Sprawl

Oct 2 & 4, 2007

What is sprawl?

- Suburbanization
  - the growth of population outside the central city (Anthony Downs, 1995)

Cf. Central city: A central area with the highest population density in a MA

City of Seattle:

POP 563,374 **HH** 258,499 **Families** 113,481

Pop density: 6,717.0/mi² (* 1 mi² = 640 acres)

(_____ persons /acre)

Housing density: 3,225.4/mi²

(____ houses/acre)

What is sprawl? (cont.)

Low-density development on the edge of cities that is "poorly planned, land-consumptive, automobile-dependent, designed without regard to its surroundings" (Richard Moe, 1995).

- Two types:
  - "sellscape" retail development along major arteries;
  - spread-out SFH residential development -


Baskin Robbins
Rite Aid


CROSS WALK
EYES RITE OPTICAL
SOURCE


Chubby & Tubby
NIKE
Chubby & Tubby


Emerald
ShuttlePark


4 18 01

States where sprawl factors compare this way (1982-97)

State	Growth in Per Capita Land Consumption	Population Growth
Arizona	-13%	58%
California	2%	30%
Hawaii	1%	20%
Nevada	-26%	90%
Washington	3%	31%

SOURCE: "1997 National Resources Inventory"
(U.S. Department of Agriculture

http://www.sprawlcity.org/charts_usda/west_4.html

Third of states with LEAST per capita land consumption

rank high in total land lost

State	Rank: per capita land consumption	Rank of 24: total land lost (in thousands of acres)
Hawaii	#24	#24 (31,000)
California	#23	#2(1,318,000)
Nevada	#22	#20 (109,000)
Utah	#21	#16 (192,000)
Arizona	#20	#8 (403,000)
Washington	#19	#3 (528,000)
Louisiana	#18	#9 (390,000)
Oregon	#17	#12 (267,000)
National Average		(506,000)

SOURCE: "1997 National Resources Inventory"
(U.S. Department of Agriculture)

http://www.sprawlcity.org/charts_usda/west_9.html

What is sprawl? (cont.)

- "random unplanned growth characterized by inadequate accessibility to essential land uses such as housing, jobs, and public services like schools, hospitals, and mass transit" (Bullard, 2000)

Sprawl and Infill

cf. *Infill:* Development of vacant, or under-utilized, lands in an urban area

What is sprawl? (cont.)

- Argument is that sprawl results in
  - underutilization of older infrastructure in older neighborhoods;
  - duplication of services; and
  - subsidies from central city taxpayers.

100 Largest U.S. Urbanized Areas ranked by square miles of sprawl (1970-1990)

http://www.sprawlcity.org/hbis/index.html#

Urbanized Area (ranked by amount of sprawl)	Square Miles of Sprawl (growth in land area)
1. Atlanta, GA	701.7
2. Houston, TX	638.7
3. New York City-N.E. New Jersey	541.3
4. Washington, DC-MD-VA	450.1
5. Philadelphia, PA	412.4
6. Los Angeles, CA	393.8
7. Dallas-Fort Worth, TX	372.4
8. Tampa-St.Petersburg-Clearwater, FL	358.7
9. Phoenix, AZ	353.6
10. Minneapolis-Saint Paul, MN	341.6

(sq. mi)

Greater Paris: 890

Greater London: 617

Greater Tokyo: 837

Mexico City: 597

Beijing: 350

Seoul: 234

Seattle urbanized areas: 174.8 (#83)

City of Seattle: 84

Causes of Sprawl

- a natural process ("expanding the frontier")
- entrenched attitudes about "boundless space, the concept of throwaway culture and the conviction that newer is always better“
- market forces
  - individual choices made by citizens, developers, governmental units, farmers and others

Causes of Sprawl

- public policies in favor of sprawl
  - mortgage insurance,
  - tax deductibility for mortgages,
  - financing of transportation and major infrastructure investments,
  - underpricing of roads and automobiles, etc.

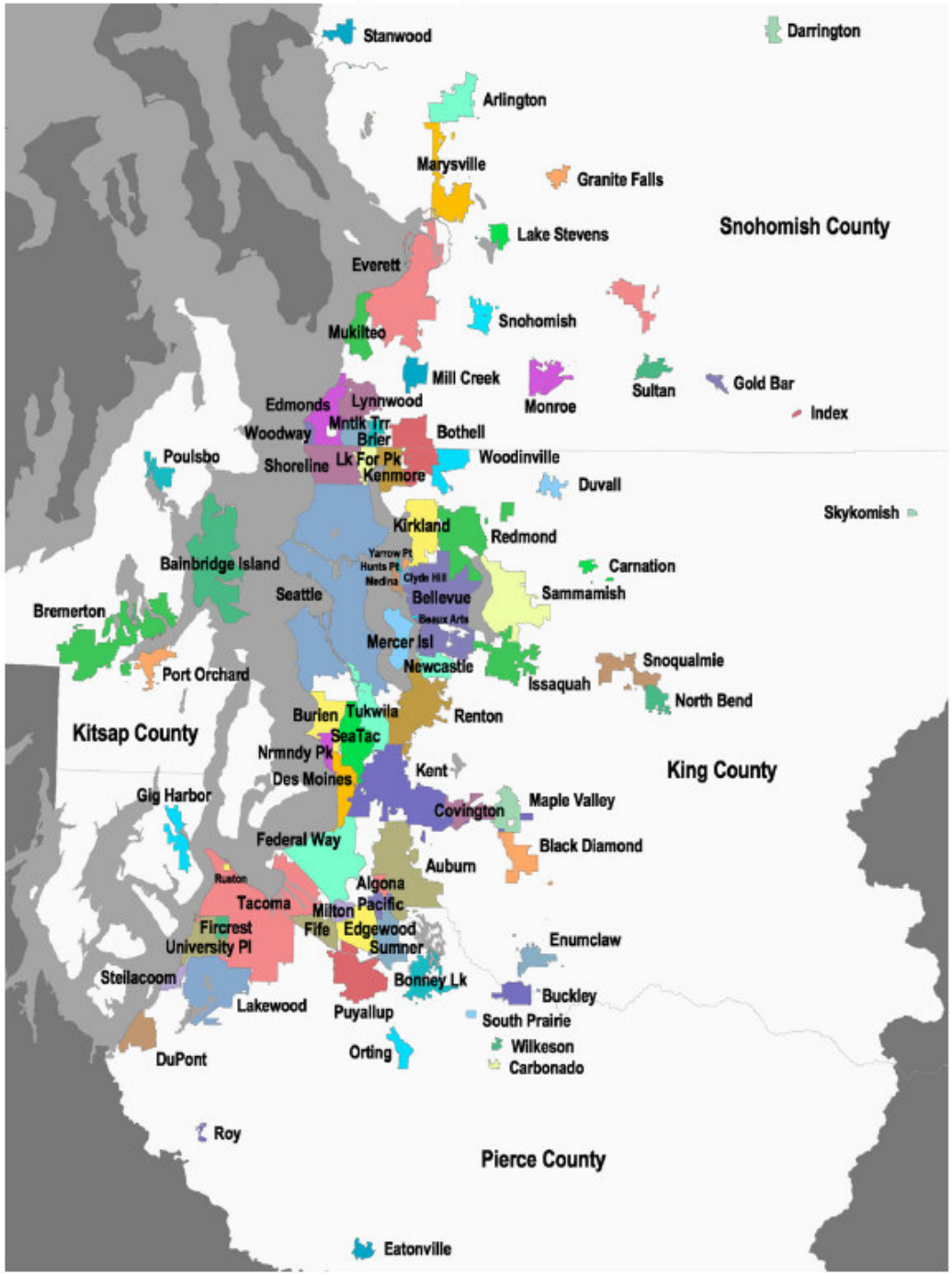
Where is sprawl more likely to occur?

- fragmented metropolitan areas (with hundreds of independent jurisdictions)
- spatially expanding MAs
- MAs characterized by uneven public and private investment
- regional disparities in financing of public services
- areas with automobile-dependent development

Atlanta Metropolitan Area

- 28 counties
- 50 suburban cities (>Pop 10,000)
- 87 suburban cities (< Pop 10,000)

APPENDIX A. Cities and Towns of the Central Puget Sound Region



Factors favoring sprawl

- fragmentation of governance**;
- SFHs in low-density areas;
- universality of the automobile;
- dispersed workplaces, usually providing free parking;
- "***filtering***" to provide low-income housing
  - "the changing of occupancy as the housing unit that is occupied by one income group as a result of decline in market price, i.e., in sales price or rent value" (Richard Ratcliff (1949), *Urban Land Economics*)

Factors favoring sprawl (cont.)

- ** the most serious.
  - It leads to exclusion of the poor, with negative consequences on both the inner city (social disorganization) and the suburbs (growth-related problems).

Sprawl and Public Health

- Some analysts argue "roadside blight and strip sprawlscapes" result in stress to commuters.
  - (CB) But does this compare with fears of violent crime in the inner city?
- Sedentary life style
  - Obesity

Sprawl and the Automobile

- A symbiotic relationship
  - the auto encourages low-density development, and the latter ensures that the automobile is the only practical mode.

Sprawl and the Automobile

- Several factors encourage auto use (double the European level):
  - low gas prices (1/3 to 1/4 of those in Europe);
    - France: U$6.85/gallon (> $100/SUV tank)
    - The Netherlands: U$ 7.84/gallon (U$ 2.6 for gasoline)
    - USA: U$3.03/gallon
    - http://www.eia.doe.gov/emeu/international/gas1.html (09/24/07)
  - low sales taxes on autos (again, 1/4 of those in Europe);
  - low roadway user fees, about 60% of government expenditures;
  - 95+% of parking is free; and
  - the failure to internalize the social costs of auto use (pollution, congestion, noise).

Average Annual Household Expenditures, 2004
Bureau of Labor Statistics, Current Expenditure Shares
Table, # 47

Item	*Proportion of Total Expenditure*
shelter (home mortgage or rent)	32%
car ownership & operating expenses	17%
food	13%
pensions & Social Security contributions	10%
utilities	7%
health care	6%
entertainment	5%
clothing	4%
household furnishing	4%
education	2%

http://www.bikesatwork.com/carfree/cost-of-car-ownership.html

In Defense of Sprawl

- May force cities to act to create more attractive urban environments (Linneman);

- It is an effective congestion reduction mechanism (Gordon & Richardson);

- Opposition to sprawl is elitist, hypocritical and paternalistic.

In Defense of Sprawl

- Low-density, mainly SFH, living is the overwhelming revealed preference of American households.
- Continuous fall in transportation costs and increasing potential for telecommunications-transportation substitutions weakens any efficiency case for compact development

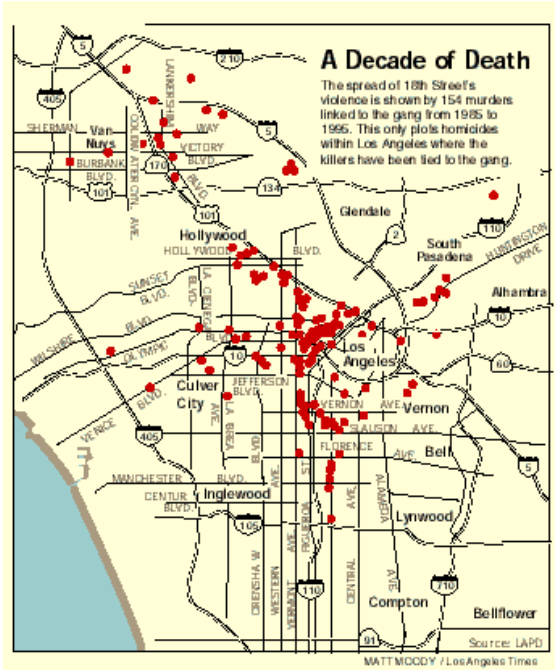
- Underpricing of automobile use has not been a major factor; transit use is much more heavily subsidized.

The Economic Costs of Sprawl

- Burchell argues that more compact PLAN consumes 20-45% less land than TREND, and saves in some infrastructure costs (15-25% in local roads, 7-15% to water and sewer loans).

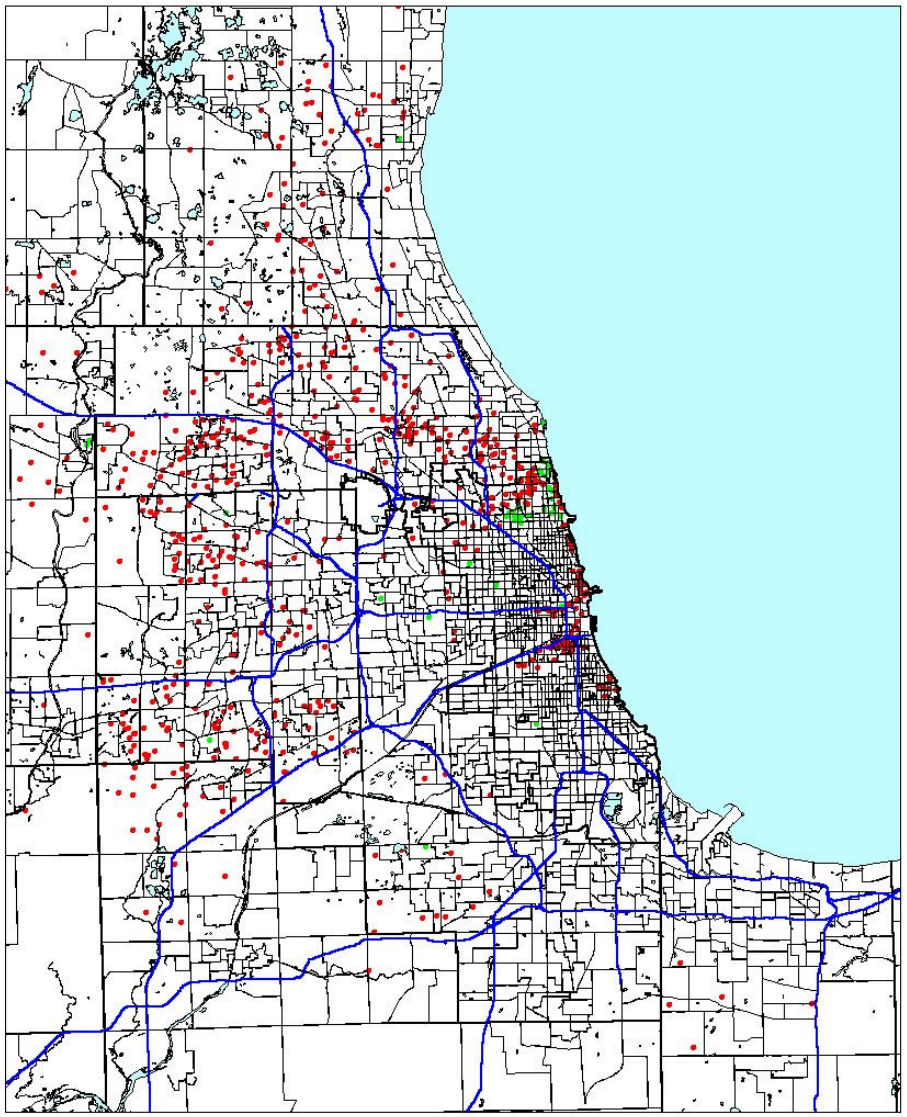
Socioeconomic Impacts of Sprawl

- concentration of poverty in the inner city;
- economic and racial residential segregation;



- Prof. Michael Porter "The Competitive Advantage of the Inner City" *Harvard Business Review* (1995)
  - Locational advantage
  - Local market demand
  - Potential regional job clusters
  - Human resources (unskilled, but willing to work)
  - Obstacles: local governments' regulation, anti-business attitude

Change in Non-Hispanic Asian/Pacific Population, 1990-2000
By 1990 Census Tract
Chicago Region



Non-Hispanic Asian/Pacific population gain
1 Dot = 200
Non-Hispanic Asian/Pacific population loss
1 Dot = 200

University of Chicago Map Collection, March 2001

Change in Hispanic Population, 1990-2000
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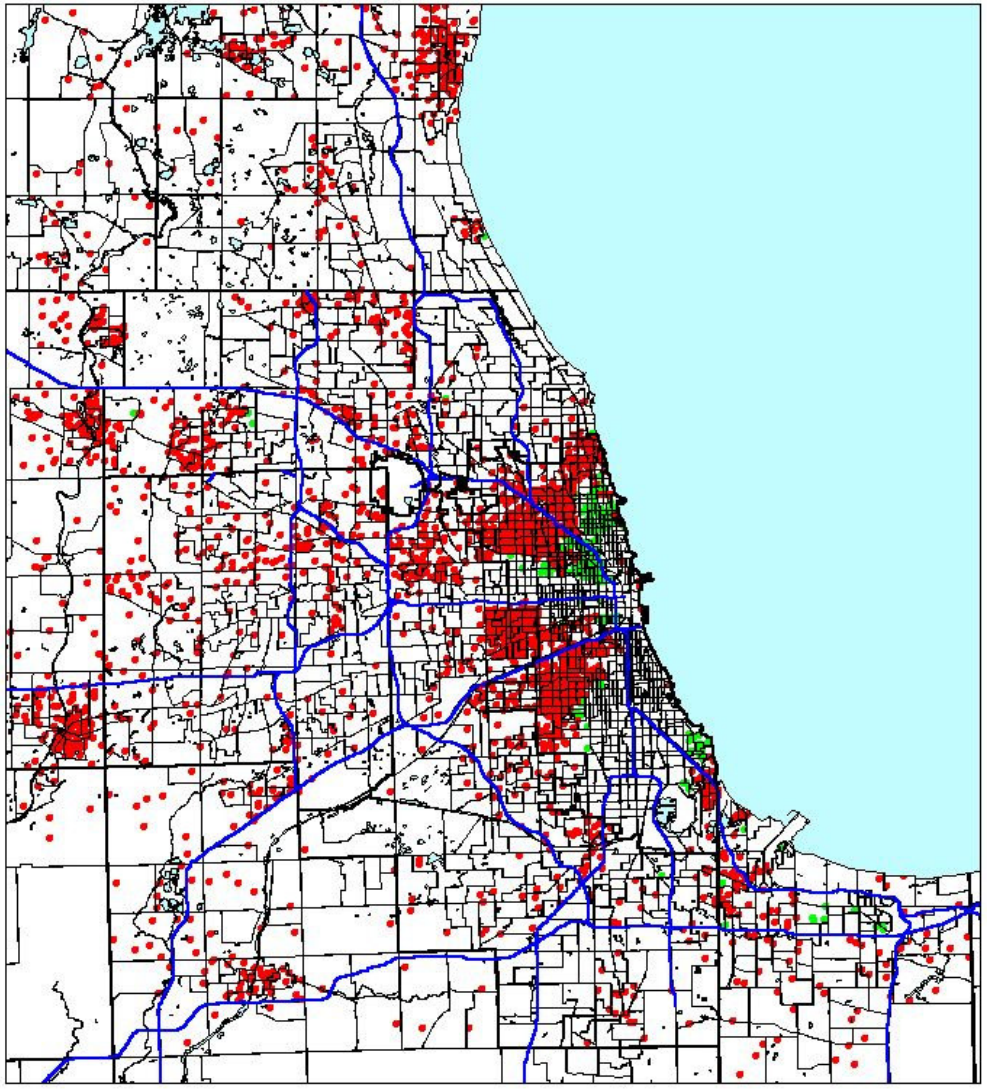

Hispanic population gain
1 Dot = 200
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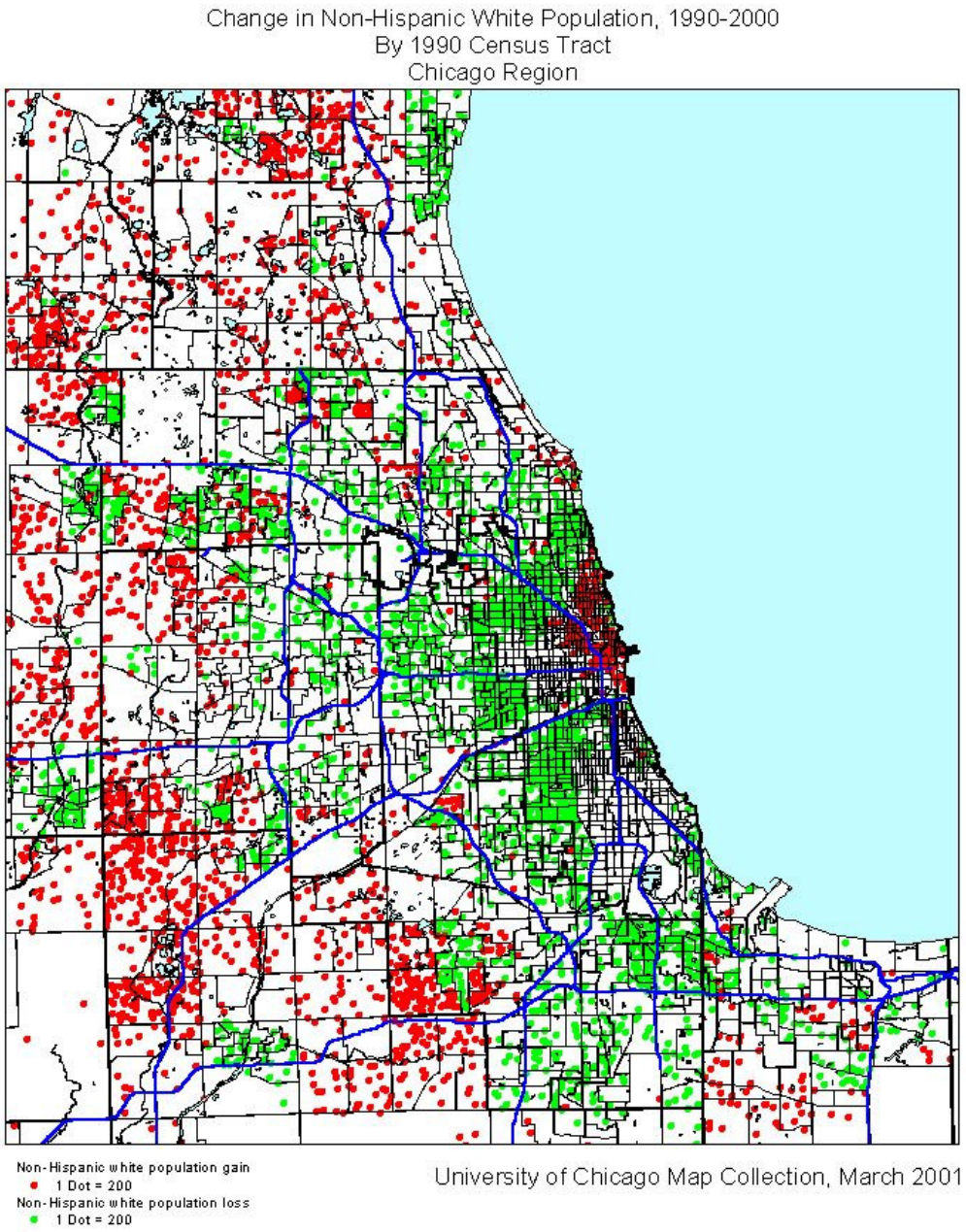
University of Chicago Map Collection, March 2001

Gain 200 people

Loss 200 people

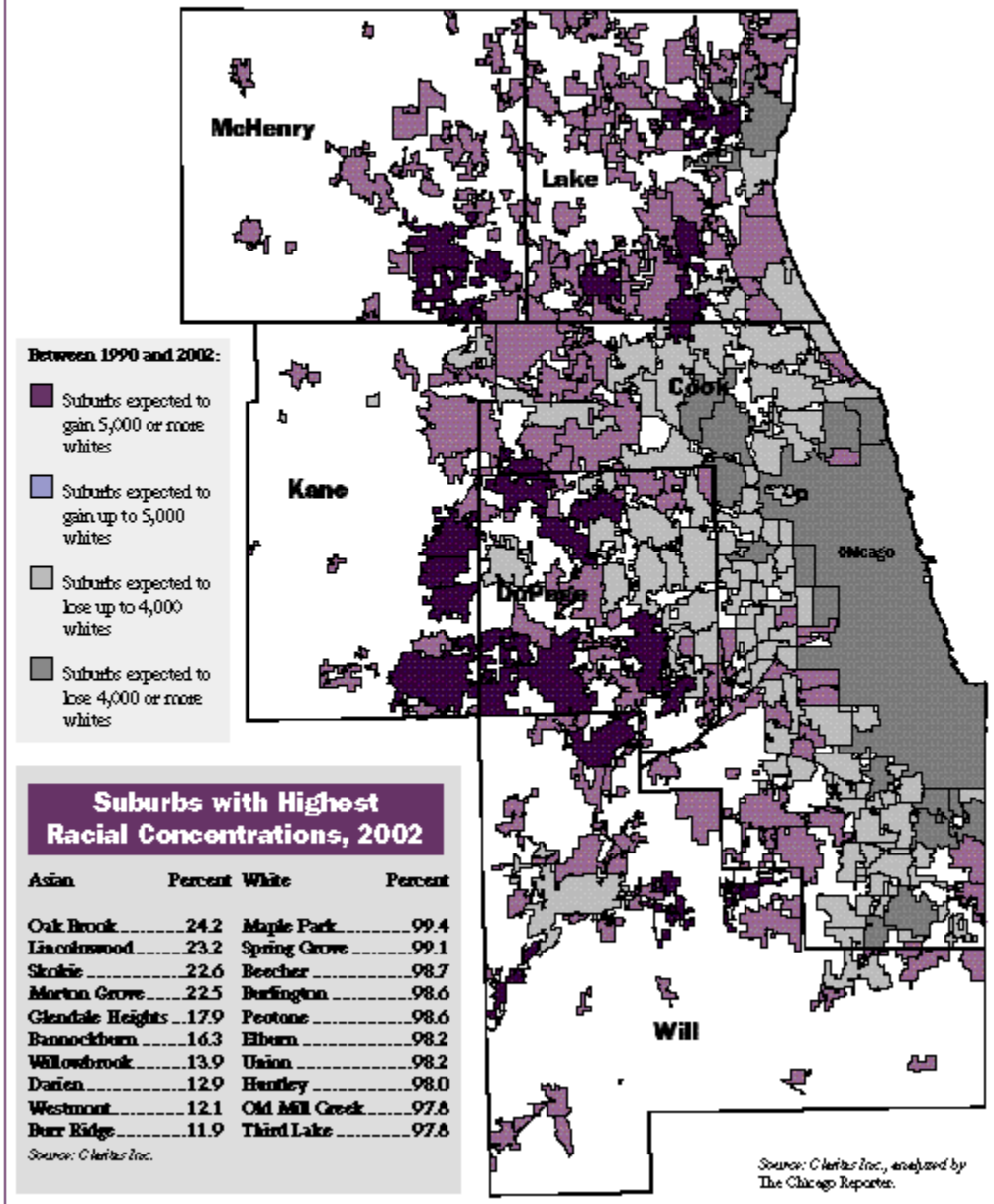


White Flight

- **"White Flight"**: Phenomenon of white middle class suburbanization from the central city into the suburbs. It reached its crescendo when the Supreme Court mandated school desegregation, in the late 1960s

White Flight

By 2002, 14 suburbs will have lost more than 4,000 whites since the 1990 census. Thirteen of those towns are in Cook County. However, only three of the 25 suburbs that will gain at least 5,000 whites are in Cook. Forty-eight suburbs will remain more than 95 percent white in 2002—41 of them outside Cook County.



Between 1990 and 2002:

- Suburbs expected to gain 5,000 or more whites
- Suburbs expected to gain up to 5,000 whites
- Suburbs expected to lose up to 4,000 whites
- Suburbs expected to lose 4,000 or more whites

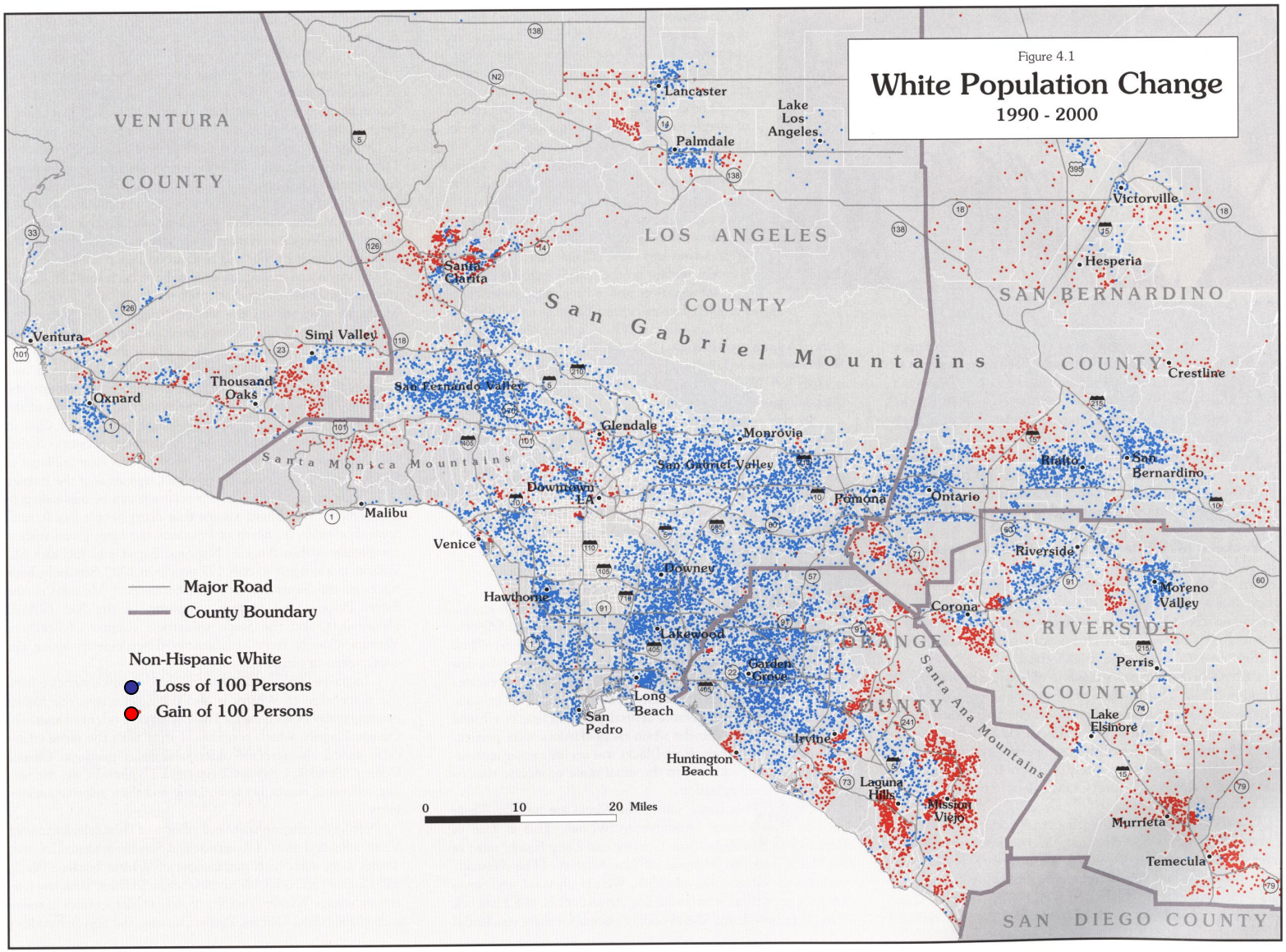
Suburbs with Highest Racial Concentrations, 2002

Asian	Percent	White	Percent
Oak Brook	24.2	Maple Park	99.4
Lincolnwood	23.2	Spring Grove	99.1
Skokie	22.6	Beecher	98.7
Morton Grove	22.5	Burlington	98.6
Glendale Heights	17.9	Peotone	98.6
Bannockburn	16.3	Elburn	98.2
Willowbrook	13.9	Union	98.2
Darien	12.9	Huntley	98.0
Westmont	12.1	Old Mill Creek	97.8
Burr Ridge	11.9	Third Lake	97.8

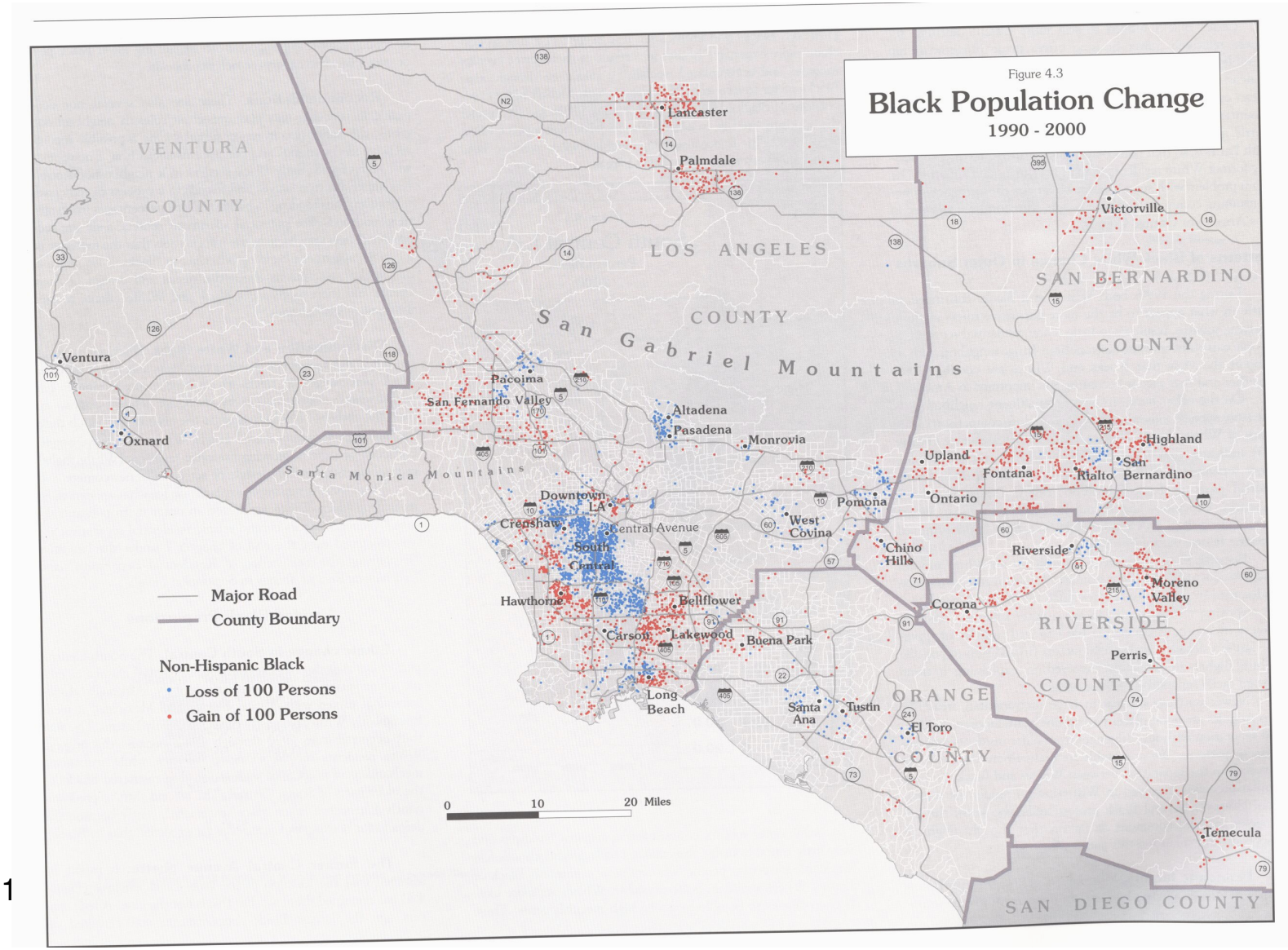
Source: Claritas Inc.

Source: Claritas Inc., analyzed by The Chicago Reporter.

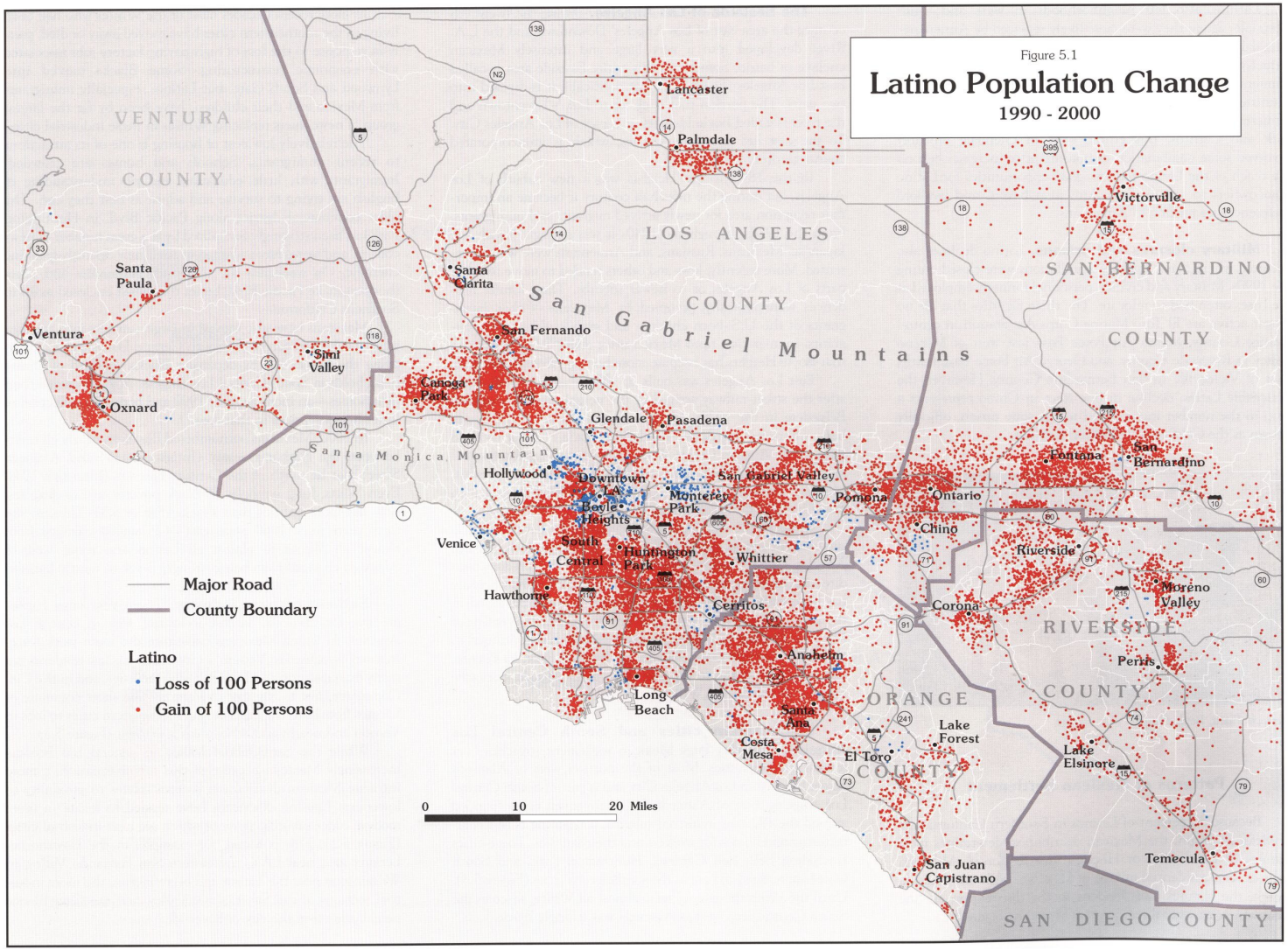
Example of White Flight (S Cal)



Black flight (?)



Latino Influx



Socioeconomic Impacts of Sprawl

- urban public investments are difficult to finance;
- automobile dependence undermines efforts to improve air and water quality and to conserve energy;

Socioeconomic Impacts of Sprawl

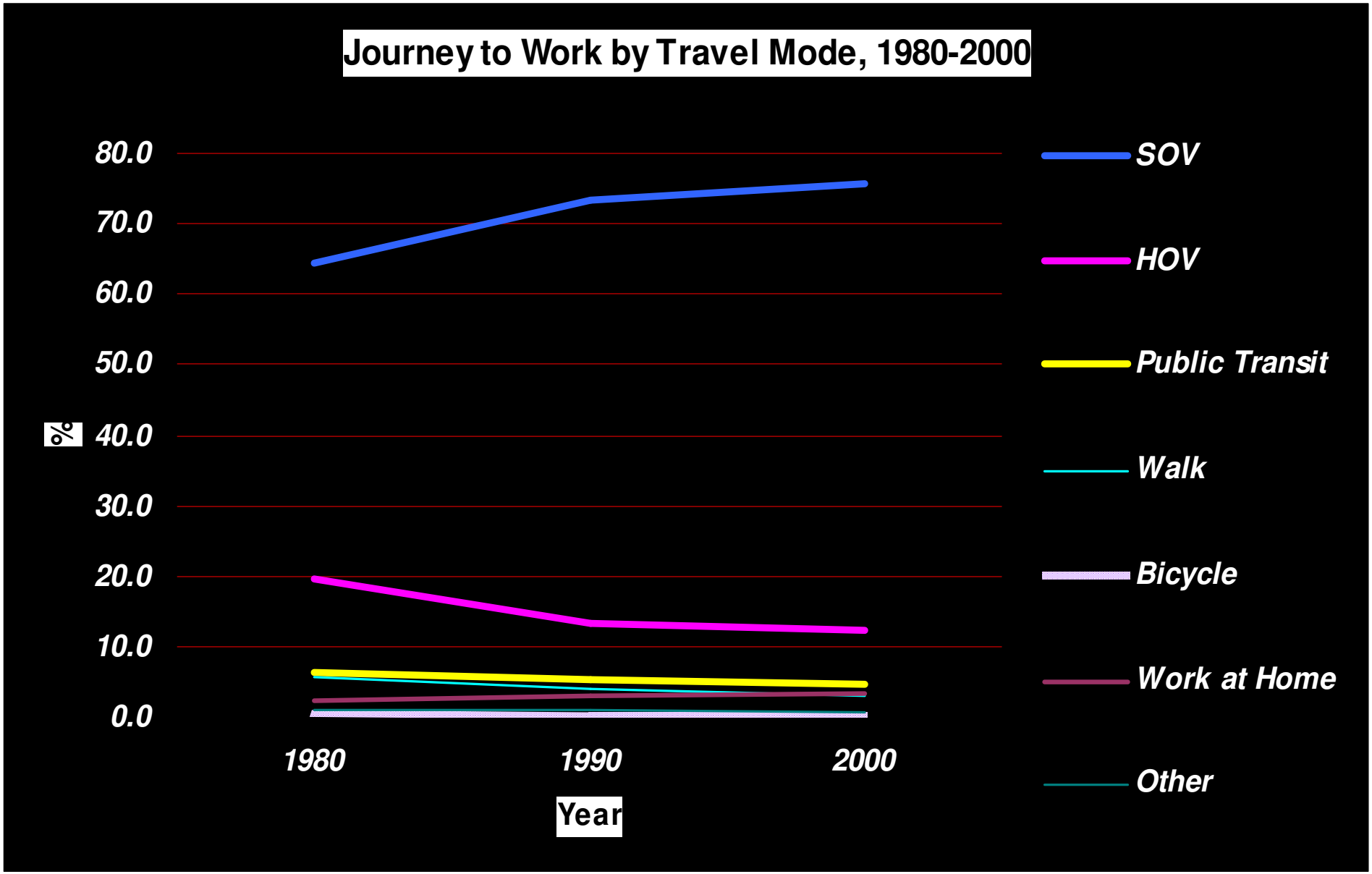
- middle-class financial instability;
- efforts to preserve central city neighborhoods with historic resources are undermined; and
- sprawl is "corroding the very sense of community that binds us together as a people and as a nation" (Richard Moe).

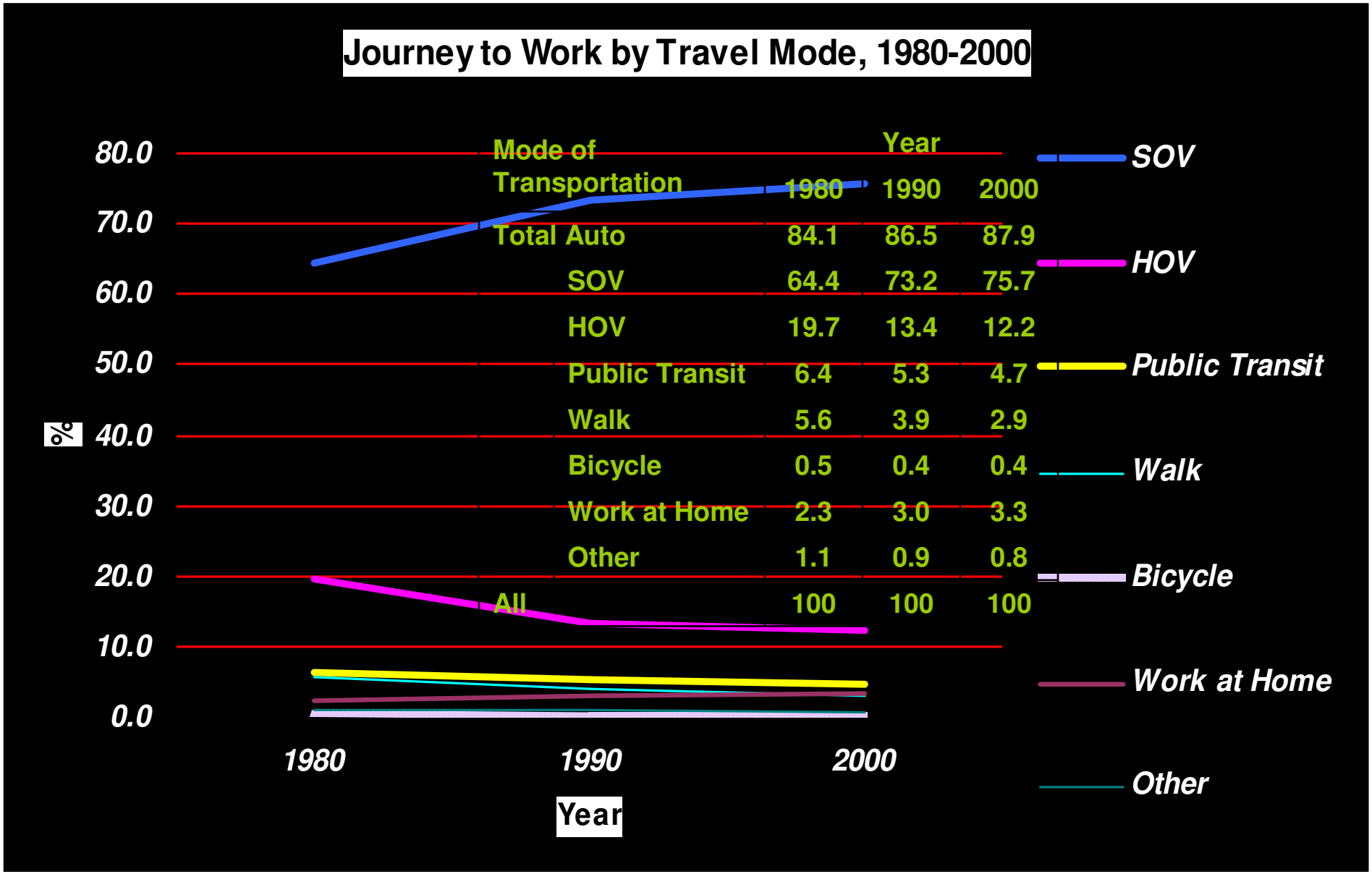
Why is it difficult to change sprawl?

- No obvious villain.
- Most people (even sprawl's opponents) benefit from the auto-dependent culture.
- The costs and benefits of auto use are more or less in balance, with the beneficiaries paying most of the costs.
- Those who suffer most from the auto-dependent society have little political power, and their advocates have had only limited success in changing public policy.

Reducing Automobile Dependence

- Auto travel is cheap and convenient; auto VMT has increased continuously while public transit patronage has declined.

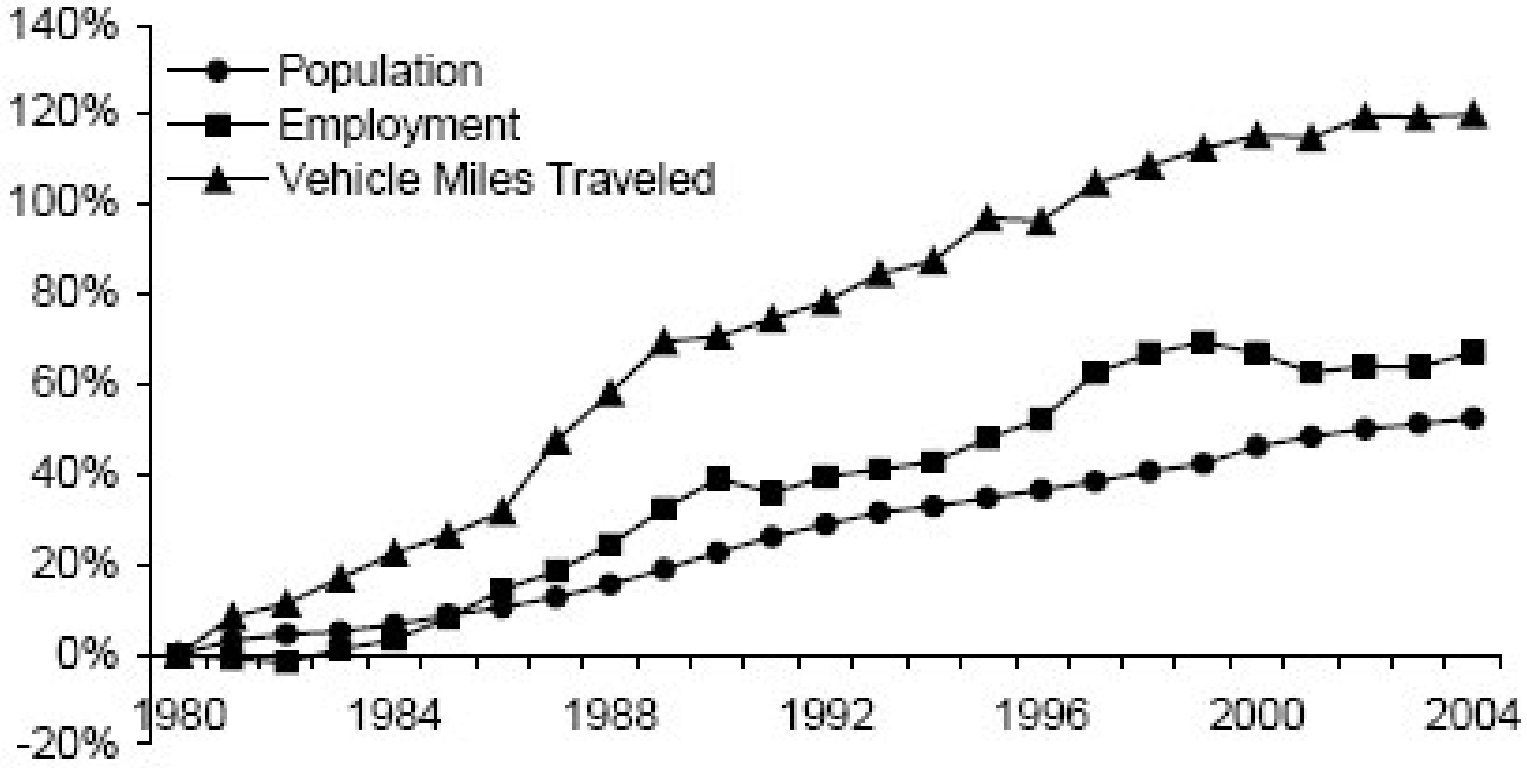

Journey to Work by Travel Mode, 1980-2000
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
%
1980
1990
2000
Year
SOV
HOV
Public Transit
Walk
Bicycle
Work at Home
Other



Mode of Transportation	Year 1980	1990	2000
Total Auto	84.1	86.5	87.9
SOV	64.4	73.2	75.7
HOV	19.7	13.4	12.2
Public Transit	6.4	5.3	4.7
Walk	5.6	3.9	2.9
Bicycle	0.5	0.4	0.4
Work at Home	2.3	3.0	3.3
Other	1.1	0.9	0.8
All	100	100	100

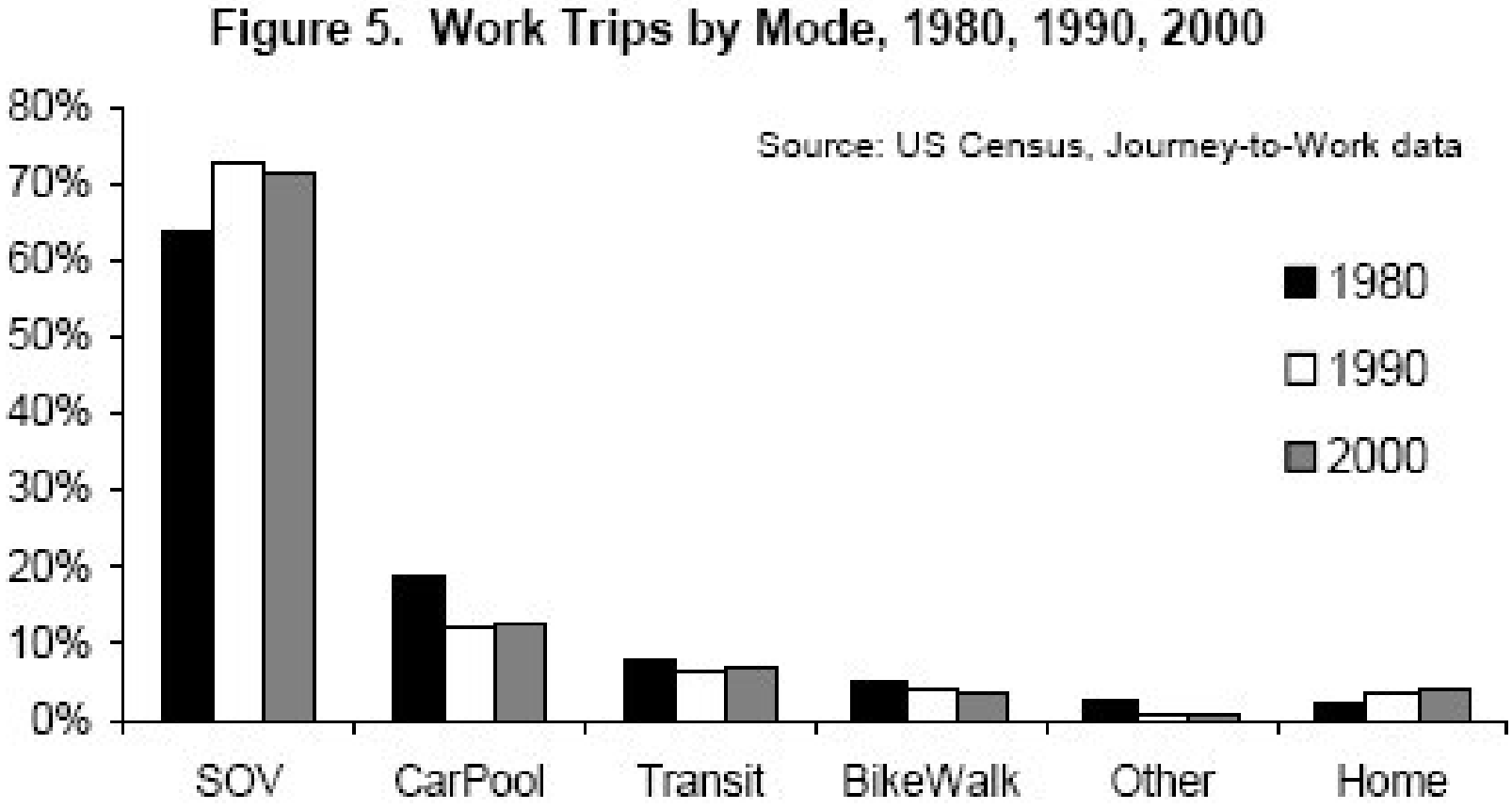
Figure 4. Cumulative Growth in the Central Puget Sound Region, 1980-2004

Note: While VMT outpaced population and employment between 1980 and 1992, since then the three growth rates have been similar.



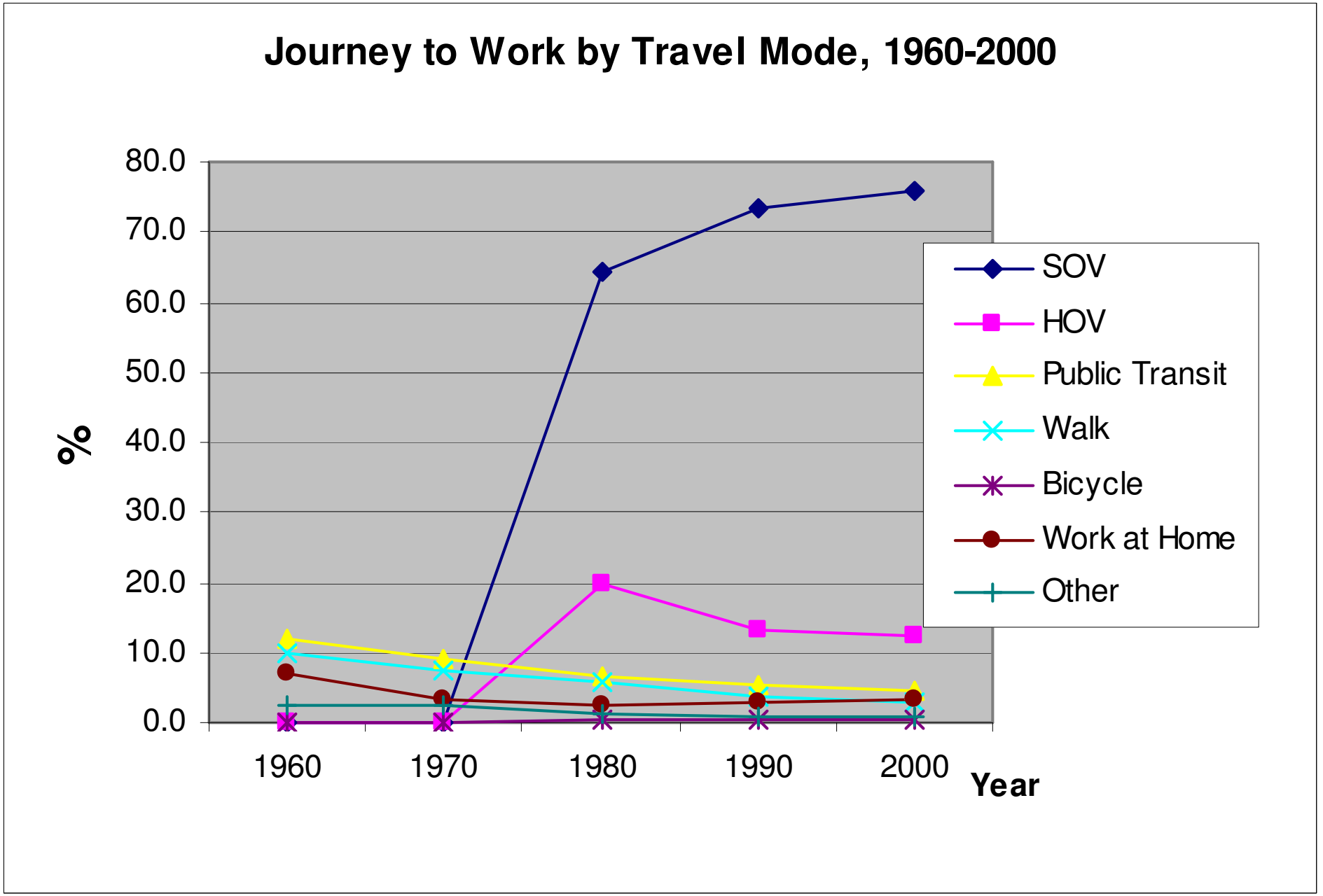
Source: US Census Bureau; State Office of Financial Management (for noncensus years); US Bureau of Labor Statistics; State Department of Transportation

http://www.psrc.org/projects/vision/pubs/transportation.pdf



http://www.psrc.org/projects/vision/pubs/transportation.pdf

- Solo driving has increased because of
  - suburbanization of jobs;
  - growth of 2-worker families;
  - increase in linked rather than non-stop trips;
  - rise in flextime or irregular work hours;
  - increase in female employment (except for transit-dependent, women prefer to drive alone than to use mass transit);
  - travel time by autos is approximately 1/2 that of transit travel time.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1990
2000
Year
SOV
HOV
Public Transit
Walk
Bicycle
Work at Home
Other

Measures of Energy Demand
Energy Information Administration
Household Vehicles Energy Use: Latest Data & Trends - Sep 2005

	Year				Annual Percent Change		
	1988	**1991**	1994	**2001**	88-91	91-94	94-01
Households (million)	91.6	94.6	97.3	**107.4**	1.1	0.9	**1.4**
Vehicles (million)	147.5	151.2	156.8	**191.0**	0.8	1.2	**2.9**
Vehicle-Miles Traveled (trillion)	1.5	1.6	1.8	**2.3**	2.0	3.8	**3.5**
Energy Use (billion gals)	82.4	82.8	90.6	**113.1**	0.2	3.0	**3.2**
Intensity (gals/1000 miles)	54.6	51.8	50.5	**49.5**	-1.8	-0.8	**-0.3**

http://www.eia.doe.gov/emeu/rtecs/toc.html

Prevalence of automobile ownership

- Auto ownership: 92% US Households
- More than 2 cars: 59%
- No. of vehicles/HH: 1.9 [cf. 1.2 in 1960]
- No. of vehicles/drivers license:

  1.1 [cf. 0.7 in 1960]
- No. of vehicles/1,000 persons

  766 [cf. 340 in 1960]

- Public transport accounts for 2% of urban travel
  - The lowest income group: 5%

- US auto ownership is 50% > Europe

Table 3 Household Car Ownership, share of households in each group

	US	GB
No car in household	8.0	30.6
1 car	30.2	44.8
2 or more cars	61.9	24.7
Fewer cars than driver's licenses	13.6	20.1
Cars = driver's licenses	63.9	46.4
More cars than driver's licenses	14.0	3.0
N (households)	42,033	9,688

http://www.geog.ox.ac.uk/staff/jdargay_wp02.pdf#search=%22US%20auto%20ownership%20%22

Efforts to Reduce Auto Dependency

none particularly successful

- command-and-control
  - trip reduction programs
- market mechanisms
  - congestion pricing, employee parking fees
- voluntary efforts
  - ridesharing programs, corporate commuter-assistance programs, transit marketing

Reinventing Urbanism

- redirecting growth back to the urban centers, if possible at all, probably requires massive improvements in schools and public safety;
- some potential for diversification of housing product, given that traditional nuclear families are only 26% of households;
- design changes in the suburbs could increase density in an indiscernible way, although marketing higher densities remains a challenge;

Rebuilding the Urban Fabric

- A prime example is *Portland's Metro 2040 Plan*, aimed at accommodating 1 million people while limiting the expansion of the urban growth boundary to 6%.
- Builds on prior developments: transit system, pedestrian-friendly urban core, replacement of a riverfront freeway with a park.

Alternative Growth Patterns

- Downs (p.125 in *New Visions for Metropolitan America*) considers three alternatives to the "dominant vision" of unlimited, low-density growth. They are:
  - ***bounded high-density growth*** (12.5 d.u./acre: European cities, e.g. London, Stockholm);
  - ***limited-spread, mixed-density growth*** (9.2 d.u./acre); and
  - ***new communities and greenbelts***.