



Comments on Second Draft of EPA's Urban-Focused Visibility Assessment

Comments prepared on behalf of UARG

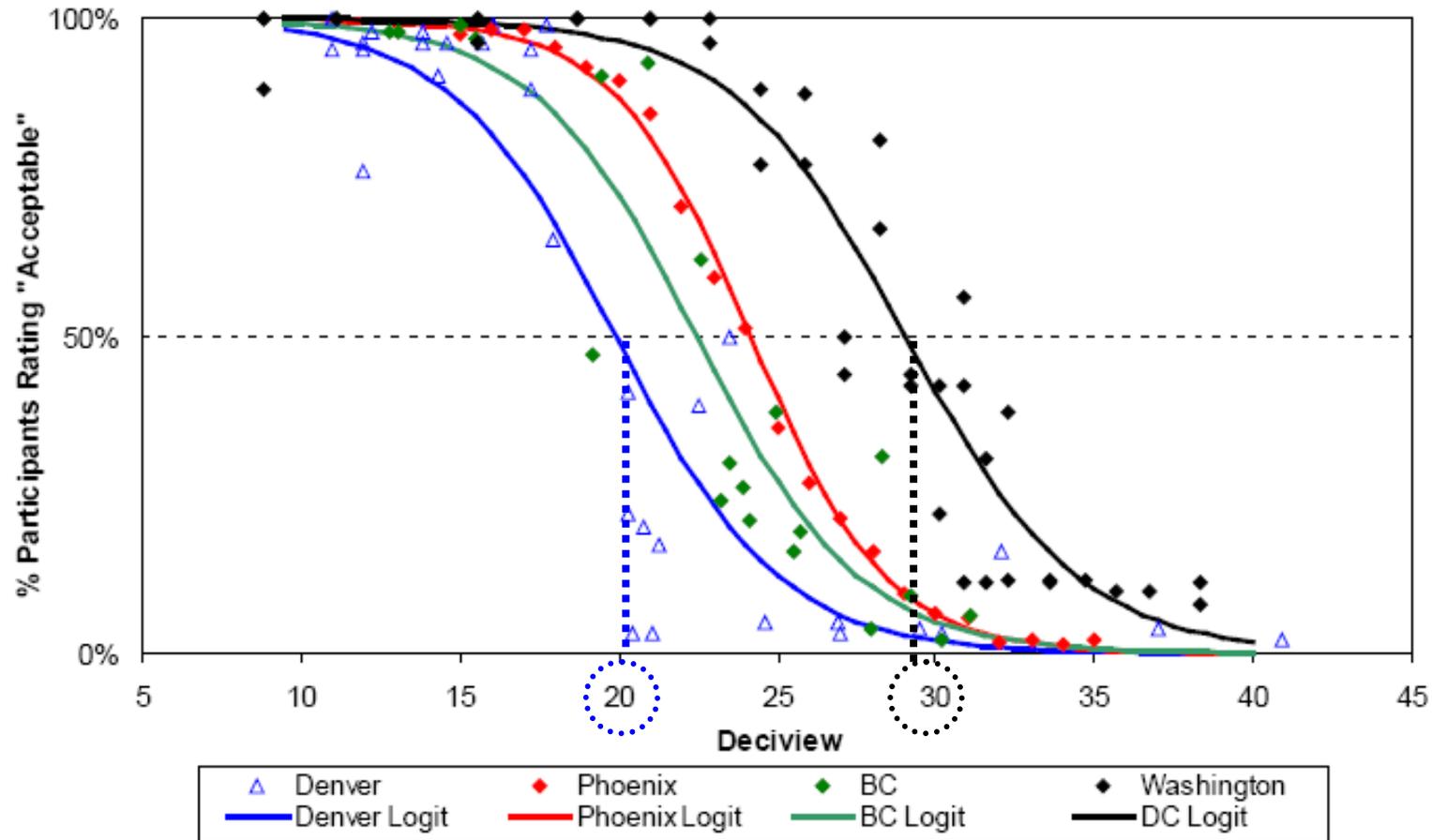
Public comments session of
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Research Triangle Park, NC

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The 2nd Draft UFVA Is Using Statistically-Estimated Logistic Curves to Justify its Candidate Protection Level Range of 20 to 30 dv

From Figure 2-16, 2nd Draft UFVA:



However, the 2nd Draft UFVA Ignores Other Key Findings in the 2/3/10 Memo from Stratus Consulting to EPA Delivering these Logistic Curves

- Other key statistical findings in the memo from Stratus to EPA:
 - Heterogeneity of “preferences” across cities
 - Statistical significance of the “preference” malleability in Smith & Howell study
 - A reasonable acceptability criterion estimate above 30 dv

These statistical findings undermine the scientific cases for:

- *identifying a uniform national VAQ standard*
- *using VAQ preference studies for setting any VAQ standard*
- *setting the upper bound for candidate protection levels at 30 dv*

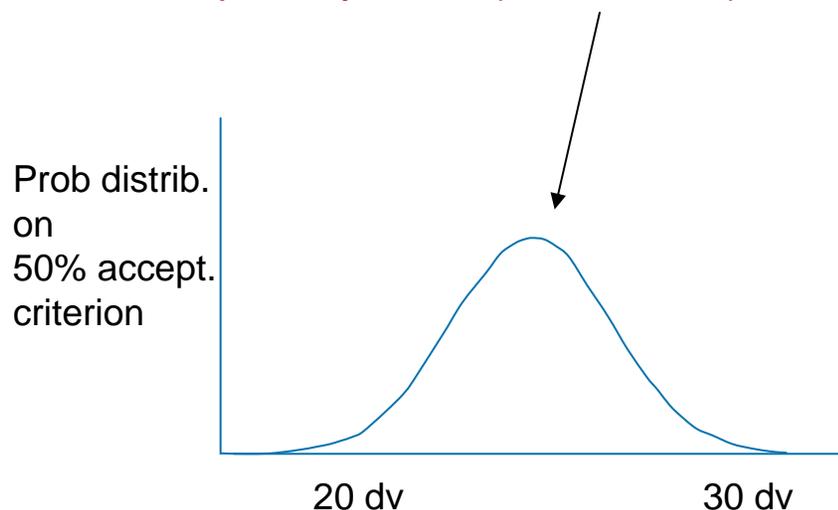
Strong City-to-City Heterogeneity on a 50% VAQ Acceptability Criterion

- Stratus concludes that results are heterogeneous across cities:

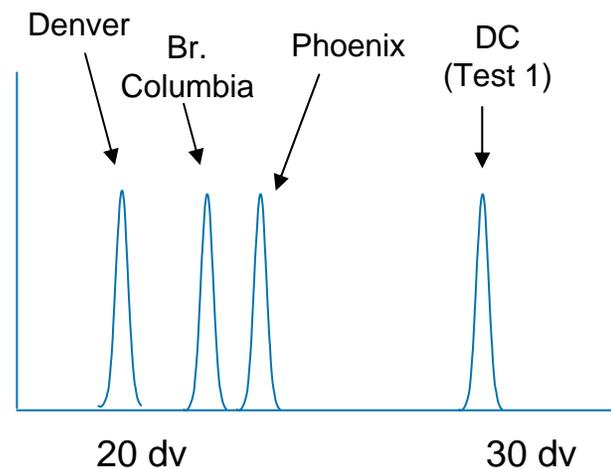
The “hypothesis test...that the means are the same...is strongly rejected for all pairs of cities, indicating that the mean 50% criteria dv levels differ for all four cities.” (Stratus memo, p.10)

- Heterogeneity undercuts support for a uniform national visibility standard

Instead of “uncertainty” about a nationally-held view on VAQ acceptability cutoff (such as this)



Heterogeneity implies *statistically significant differences* in the acceptable VAQ level by city. These are Stratus' statistical results:



The t-Statistics Supporting the Heterogeneity Finding

Copy of table on p.10 of 2/3/10 memo from Stratus Consulting to V. Sandiford, EPA:

Table 5. Hypothesis testing on whether the full interaction model mean 50% criteria dv levels are the same

	British Columbia Mean dv = 22.45	Phoenix Mean = 24.15	Washington, DC Mean dv = 29.12
Denver Mean dv = 19.90	t-stat = 16.89 Pr(Den = BC) ~0	t-stat = 35.15 Pr(Den = Ph) ~ 0	t-stat = 30.21 Pr(Den = DC) ~ 0
British Columbia	–	t-stat =12.08 Pr(BC = Ph)~0	t-stat = 21.23 Pr(BC = DC) ~ 0
Phoenix		–	t-stat = 16.53 Pr(Ph = DC) ~ 0

These are extremely high t-statistics, indicating very strong rejection that differences could be due to variance.

Differences Among Smith & Howell’s Three “Tests” of VAQ Preference Response Malleability Are Statistically Significant

- Stratus concludes Smith & Howell test differences not due to variance:

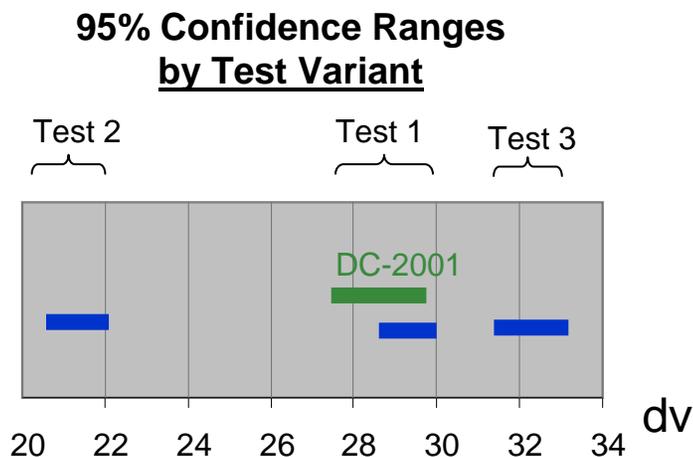
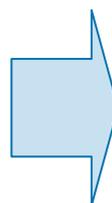
They “reject the hypothesis that Test 2 and Test 3 are the same as either the Test 1 or the DC-2001 results.” (Stratus memo, p.13)

- This means that VAQ preference studies do not produce a robust scientific basis for setting a VAQ standard

Copy of table on p.12 of 2/3/10 memo from Stratus Consulting to V. Sandiford, EPA:

Table 7. Mean 50% criteria levels, and Krinsky-Robb confidence intervals

	Mean dv	5% confidence estimate	95% confidence estimate
Test 1	29.30	28.59	29.97
Test 2	21.30	20.57	22.03
Test 3	32.26	31.37	33.16
DC-2001	28.65	27.46	29.70



Note: “DC-2001” refers to the original Abt survey, which was identical to “Test 1” in S&H.

A 50% Acceptability Criterion Has Been Estimated Significantly Above the 30 dv Upper Bound that the UFVA is Using

- If EPA persists in relying on VAQ preference studies, it should use the Test 3 version for Washington DC
 - Test 3 used the most complete range of actual Washington DC conditions
- Test 3's 50% acceptability criterion is 32.3 dv (CI: 31.4 to 33.2 dv)

