



California Communities Environmental Health Screening Tool (*CalEnviroScreen*)

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but the analysis is my own.



PEER REVIEWER QUALIFICATIONS



Education

- BS UC Davis 1979 (Agricultural Economics)
- MS UC Davis 1980 (Agricultural Economics)
- MPP 1982 (Kennedy School of Government)
- PhD 1989 (Harvard University)



Relevant Technical Experience

- US Office of Management and Budget (1988-98)
- Wrote government-wide guidelines for regulatory impact analysis (1990) and risk analysis (1995)
- Extensive service to professional societies
- Regular peer reviewer for multiple journals



RESPONSES TO CHARGE QUESTIONS

Selection of Indicators [1]

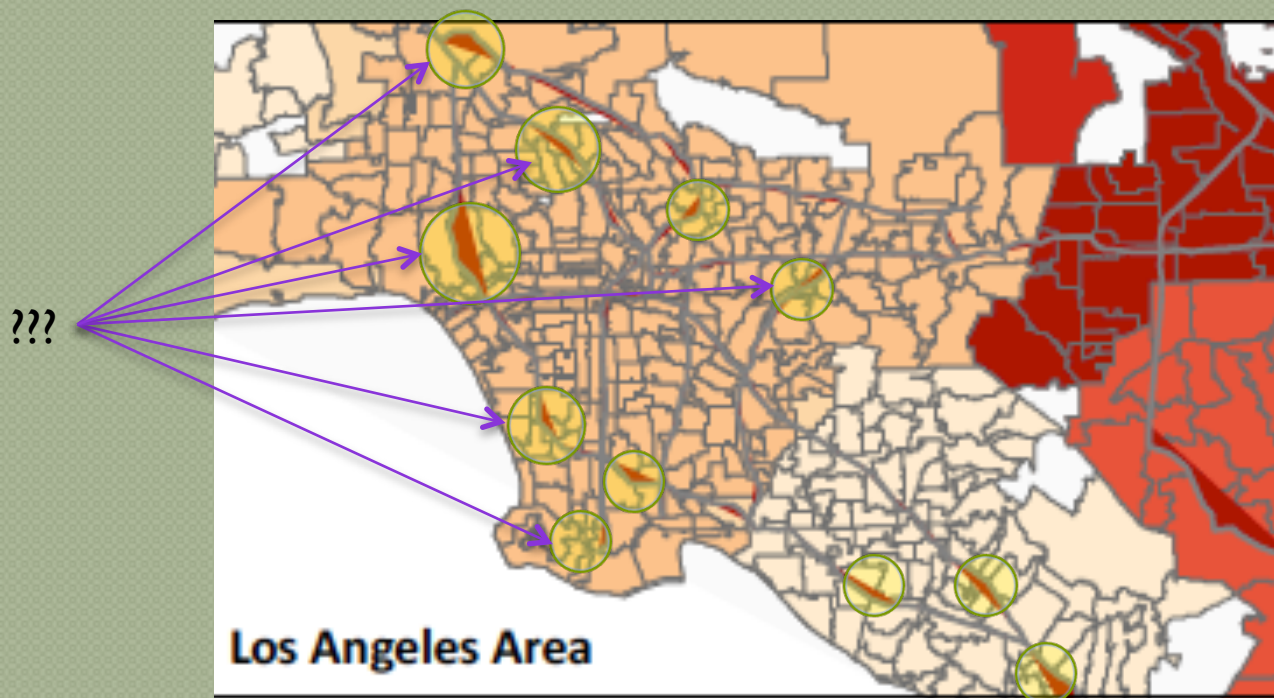
- Problematic exposure indicators
 - Pesticides (lb/mi²)
 - Mass \neq exposure
 - Mass rate \neq exposure
 - TRI releases:
 - Mass \neq exposure
 - Uncertainty, excess precision and bias in reporting
 - Traffic density
 - Exposure to what?
 - If it's about particulates, then zip code assignment is much too coarse and will result in misclassification

Selection of Indicators [2]

- Problematic public health indicators
 - Chronic health conditions
 - Limited environmental component
 - Assigned to last zip code means misclassification
 - County scale data?
 - Cancer and heart disease
 - Incidence or mortality?
 - Low-birth weight infants
 - Sensitive to small sample sizes by zip code (min=5)
 - Sensitive to age of mother

Cancer Mortality in LA Area

What Are these Hot Spots?

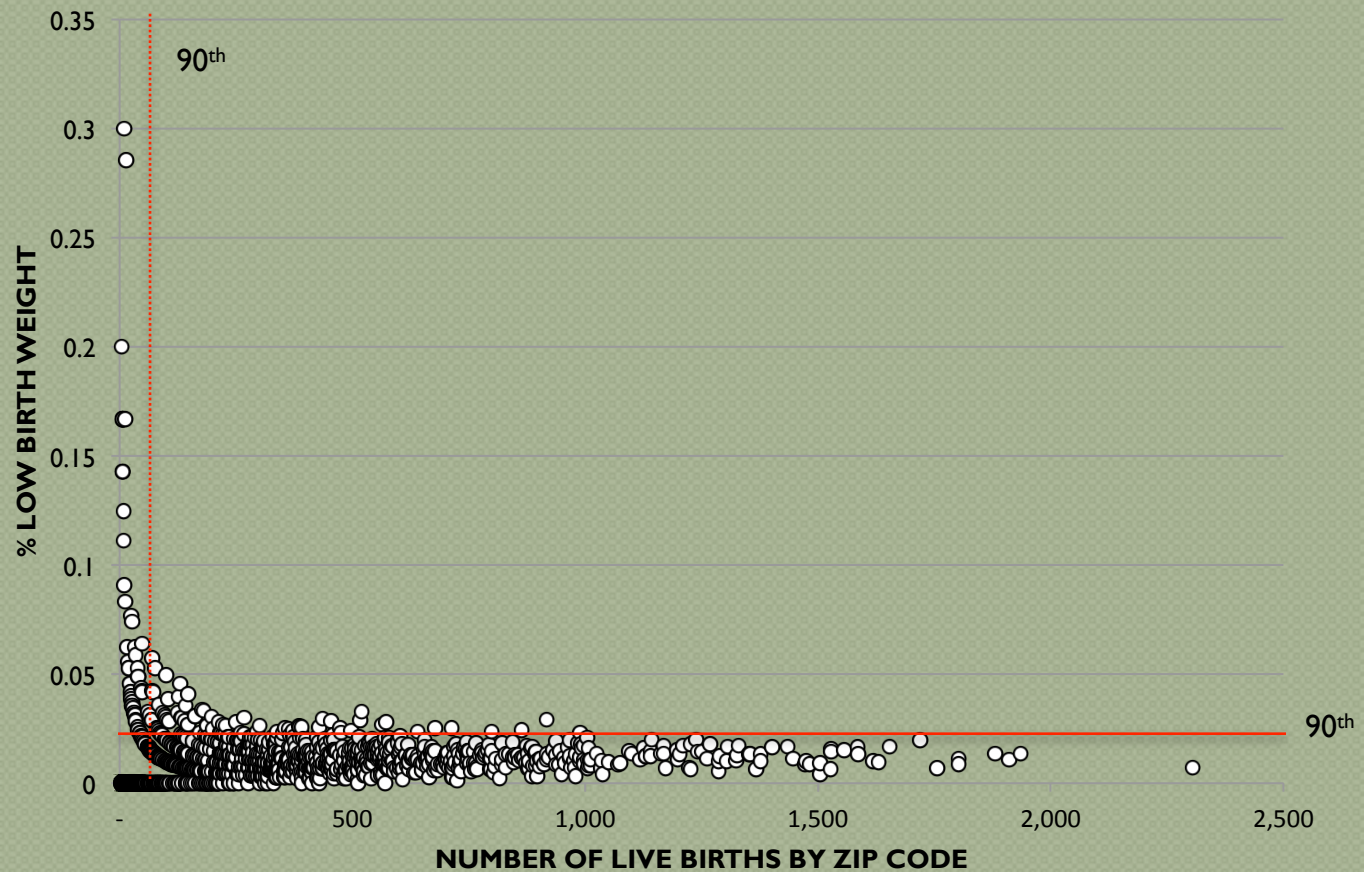


Source: Draft Report at 27.

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Percent Low Birth Weight by Number of Live Births in Zip Codes (2010)



Source: California Department of Public Health

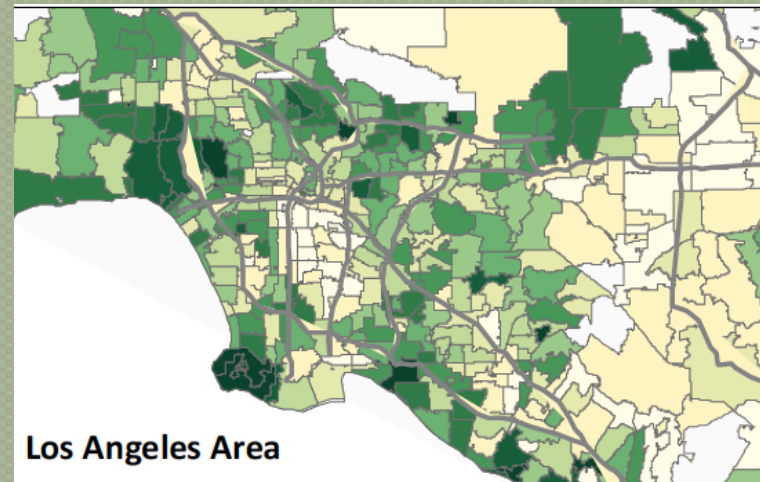
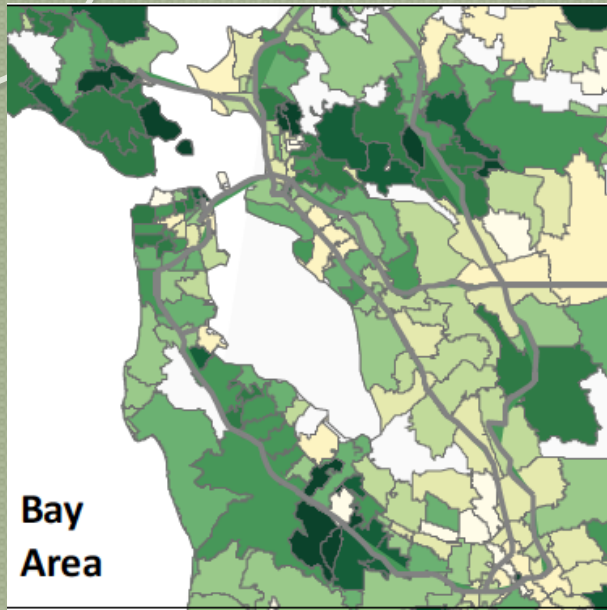
Selection of Indicators [3]

- Problematic environmental indicators
 - What do these indicators actually measure?
 - Cleanup sites and LUSTs?
 - Impaired water bodies?
 - Leaking underground storage tanks?
 - Hazardous waste facilities?

Selection of Indicators [4]

- Problematic sensitive population indicators
 - % of population > 65 yrs
 - Correlated with places people choose to retire
 - Should retirement choices influence EJ screening score?
 - Correlated with high income, very expensive real estate, places few young families can afford to live
 - Los Angeles: Palos Verdes, Tujunga Canyon, Bel Air
 - Bay Area: Sausalito, Tiburon, Belmont, Sunnyvale, Monterey, Carmel

'Elderly' Indicator Gives High Weights to Wealthy Zip Codes



Source: Draft report at p. 47.

Selection of Indicators [5]

- Problematic socioeconomic factors
 - Educational attainment
 - Highly correlated with income
 - School quality might be a superior indicator
 - Income
 - Not adjusted for cost of living
 - \$50k/yr in Redondo Beach \neq \$50k/yr in Redding
 - Poverty
 - Highly correlated with income
 - Race/ethnicity
 - Are these independent factors?

Scoring of Indicators

- Additively across indicators implies equal weight by decile
 - $80^{\text{th}} \% > 65y = 80^{\text{th}} 80\% < 5y = 80^{\text{th}} \% < 2xPL$
- Multicollinearity across indicators implies multiple weights on same phenomenon
- Multiplication by sensitivity and SES may yield unpredictable, unintended, or bizarre results

Strengths

- Data are convenient
- Geo units are intuitive appealing
- Relative scale is simple

- Deciles are simple
- Arithmetic operators are simple to apply

Weaknesses

- Data are not demonstrably relevant and appropriate
- Geo units may not be valid; if valid, will differ by indicator
- Relative scale means population variability is inherently bad, and EJ concerns cannot be overcome
- Deciles mean very small differences are meaningful
- Arithmetic operators have no scientific or logical antecedent

Model



RESPONSES TO OTHER QUESTIONS



Unresolved Overarching Methodological Problems

- Is geographic assignment appropriate?
- Are zip codes the right geographic units?
- Are deciles the right granularity?
- Can deciles across indicators be added?
- Is multiple weighting of same/similar phenomena intended? Desirable?
- Are substantial false positives acceptable?



Unresolved Interpretative Problems

- Is relative scoring appropriate?
- What are smallest meaningful effect sizes?
- What are smallest meaningful cross-sectional differences?
- How will policy uses affect scores?

Unresolved Policy Issues [1]

- No criteria for expansion (i.e., increasing the number of components) or updating (i.e., the substitution of new for old data)
- How to apply
 - Screening tools should only be used to exclude matters below policy concern
 - Draft report implies use in lieu of actual EJ assessment
 - ‘No use for regulatory purposes’
 - But permitting uses are regulatory uses

Unresolved Policy Issues [2]

- Could implementation harm EJ communities?
 - Actions that increase the cost of private sector *capital* in EJ communities will
 - Reduce investment in EJ communities
 - Shift investment to non-EJ communities
 - Actions that increase the cost of private sector *labor* in EJ communities will
 - Reduce wages in EJ communities
 - Increase unemployment in EJ communities



Sensitivity Analysis

- Essential but highly premature
- Things to do first
 - Validate indicators
 - Validate model specification
 - Discern minimum meaningful effect sizes
 - Characterize model uncertainties
 - Characterize propensity of the model to produce false positives and false negatives



Questions?

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