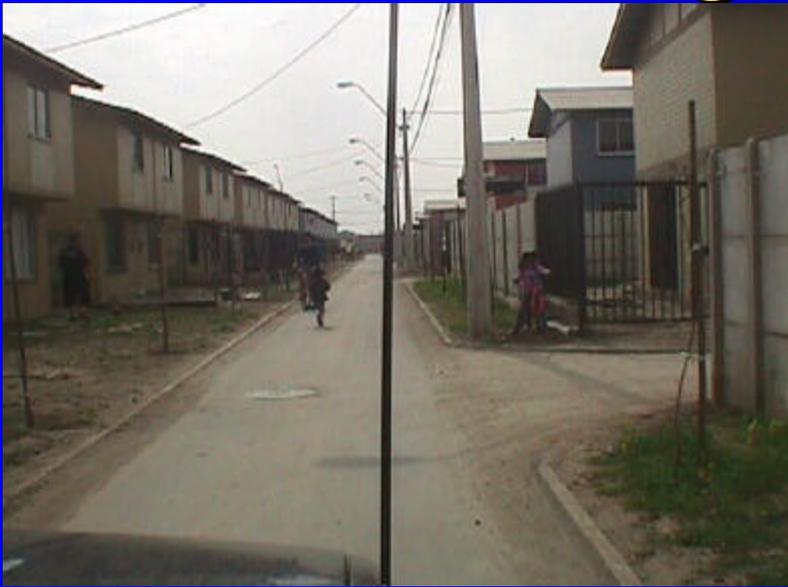
The Segregated City

- Migration historically led to “invasions” and precarious housing
 - *Poblaciones > ciudades callampas > campamentos > “asentamientos precarios”*
 - Major efforts in recent years to supply public housing
- Segregation exhibited through inequalities in: housing quality, education, municipal infrastructure provision, greenspace, etc.

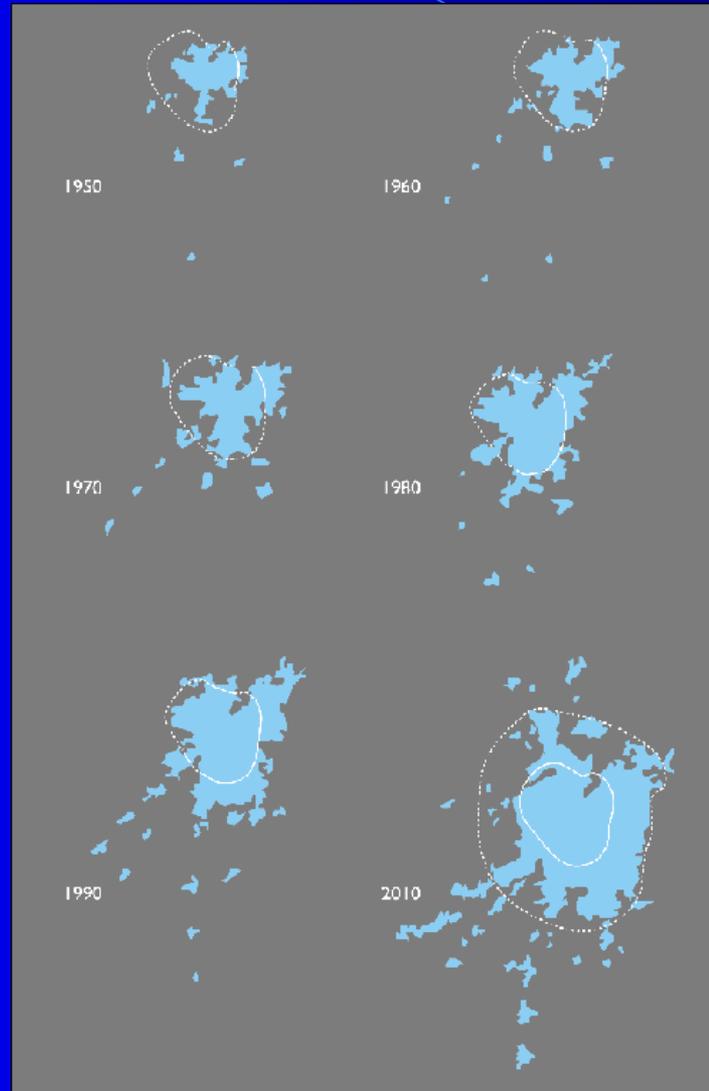
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The Segregated City



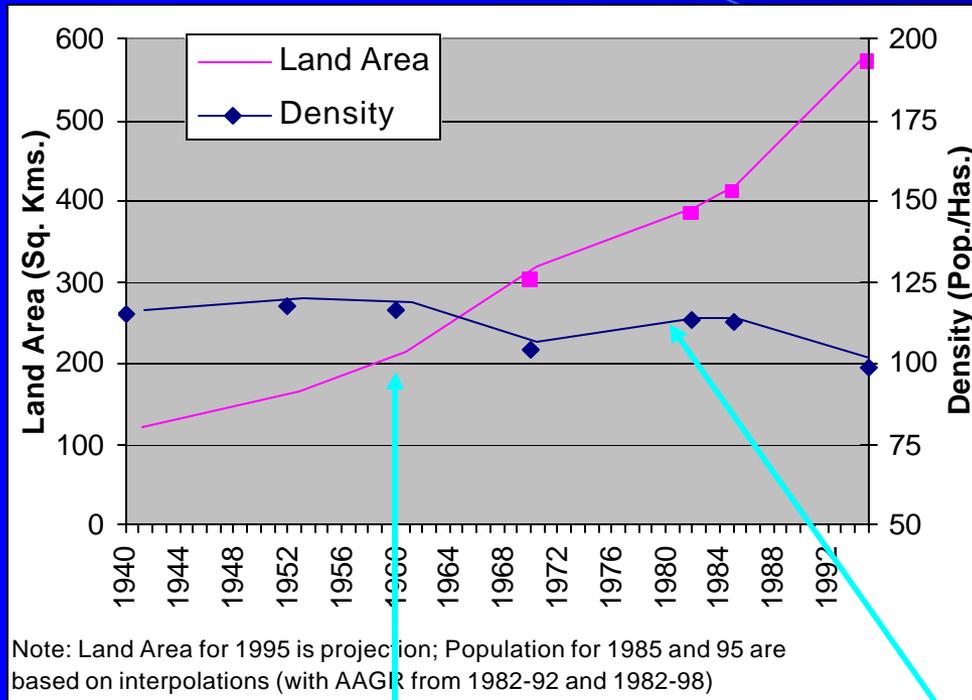
Urban Expansion – the SMA



1940: 100 km²

1995: 600 km²

Urban Expansion – Patterns, Influences



Overall Densities constant through 1950s

- though important shift in densities toward periphery

Densities decline during 1960s

By early 1970s, urbanization approaches growth boundary

- densities start rising

First Metropolitan Land Use Regulatory Plan

- includes urban growth boundary
- first major transport investments
- city begins losing “compact traits”

Urban Growth Boundary Lifted

- after 1981-82 economic crisis city begins expanding 70% faster than population
- densities decline at most rapid rate in history

Growth Patterns – Influencing Factors

Lifting the Growth Boundary in 1979

In More Recent Years

- Reinvigorated road construction
- Low density suburban subdivisions
- Distant public housing projects and “*invasiones*”
- Industries on southeastern & northern fringes and in West near Airport on Ring Road
- Demographics – middle class “boom”: From 1992-97, 60% of urbanization in 4 “middle class” *comunas*