# Comments on the Health REA

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For the Alliance of Automobile Manufacturers
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# Controlled Human Studies

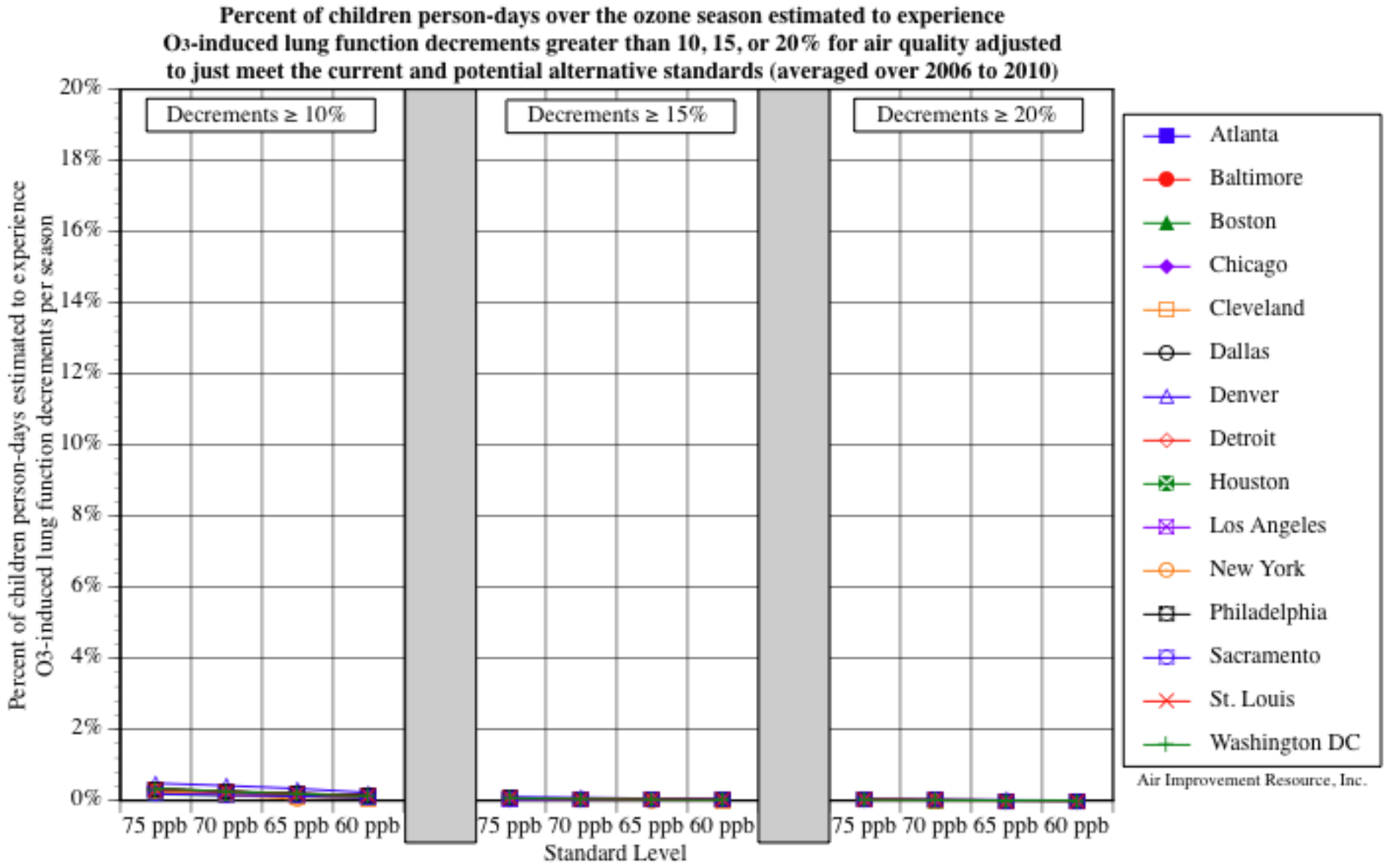
- Clear threshold before effects are seen
- First effects
  - Transient, reversible FEV1 decrements that are reflex reaction
  - Observed near current standard only with strenuous exercise

# Exposure Modeling Methodology

- Biased to overestimate number of exposures with high ventilation rates
- EPA acknowledges these biases, but has not made corrections
- Benchmark counts and FEV1 counts are both overestimated

# Population With Lung Function Decrements

- First responses from single exposures not considered adverse in previous review
- Therefore the fraction of person-days metric needs to be in HREA and PA
- This shows that there is no “bright line” that distinguishes any alternative standard as being more protective of public health


Percent of children person-days over the ozone season estimated to experience
O3-induced lung function decrements greater than 10, 15, or 20% for air quality adjusted
to just meet the current and potential alternative standards (averaged over 2006 to 2010)
Decrements ≥ 10%
Decrements ≥ 15%
Decrements ≥ 20%
Percent of children person-days estimated to experience
O3-induced lung function decrements per season
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
75 ppb 70 ppb 65 ppb 60 ppb
75 ppb 70 ppb 65 ppb 60 ppb
75 ppb 70 ppb 65 ppb 60 ppb
Standard Level
Atlanta
Baltimore
Boston
Chicago
Cleveland
Dallas
Denver
Detroit
Houston
Los Angeles
New York
Philadelphia
Sacramento
St. Louis
Washington DC
Air Improvement Resource, Inc.

# Mortality

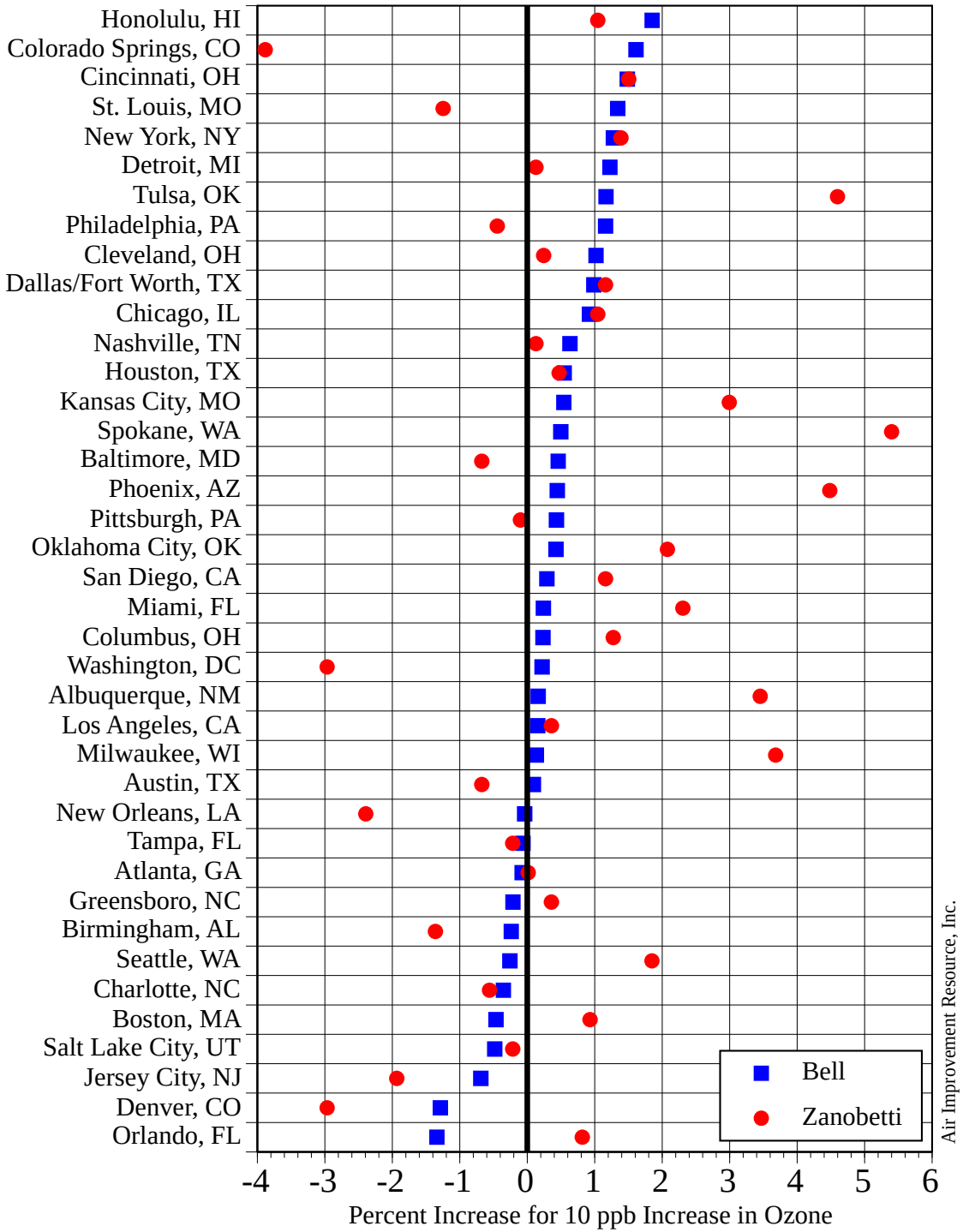
- EPA selected one of many possible C-R functions from Smith et al. (2009)
- However, purpose of Smith et al. was to demonstrate that the results are model dependent
- Smith et al. conclude: "…the heterogeneity and sensitivity of ozone effect estimates to a variety of covariates leaves open the issue of whether or not ozone is causally related to mortality. Consequently, the question arises whether any particular ozone-mortality effect estimate can reliably be used to predict mortality reductions that would ensue from specific ozone reductions"

# Multi-Continent APHENA

- Does not support relationship between $O_3$ & mortality or respiratory hospital admissions
- HEI Review Committee: all-year $O_3$/respiratory associations near zero & not significant
- APHENA: little evidence of effect of $O_3$ on respiratory mortality
- Lack of coherence between mortality and hospitalizations

# Variability in Mortality Results

- Compared unadjusted individual-city associations from Zanobetti & Schwartz (2008) and Bell et al. (2004)
- Many negative associations and little or no correspondence in cities used in both studies


Honolulu, HI
Colorado Springs, CO
Cincinnati, OH
St. Louis, MO
New York, NY
Detroit, MI
Tulsa, OK
Philadelphia, PA
Cleveland, OH
Dallas/Fort Worth, TX
Chicago, IL
Nashville, TN
Houston, TX
Kansas City, MO
Spokane, WA
Baltimore, MD
Phoenix, AZ
Pittsburgh, PA
Oklahoma City, OK
San Diego, CA
Miami, FL
Columbus, OH
Washington, DC
Albuquerque, NM
Los Angeles, CA
Milwaukee, WI
Austin, TX
New Orleans, LA
Tampa, FL
Atlanta, GA
Greensboro, NC
Birmingham, AL
Seattle, WA
Charlotte, NC
Boston, MA
Salt Lake City, UT
Jersey City, NJ
Denver, CO
Orlando, FL
-4
-3
-2
-1
0
1
2
3
4
5
6
Percent Increase for 10 ppb Increase in Ozone
Bell
Zanobetti
Air Improvement Resource, Inc.

# Mortality Summary

- Full pattern of associations in literature is not consistent with $O_3$ causing acute or chronic mortality
- Consequently, EPA's extrapolation of risk to low $O_3$ levels are not justified and should not be used to set regulatory standards

# Conclusion

The revisions necessary in the final HREA will have a major effect on the final PA and on estimates of the risk to public health from the current ozone standard. Therefore, it is premature to make a judgment on the adequacy of the current standard before the revisions are made.