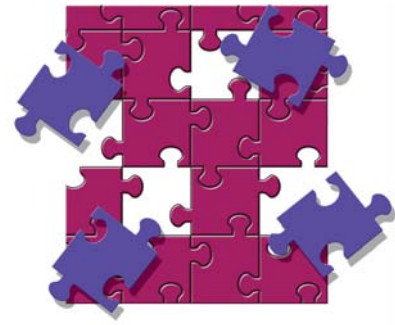


# Human Smoking Behavior

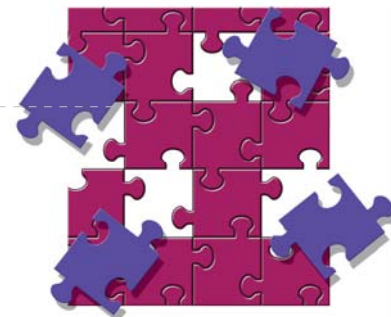
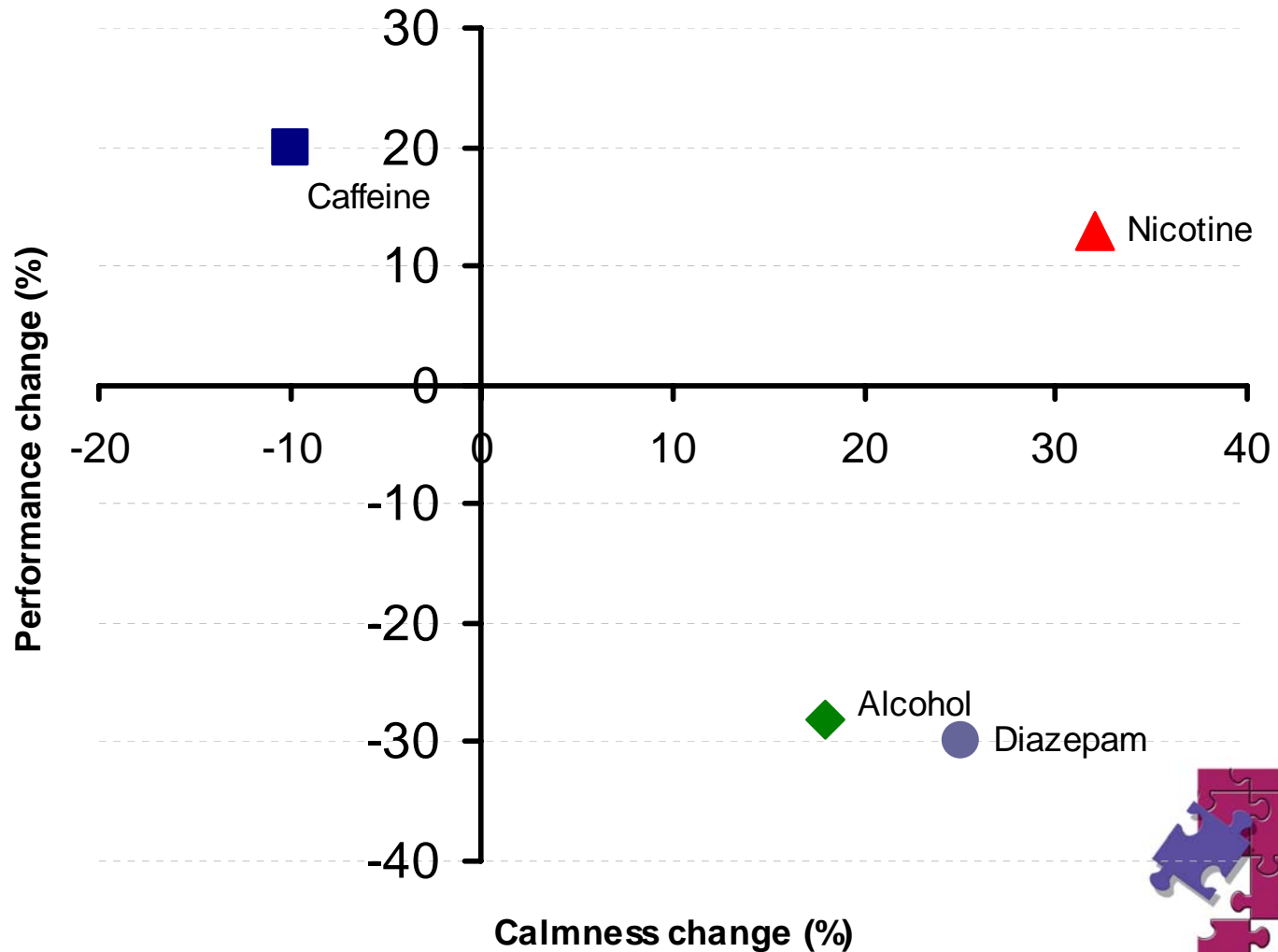


# Compensation

- Compensation
  - Change in smoking style with change in cigarette characteristic
    - Commonly nicotine, but also tar, flavor, pressure drop



# Nicotine Effect

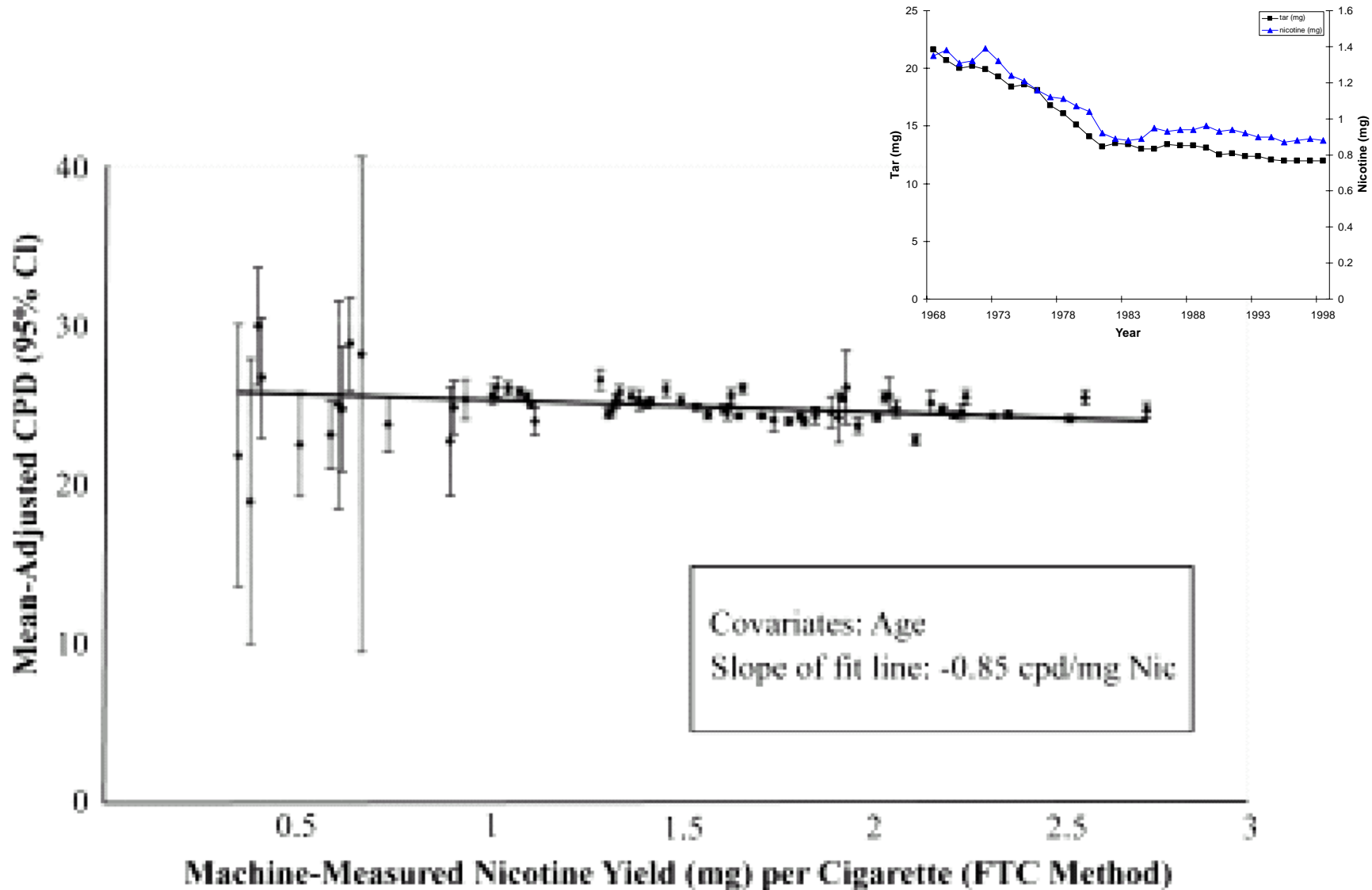


# Compensation

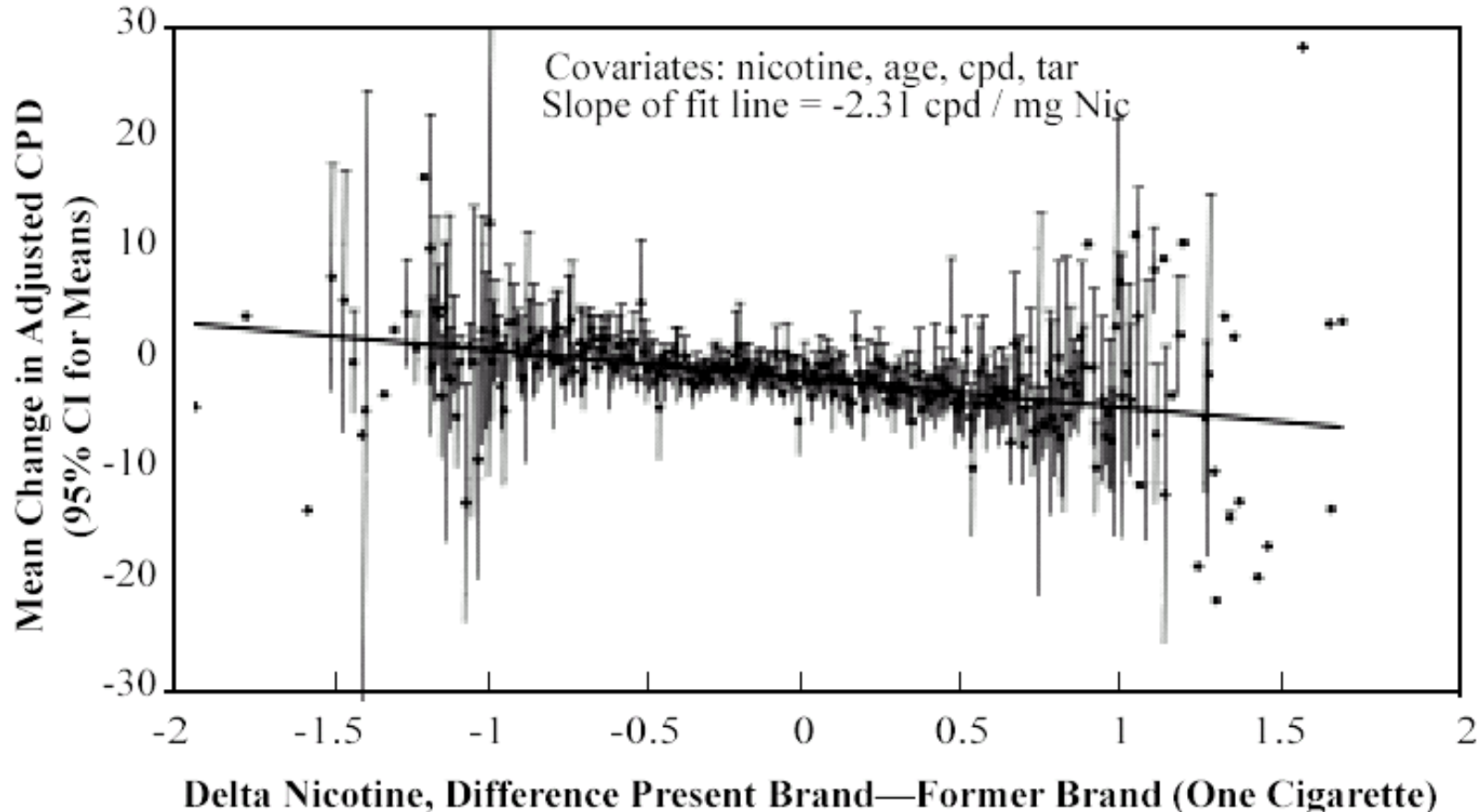
- In general
  - Higher yield less intensively smoked than lower yield
  - Some evidence for partial compensation
  - More complete compensation with higher than lower yield
- Data is weak
  - Few participants, limited time, multiple properties changed
- Human smoking behavior is highly variable



# 1960 – 1972 CPS I



# Change in smoking with yield



~ 10% compensation

# Note

- Source: ACS CPS-I, White male current cigarette-only smokers.
- Note: Nicotine and tar levels interpolated by year and brand from Reader's Digest (Miller & Monahan, 1959) and FTC (for years 1967-1973) data, mean CPD by nicotine value using the weighted mean value for each categorical level of CPD. The mean CPD values are adjusted for age and regressed on nicotine yield per cigarette. For the graph, covariate coefficients are calculated in a general regression, then points are graphed as adjusted for the covariate with the regression line shown through the adjusted points.

# Compensation

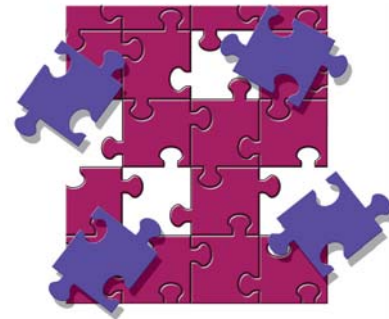
- Modern cigarettes are designed to be elastic
- Different yields depending on smoking style
  - Ventilation holes



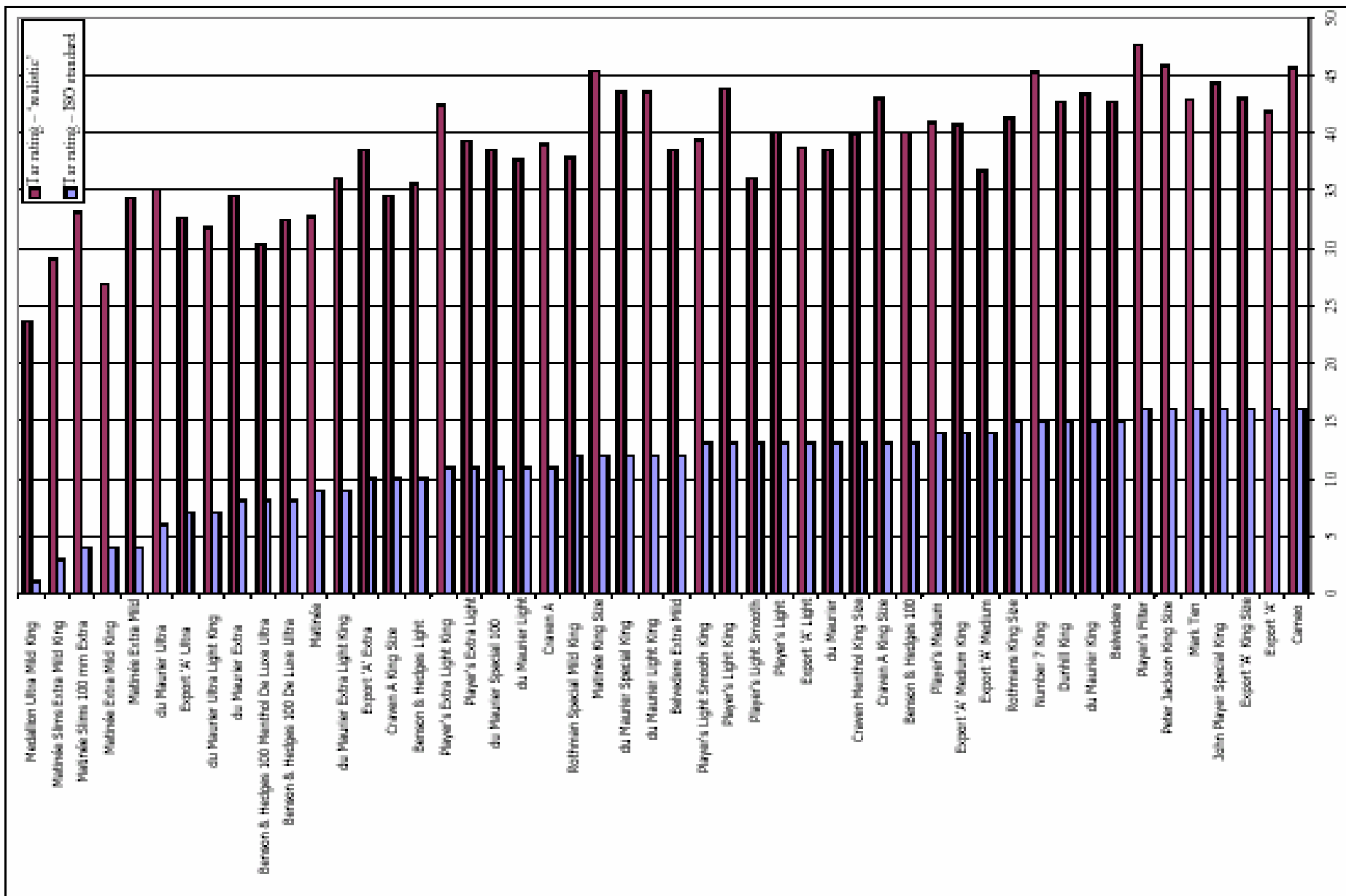


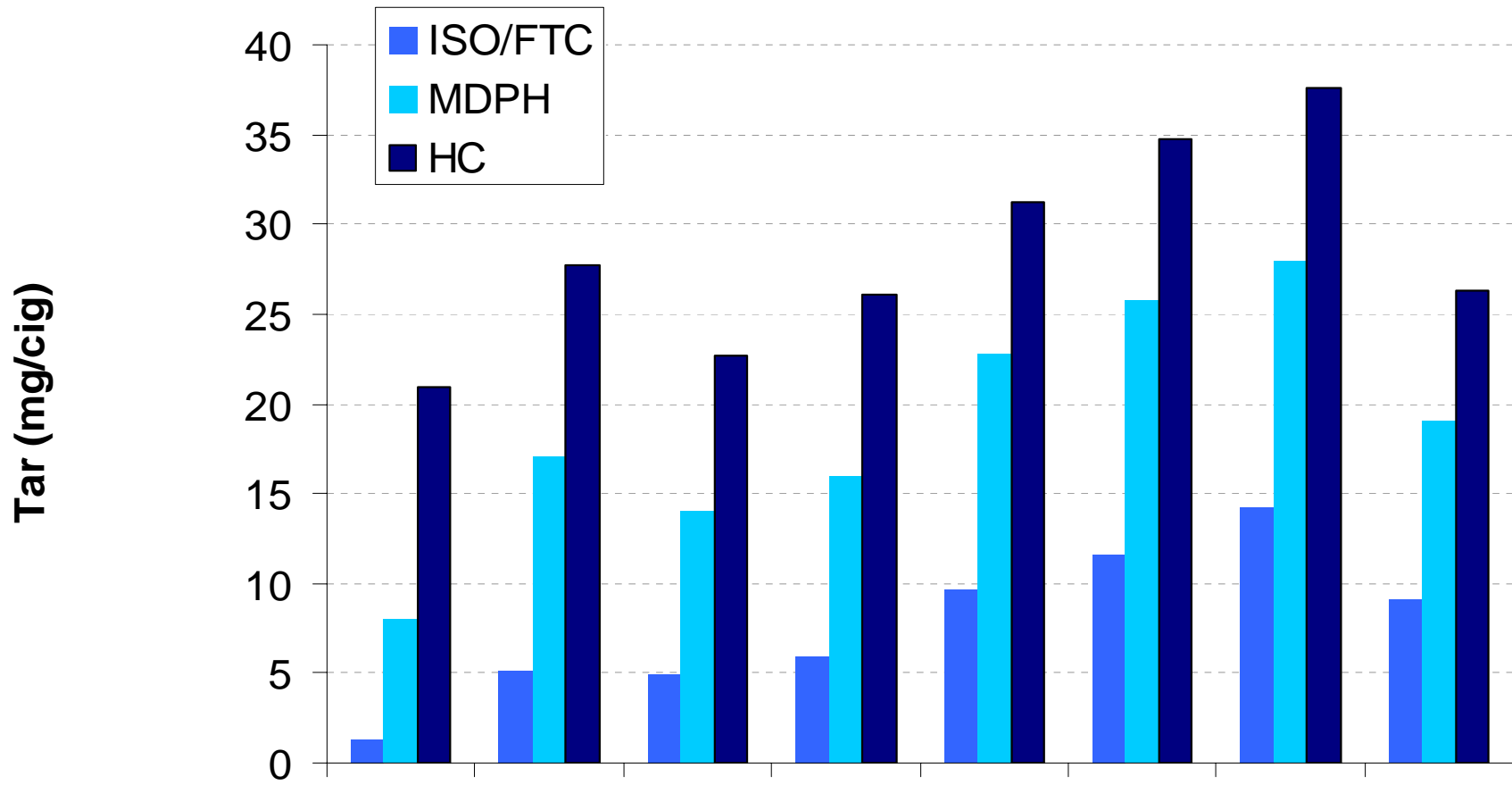
# Elasticity on the Bench

- Measures of yield (tar, nicotine) depend on intensity and blocking
  - $FTC < MDPH < HC$ 
    - MDPH: Massachusetts Department of Public Health
    - HC: Health Canada



# From "International Expert Panel on Cigarette Descriptors"





KS: King Size  
 F: filter  
 HP: hard pack  
 SP: soft pack  
 Lt: light

Nicotine (mg/cig)

ISO/FTC  
MDPH  
HC

Merit KS F SP Ultima

Virginia Slims 100 F HP

Merit KS F SP

Marlboro KS F HP

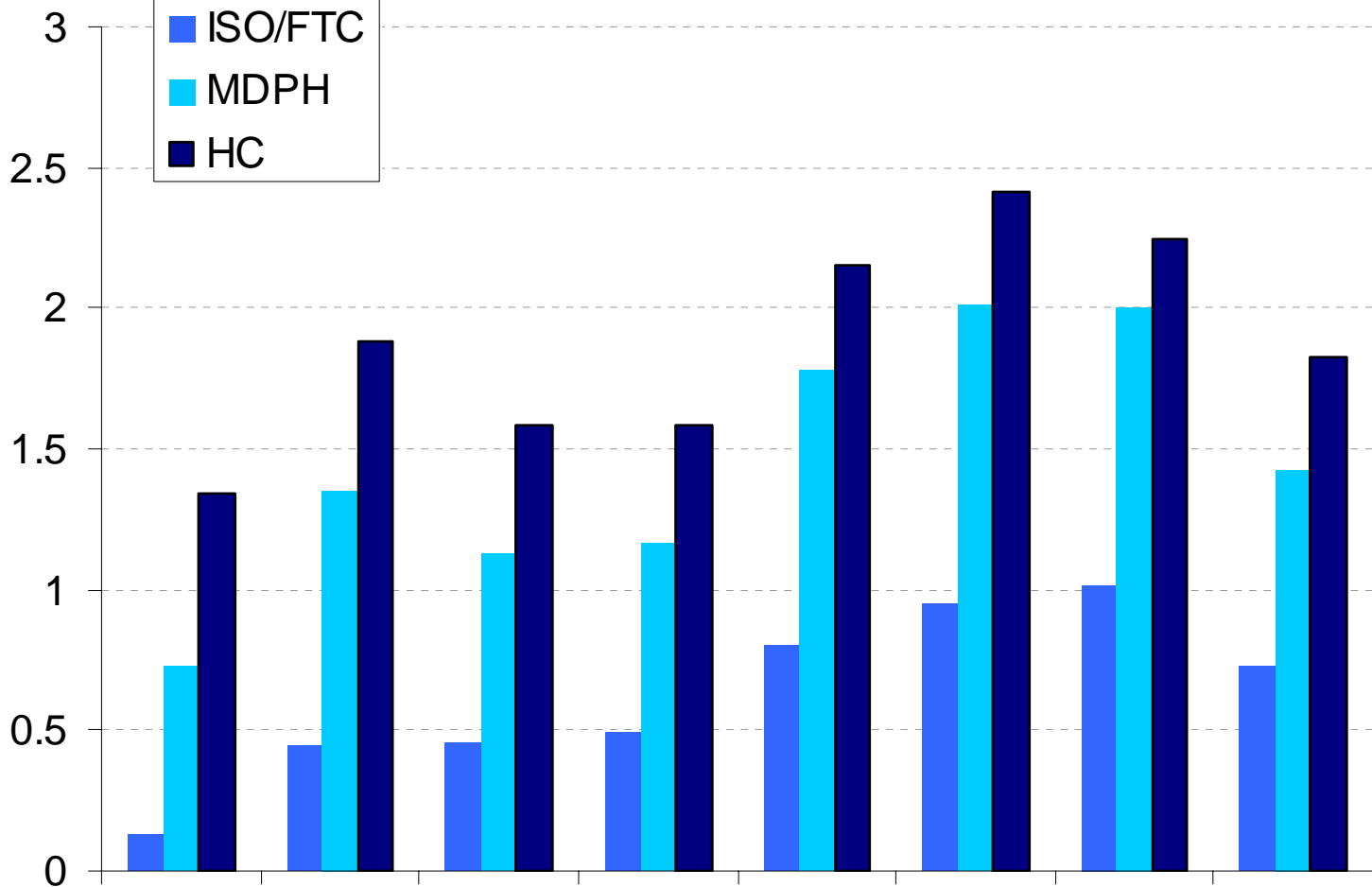
Marlboro 100 F HP Lt

Parliament 100

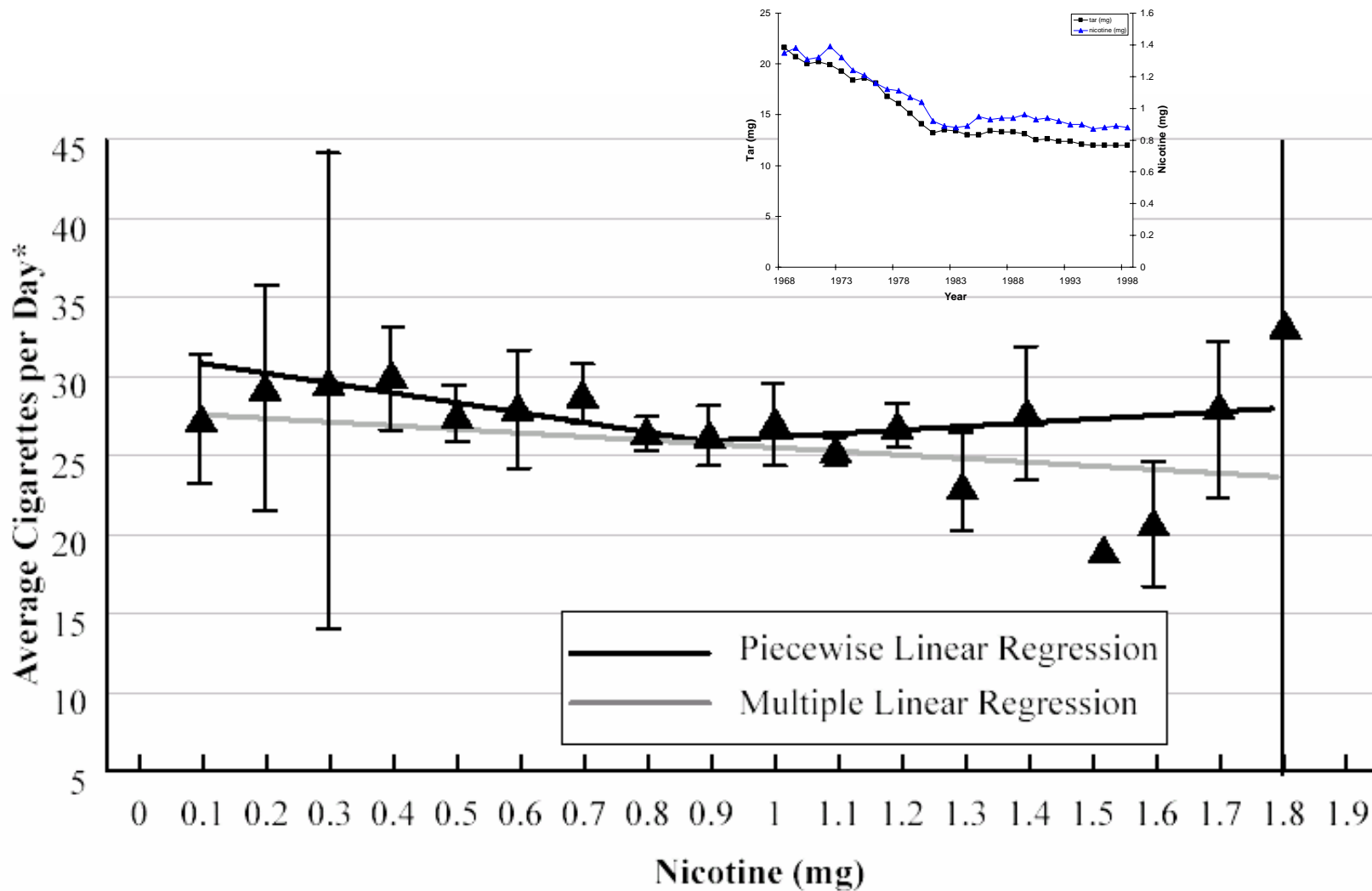
Marlboro

1R4F

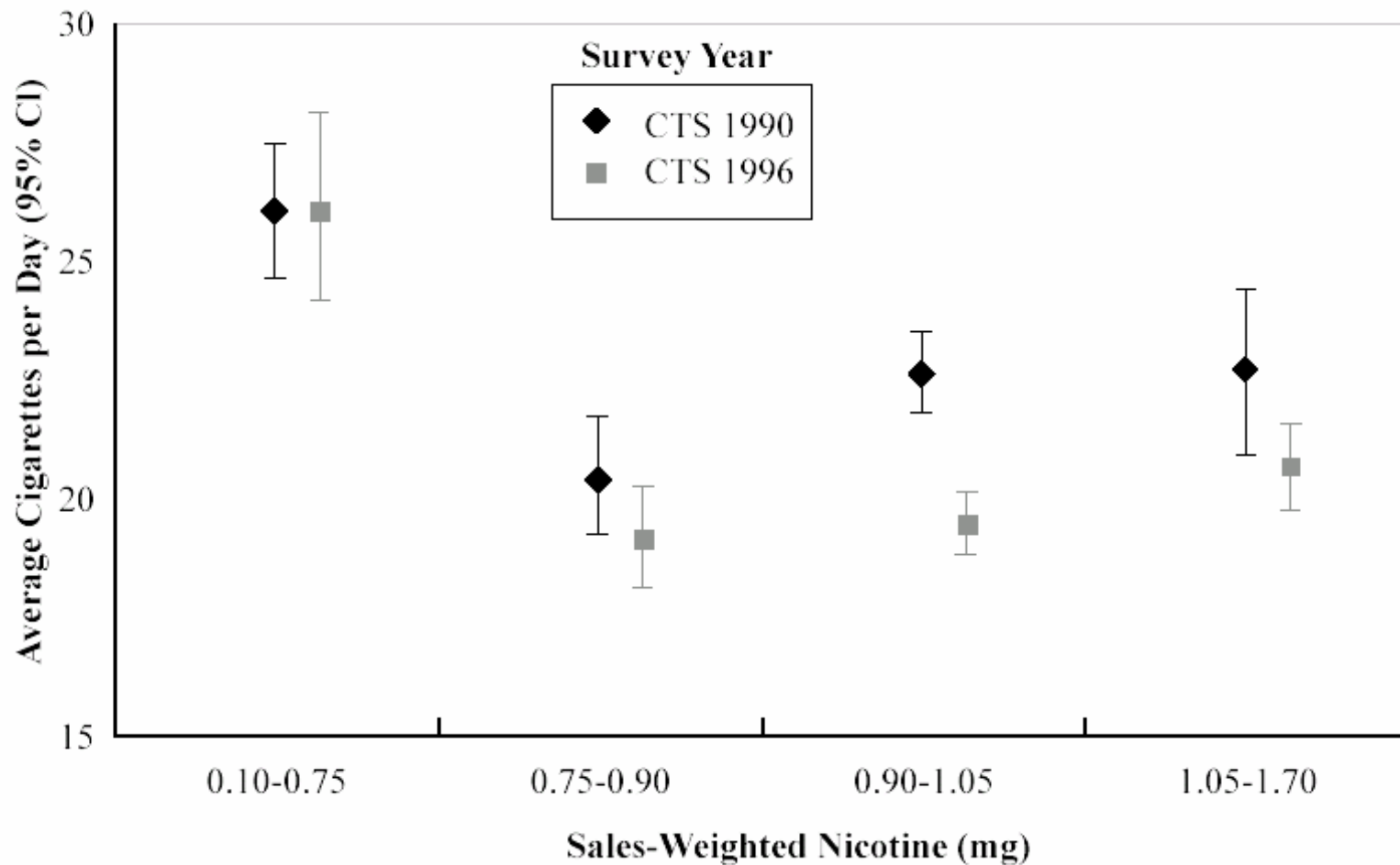
KS: King Size  
F: filter  
HP: hard pack  
SP: soft pack  
Lt: light



# 1996 – California (CTS)



# 1990, 1996 – California (CTS)

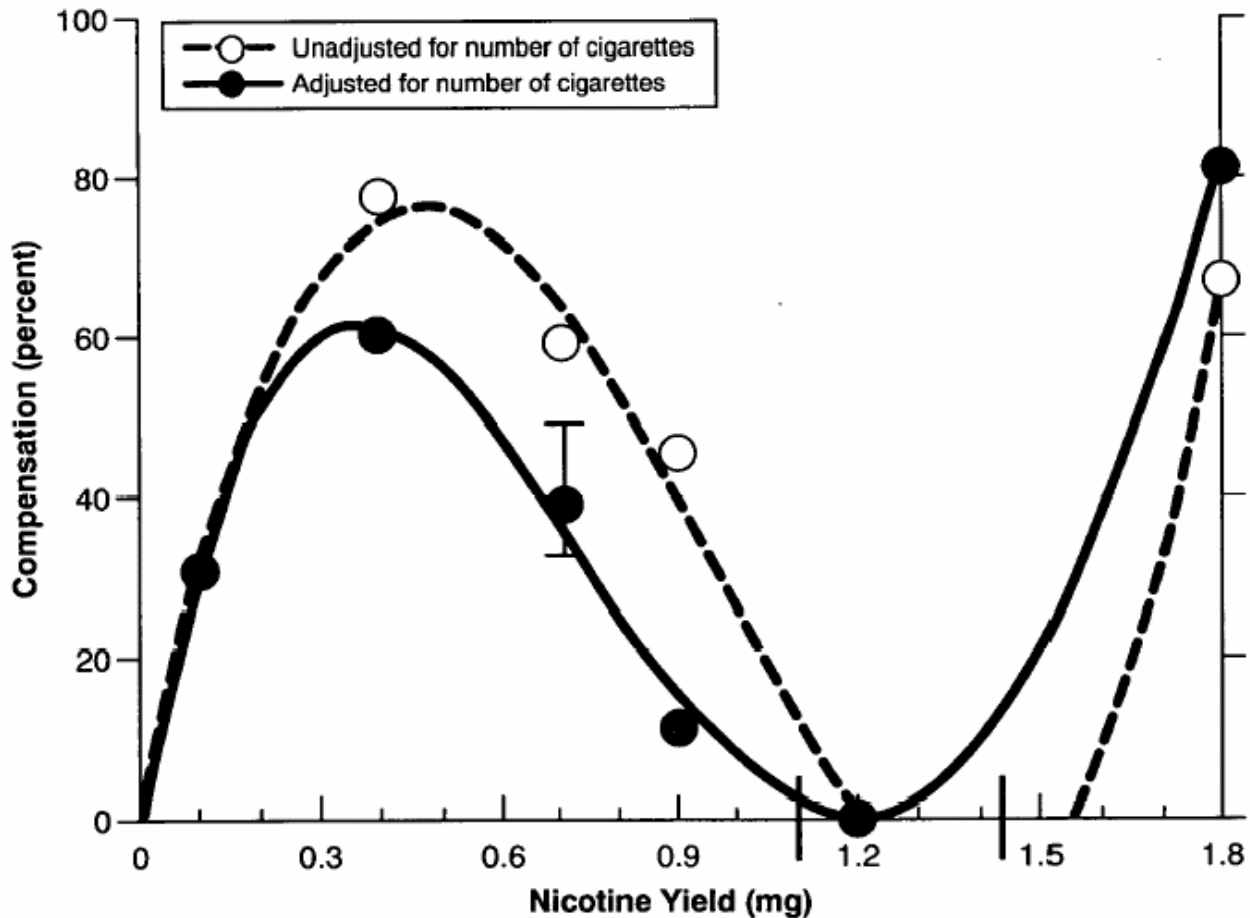


# Compensation

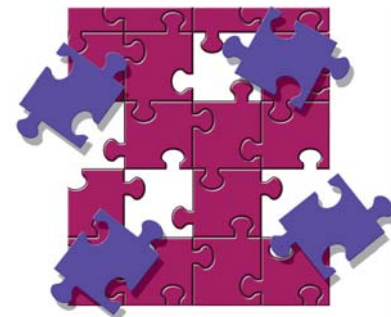
- Vent blocking
  - ~ 50% block, 50 % don't
  - 14 people
- Other studies
  - 12 % to 62 % compensation
  - 12 to 28 people



# Compensation

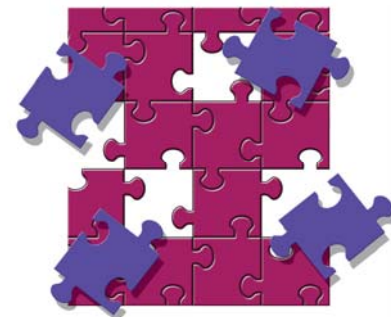
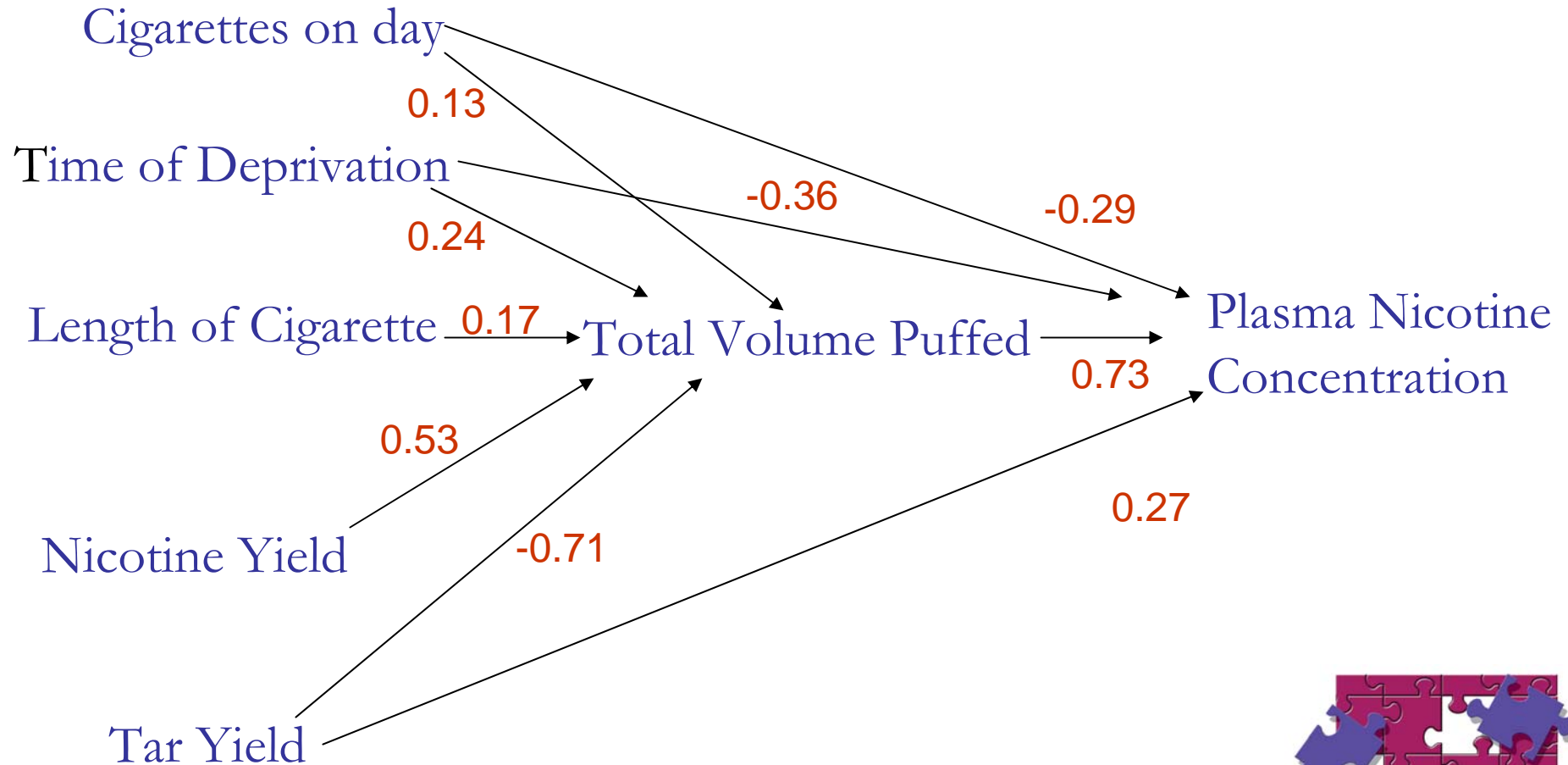


After adjusting for changes in number of cigarettes smoked, any remaining compensation is presumably due to changes in style of smoking.





# Coefficients of Effect



# Compensation

- In general
  - Higher yield less intensively smoked than lower yield
  - Some evidence for partial compensation
  - More complete compensation with higher than lower yield
- Data is weak
  - Few participants, limited time, multiple properties changed
- Human smoking behavior is highly variable

