


ENVIR 202: Lesson No. 15




Transportation and Sprawl

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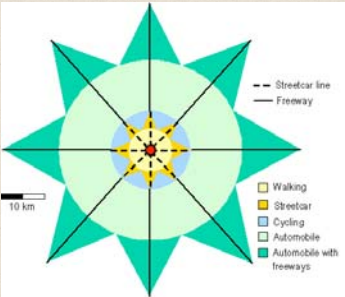
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Urban Transportation Modes



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One Hour Commuting Distance

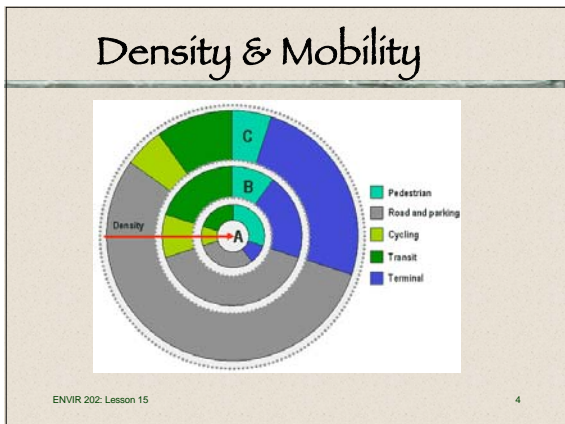


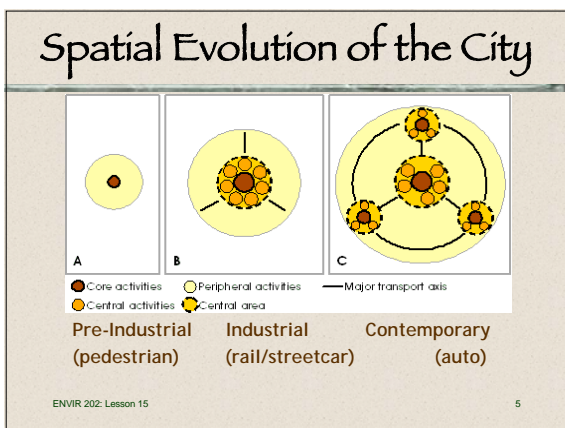
10 km

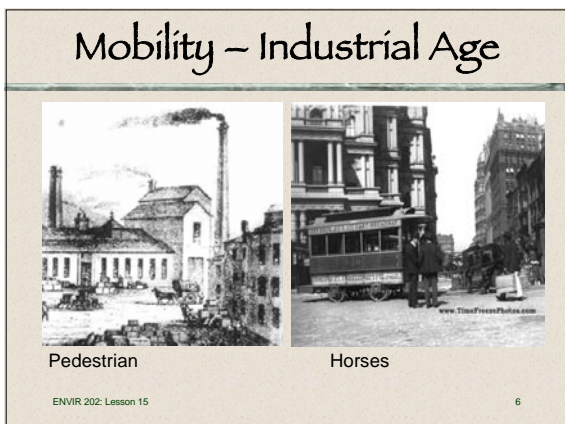
--- Streetcar line
— Freeway

Walking
Streetcar
Cycling
Automobile
Automobile with freeways

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Source: Adapted from Hugiil (1993), p. 213. 5 km ~ 3 miles








Traffic Congestion

- ❖ City Planning & the Problems of Congestion
 - 1909-Washington, D.C.
 - Disease, poverty, darkness & vice of cities caused by the scourge of high density living
 - Urban transportation planners must build public transit to the outlying areas to lower density and improve living conditions
 - Transportation improvements seen as a source of environment benefits not environmental pollutants.

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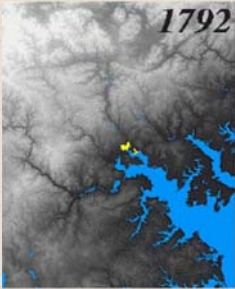
The Automobile



- ❖ A solution to the 'horse problem'
- ❖ Clean and environmentally benign

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Exodus from the Urban Center



- ❖ Baltimore
 - 1889 first horse car line
 - 1895 electric street car
 - 1925 Mass produced Model T
 - 1962 Baltimore beltway completed

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Expressways & Housing:




- ❖ Urban Renewal
 - > Dan Ryan Expressway, Chicago
 - > 1950's-60's
 - > Slum clearance
 - > Suburbanite access

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Cabrini Green



Expressways & Housing:




- ❖ Suburban Living
 - > More family advantages
 - > More personal comfort and security
 - > More friends and fun
More home for a woman to enjoy
 - > And more for a man to come home to...
In Park Forest

—From Park Forest marketing brochure, about 1955

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Land Metamorphosis



- ❖ A single country lane
- ❖ The automobile enters the scene
- ❖ A divided road
- ❖ Increasing density
- ❖ Then a 4 lane road

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The Expressway and Population Health

- ❖ Urban
 - Loss of community integrity
 - Proximity to traffic
 - Noise, air pollution, public safety
- ❖ Suburban
 - Auto dependence
 - Commuting stress
 - Not pedestrian oriented; related to obesity

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Regional Growth

Figure 1. Cumulative Growth Since 1981

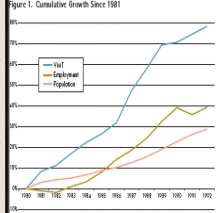

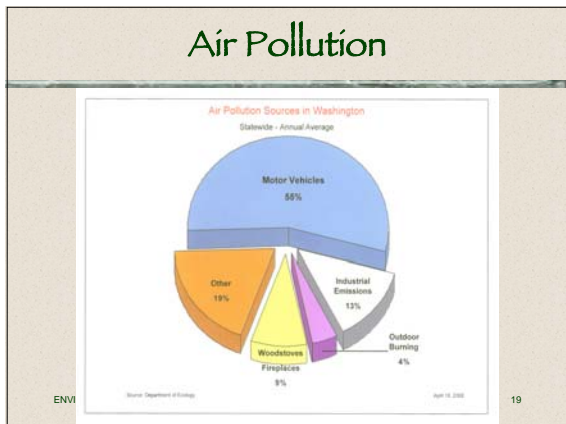


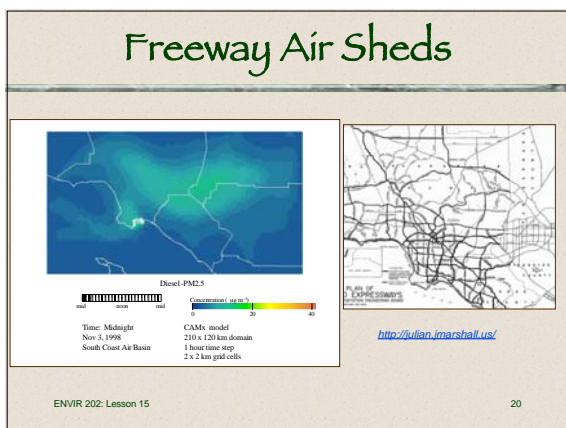
Figure 2. Cumulative Growth Since 1992

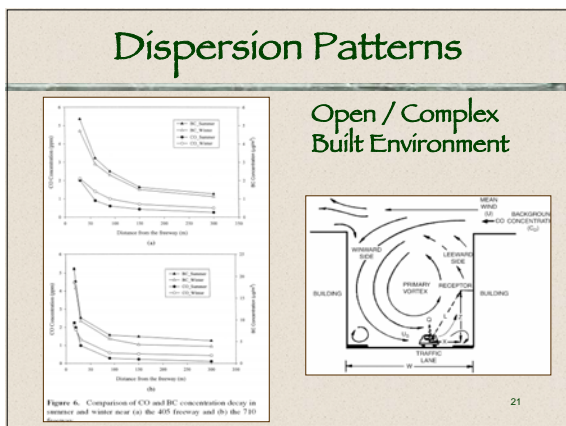


		Percent Increase
1980-1992	Population	28.9
	Employment	39.4
	VMT	79.5
1992-2004	Population	18.3
	Employment	19.9
	VMT	23.3

<http://www.psrc.org/databases/pubs/trends12aug05.pdf> 18

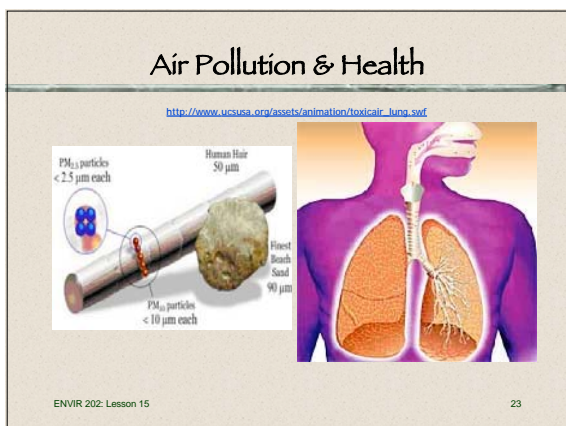


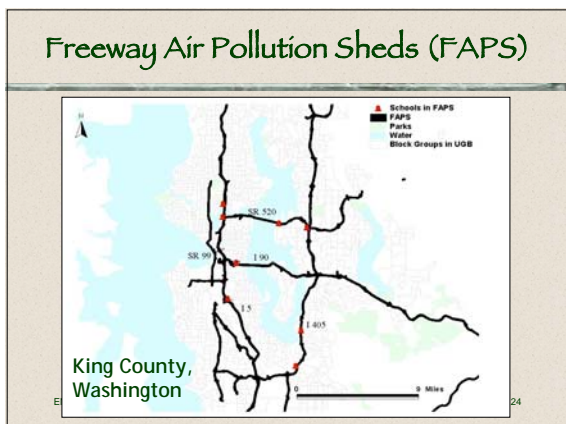





Proximity to Traffic

Mobile Source Pollutants	Ambient Air Regulatory Limits				Adverse Health Effects	Traffic / Environmental Health Studies
	1 hour	8 hour	24 hour	Annual Mean		
PM _{2.5}			15 ug / m ³	65 ug / m ³	* aggravation of asthma * depressed lung function in children	van Vliet et al. 1997
PM ₁₀			50 ug / m ³	150 ug / m ³	* aggravation of acute respiratory symptoms * increased risk of wheezy bronchitis in infants	Gehring et al 2002 English et al 1999 Wjst et al. 1993
Ultrafines						
Ozone	0.12 ppm	0.08 ppm			*aggravation of asthma *reduced lung function	
CO	35 ppm	9 ppm			*increased cardiac Ischaemia	
NO ₂	0.11 ppm (WHO)			.053 ppm	* increased respiratory morbidity *aggravation of asthma * reduced rate of lung function	Nitta et al 1993 Delfino et al 2003
VOC's	urban air toxics: e.g. benzene, acetaldehyde, formaldehyde etc.				* increased response to allergens *increased risk of lung cancer increased risk of childhood leukemia	Janssen et al. 2003 Crosignani et al. 2004





Census tract 104; Block Group 4



- Assume homogenous distribution
- to determine population in FAP
- divide housing units in FAPS by housing units in the Block Group
- percent distribution of Block Group demographics

25

Cleveland playfield

Cleveland High

Maple Hill area

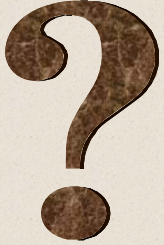
Georgetown



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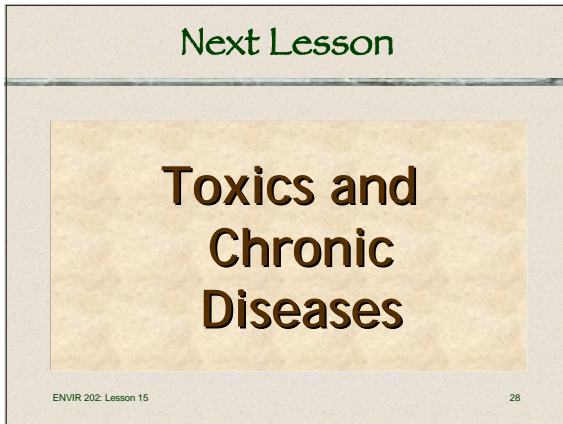
Questions



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Next Lesson



**Toxics and
Chronic
Diseases**

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