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# *Interactive comment on* "Application of positive matrix factorization to on-road measurements for source apportionment of diesel- and gasoline-powered vehicle emissions in Mexico City" *by* D. A. Thornhill et al.

**Anonymous Referee #1**

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This is a generally good paper although it is not clear it is of great general interest since it deals with one 75 km drive sampling campaign. A more comprehensive paper would be of more interest. It is a relatively routine use of PMF and obtained rather limited results. It is not clear to me that it belongs in a major international journal. In addition to lower NOx emissions when idling, there will be lower BC during that period. During heavy acceleration, there will be still lower NO emissions, but much higher BC since there would be significant fuel rich conditions. This is reflected in the OC/EC results of Shah et al., but they do not have OC values here. Thus, there is some

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considerable variability in the source profiles between cruising, idling, and accelerating that are not fully reflected in the profiles, but are probably reflected in the uncertainties in the profiles. Unfortunately, the bootstrap method applied in EPA PMF 3 is severely flawed and does not really provide appropriate error estimates. A new approach will be available soon in EPA PMF 4 and it would be better to refrain from any use of the uncertainty estimates from V3. Another approach would be to separate the data set into subsets so they look at the idling periods separate from the cruising periods. Then they could examine if there are different numbers of factors involved or different profiles. This would be a better way to explore the potential end members of the profiles.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 27571, 2009.

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