

Motorized Transportation Trips, Employer Sponsored Transit Program and Physical Activity

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Outline

- Background:
 - Walking and the built environment
- Theoretical approach: Ecological model
 - Focus on travel behavior and policy level
- Hypotheses:
 - transit use and transit incentives → walking
- Method: Travel survey – TDM incentives
- Main Results
- Conclusion and implications



Background

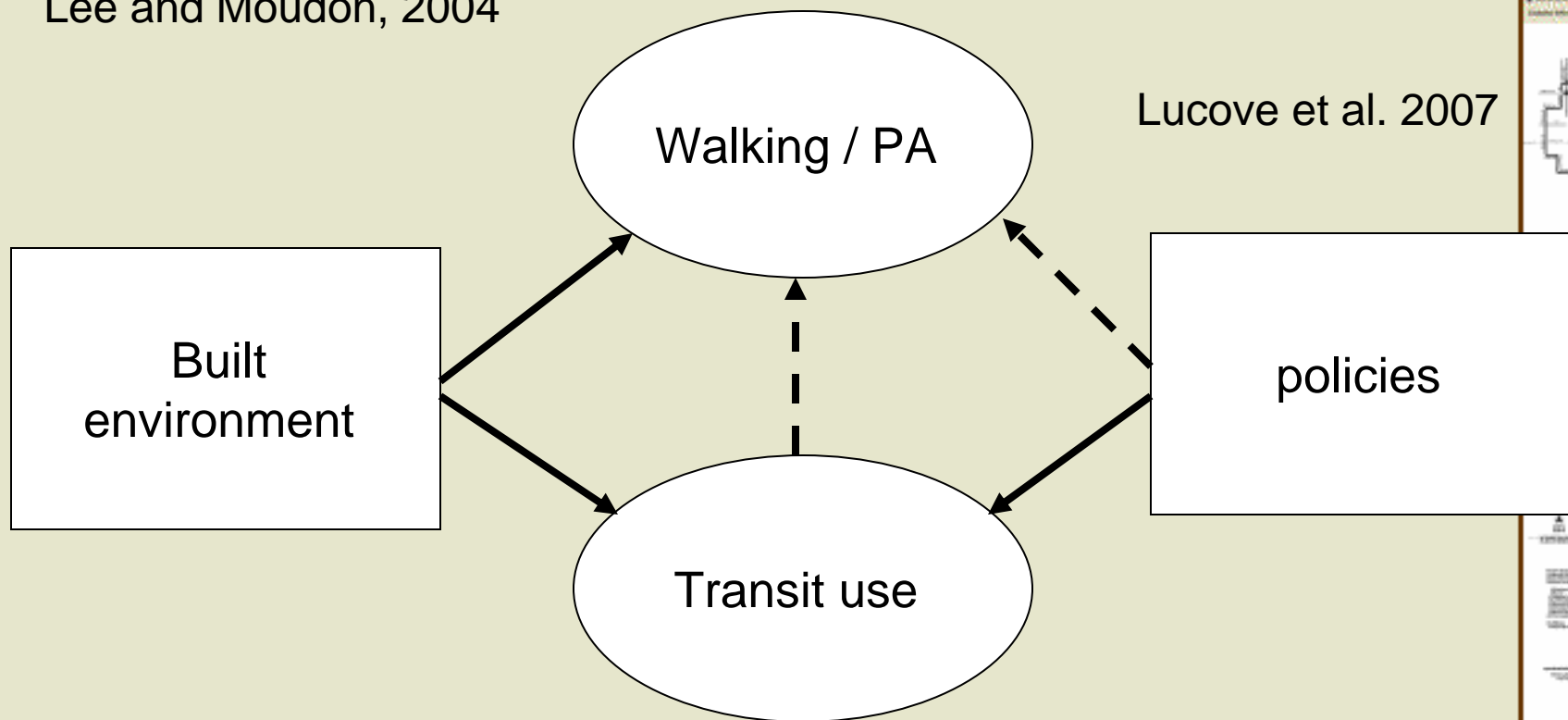
- Public Health - US Surgeon General, 1996
 - Recommendations for moderate physical activity in daily life
 - 30min. \pm 1.5mile = 2.4km : enough to provide health benefits
- Little research on
 - the relationships between transit use and walking
 - Impact of transportation incentive programs or travel demand management (TDM) on walking for transportation



Sallis et al., 2004; Saelens et al., 2003; Frank et al., 2003; Lee and Moudon, 2004

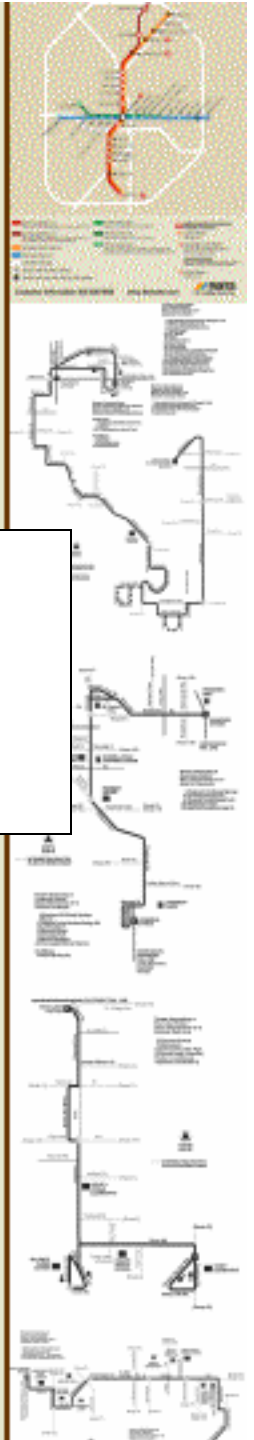
Besser and Dannenberg, 2005

Lucove et al. 2007

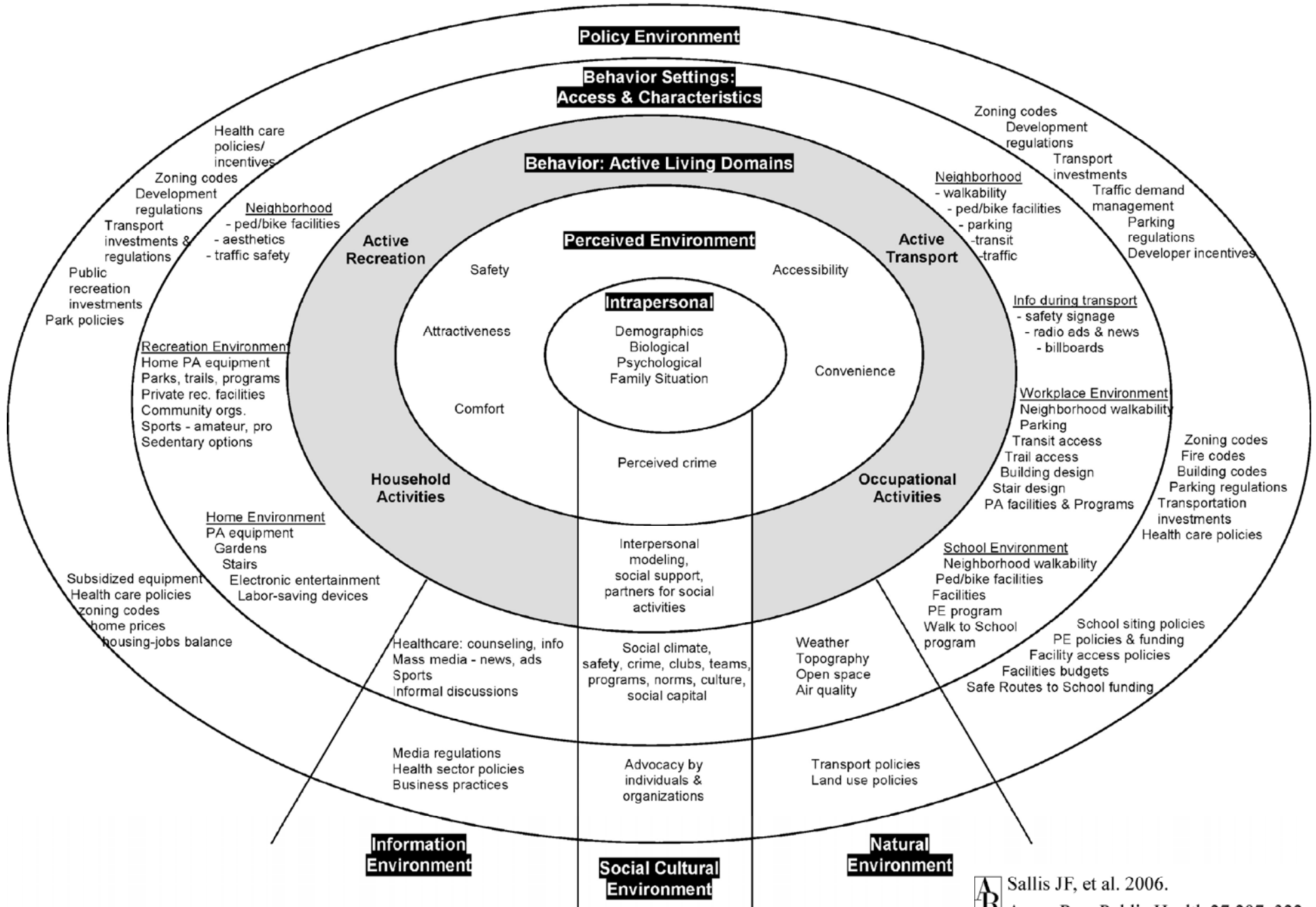


Frank, 1994; Ewing and Cervero, 2001; Cervero, 2001; Handy et al., 2002

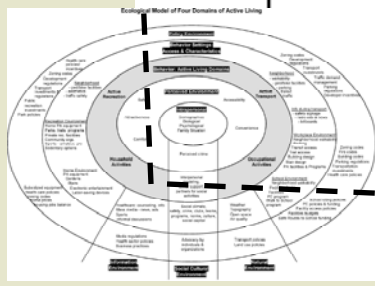
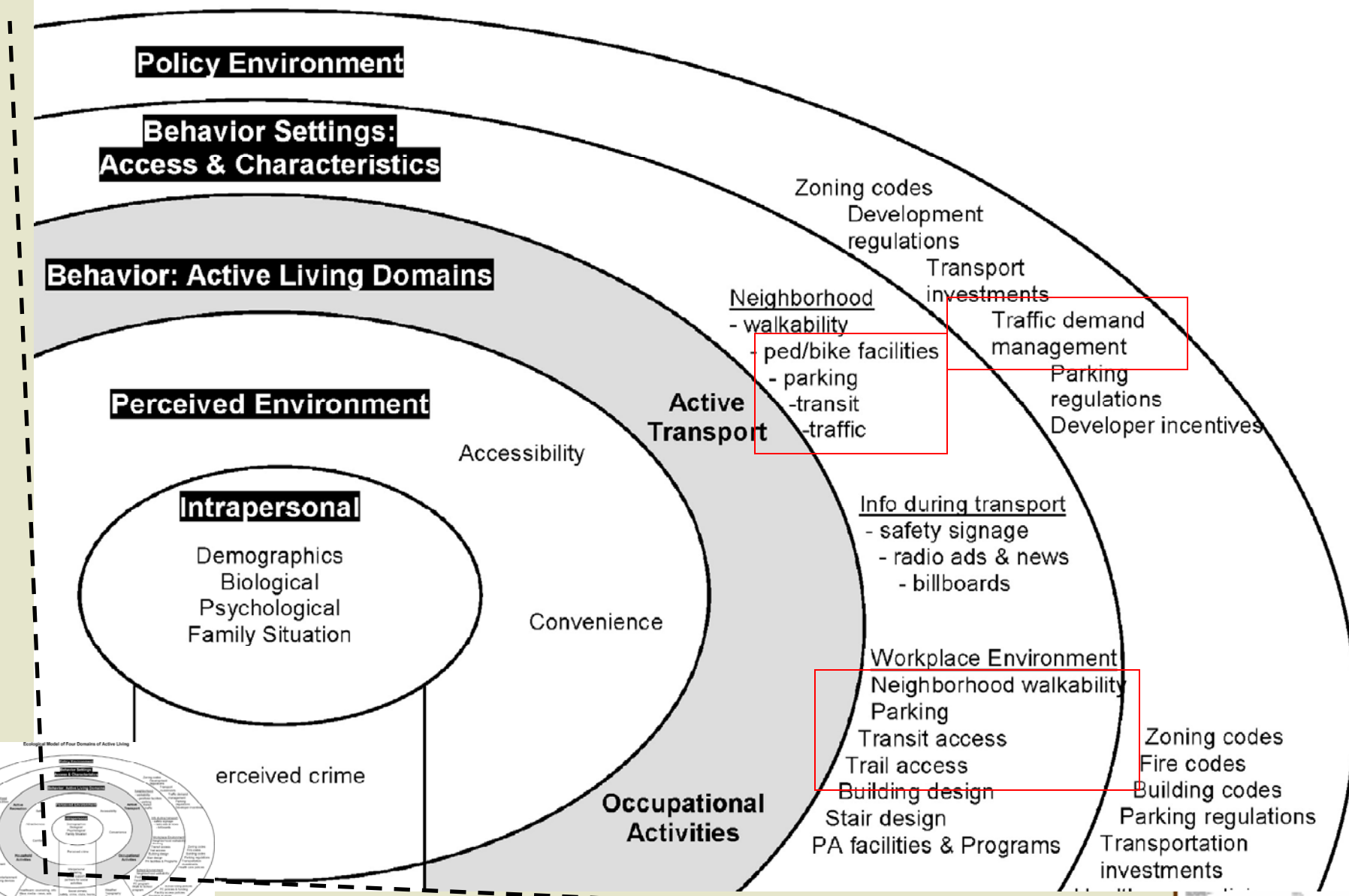
Badoe and Yendeti, 2007



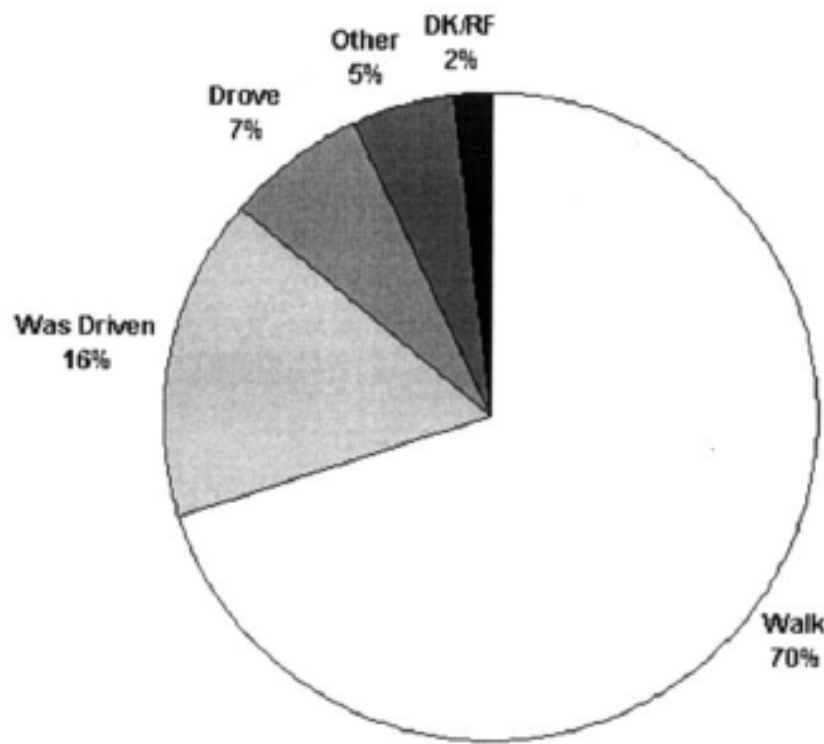
Ecological Model of Four Domains of Active Living



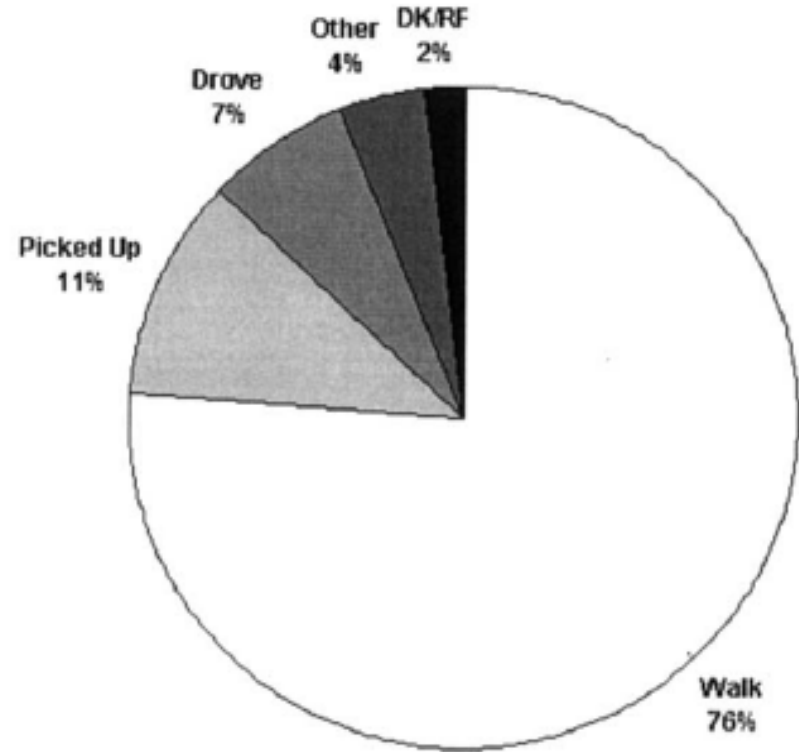
Model of Four Domains of Active Living



Transit use and physically active lifestyles



To Transit Station



From Transit Station

Figure 3. Mode of access to and from Metropolitan Area Rapid Transit Authority rail stations in Atlanta. Source: 2001 Atlanta Household Travel Survey, Atlanta Regional Commission.

Transit users – walk to transit

Besser and Dannenberg, 2005

- Methods: 2001 National Household Travel Survey
 - N= 3312 transit users, self-report time to transit
- Americans who use transit spend a median of 19 minutes daily walking to and from transit
- 29% achieve 30 minutes of physical activity a day solely by walking to and from transit
- Rail users, minorities, low income households, and people in high-density areas were more likely to spend 30 minutes walking to and from transit daily



Employer sponsored transit pass

- Transportation Equity Act of the 21st Century (1999)
 - Revised the Internal Revenue Service Code
 - Changed the tax structure to help level the playing field between parking benefits and transit benefits

(Surface Transportation Policy Project: <http://www.transact.org/ca/funding1.htm>)



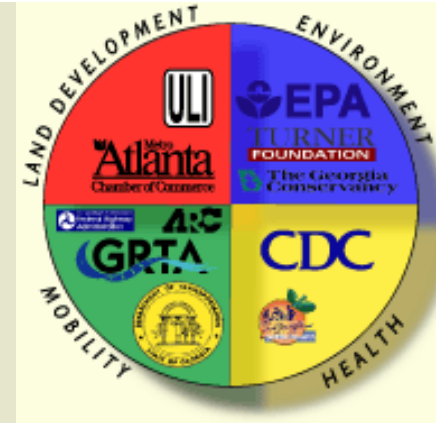
Programs are tax free to employees and tax deductible for the employer

- ***Employer Tax Benefit:***
 - Employers pay for the benefit (give their employees up to \$100/month to commute via transit)
 - Receive an equivalent deduction from business income taxes and save money by providing same value in gross income
- ***Employee Tax Benefit:***
 - The employee receives up to \$100/month tax free
- **Transit agencies benefit from increased ridership** (Brown, Hess and Shoup, 2003)

(Surface Transportation Policy Project: <http://www.transact.org/ca/funding1.htm>)



Method



- Metro Atlanta Travel Survey (2001-2002)
 - (8,600 Household, 18 326 indiv.)
 - Employed, 16-70 years, N=4,136
- 2-day snapshot using travel diaries
 - # Trips per modes
 - Socio-demographics
 - TDM work perks
 - Walking distances (network) derived by GIS (origin/(access/egress)/destination)
 - Net residential density (census block)
 - Network distance to nearest transit stop

(Other work includes: Frank et al., 2004; 2005; 2008)

Central variables

- Mean trips taken per each mode: an expression of individuals' transportation choices and constraints
- Employer sponsored public transit pass
 - Does your employer offers free or subsidized public transit passes? Yes, no
 - In a typical week, do you use your free or subsidized transit pass? None, Once or more
- Car availability: vehicles/drivers

Hypotheses

- The likelihood of meeting the PA recommendation solely by walking for transportation would be greater for transit users than for car drivers or passengers.
- Using an employer sponsored transit pass may also be associated with meeting PA recommendation



Individual and household
(Income
Age
Ethnicity
Car availability)

**Neighbourhood
Density (5 cat.)**

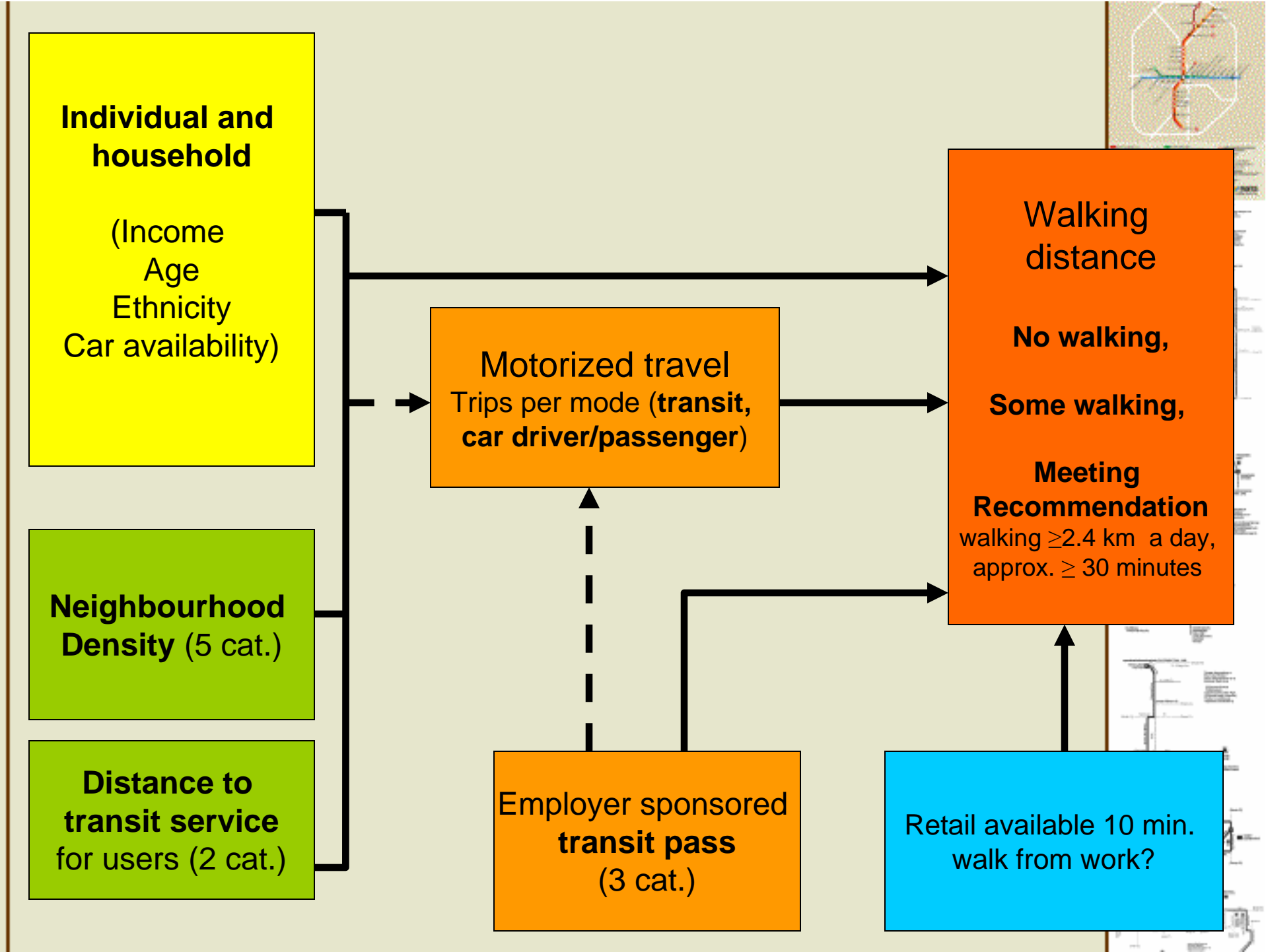
**Distance to transit service
for users (2 cat.)**

Motorized travel
Trips per mode (transit,
car driver/passenger)

**Employer sponsored
transit pass
(3 cat.)**

Walking distance
No walking,
Some walking,
**Meeting
Recommendation**
walking ≥ 2.4 km a day,
approx. ≥ 30 minutes

**Retail available 10 min.
walk from work?**



Descriptives

- 2.6% met PA recommendation solely by walking for transportation, 8.3% recorded some walking
- 5.4% of the sample used transit
- 19% of individuals were in areas with a net residential density of 6+ dwelling units per acre
- 65% of individuals lived in single use low density residential areas
- 8.7% of our sample had and used an employer sponsored transit pass
- 11.1% were eligible to such a program but did not use it
- 1.3% of sampled individuals had no car, and 6% shared a car with other household members



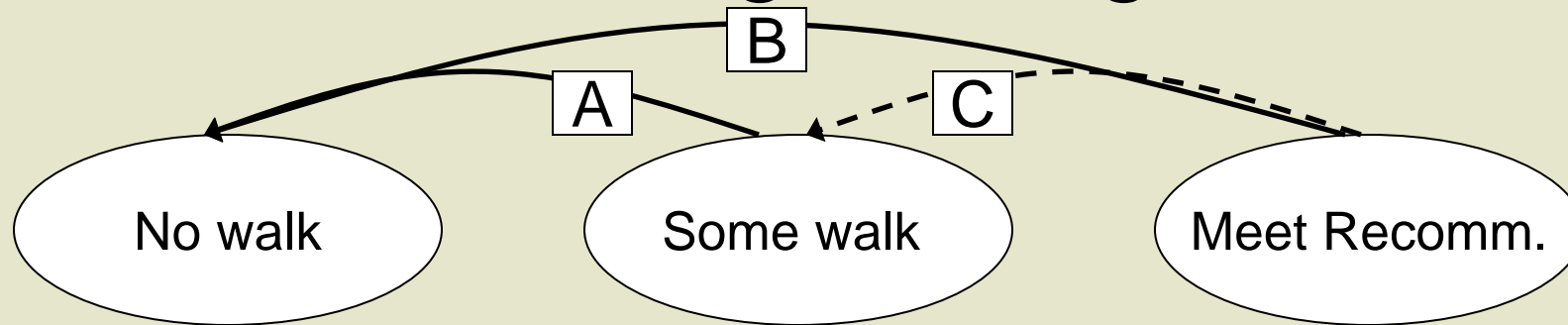
Results



Table 2: Distance walked and trips per mode by income groups and transit use

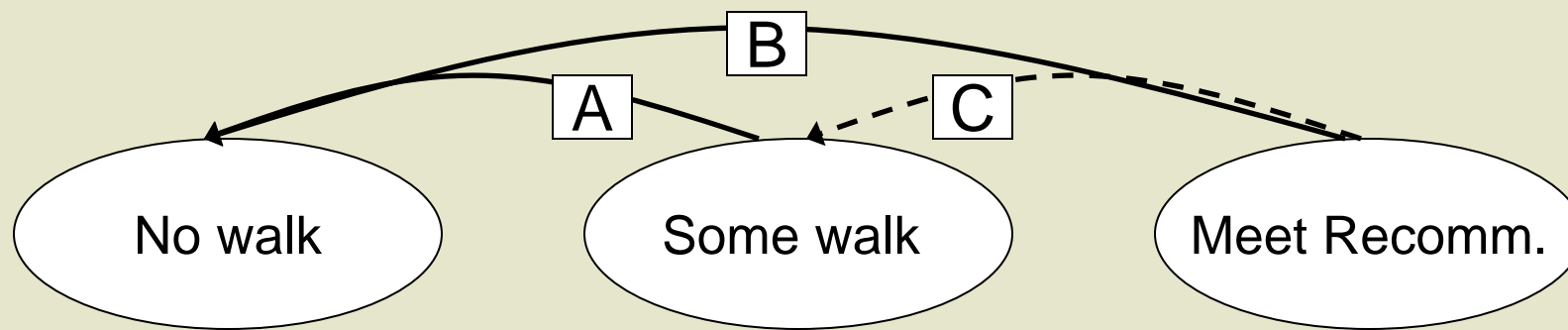
Income	Transit users				Total (5.4%)	Non-users of transit				Total (94.6%)
	Less than \$30,000	\$30,000 to \$60,000	\$60,000 and more			Less than \$30,000	\$30,000 to \$60,000	\$60,000 and more		
n (%)	52 (23.2)	92 (41.1)	80 (35.7)	224 (100)		509 (12.9)	1471 (37.4)	1952 (49.6)	3932 (100)	
Transit trips	1.81	1.75	1.57	1.70	-	-	-	-	-	
Driver trips	0.71	2.09	2.66	1.97	3.63	3.60	3.73	3.63		
Passenger trips	0.52	0.32	0.30	0.36	0.26	0.22	0.30	0.26		
At least one walk trip (%)	59.6%	60.9%	56.3%	58.9%	11.6%	9.0%	8.9%	9.3%		
Total distance walked	1.54	1.56	2.01	1.72	0.23	0.13	0.16	0.16		
No car or no License (%)	51.9	14.1	0.0	17.9	2.2	0.1	0.1	0.4		
Shared car (%)	3.8	16.3	7.5	10.3	8.8	7.1	4.0	5.8		
Car fully available (%)	44.2	69.6	92.5	71.9	89.0	92.8	95.9	93.8		

Multinomial logistic regression



- Only trips by transit are significantly associated with greater odds of meeting PA recommendation (OR=3.35; CI=2.36-4.78)
- Car availability - negative association with meeting PA recommendation (OR=0.13, CI=0.05-0.33)
- Both higher and lower income groups had higher OR of meeting PA recommendation than the middle income group

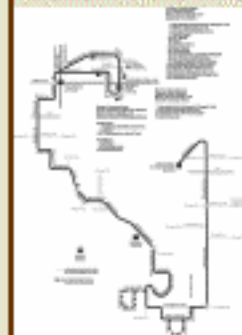




- Having and making use of an employer sponsored transit pass was positively associated with meeting PA recommendation (OR=4.96, CI=2.8-8.9)
- Having access to, but not using an employer sponsored transit pass had a significant OR of 2.2 (CI=1.15-4.3) of meeting PA recommendation
- When estimating OR of meeting recommendation with moderate walkers as a reference category (C), trips as driver (OR=0.86, CI=0.76-0.98), car availability (OR=0.25, CI=0.09-0.69), and having and using an employer sponsored transit pass (OR=3.6, CI=1.83-7.1) remained significant

Limitations

- Skewed sample distribution
 - Low transit use in Atlanta
 - Low density environment
 - Limited transit coverage
 - Few walkers
- Self-reported travel data
 - No measure of the speed or intensity of walking
 - Underreporting of walk trips
- Possible selection bias
- Quality of transit service?



Conclusion...

- Positive association between the number of public transportation trips and meeting PA recommendation
- Positive association between using an employer sponsored transit pass and meeting PA recommendation
- More investigation is required to understand the distribution of access to public transit incentives, the factors that support their use, and how such use may translate into a more active lifestyle.
- Providing transit opportunities can potentially improve physical activity levels



Thank you !

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