Data on Ethanol in Gasoline

Jim Weaver
Weaver.jim@epa.gov
US EPA, Ada OK

ASTSWMO, Fuel Oxygenates and Other Additives,
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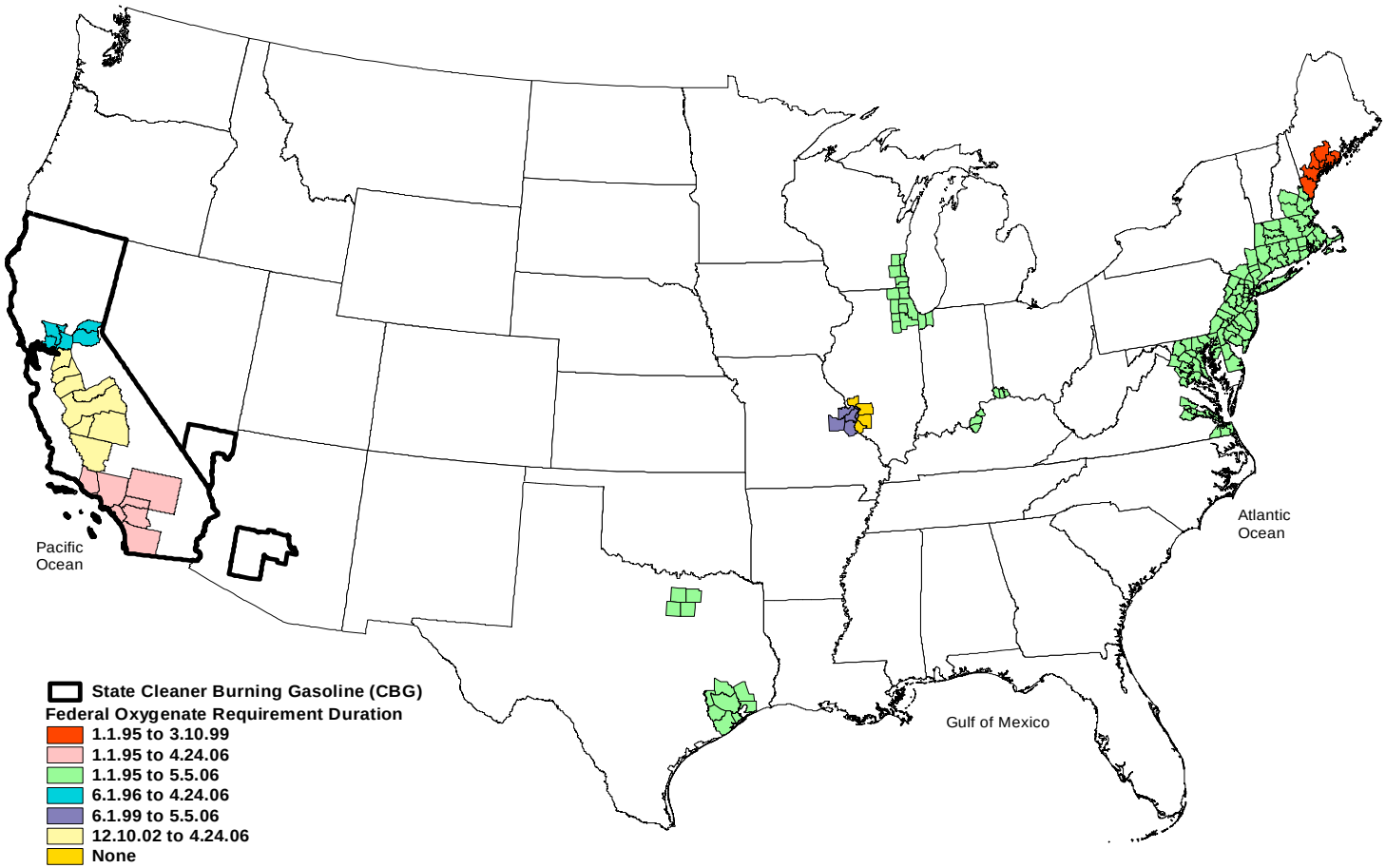
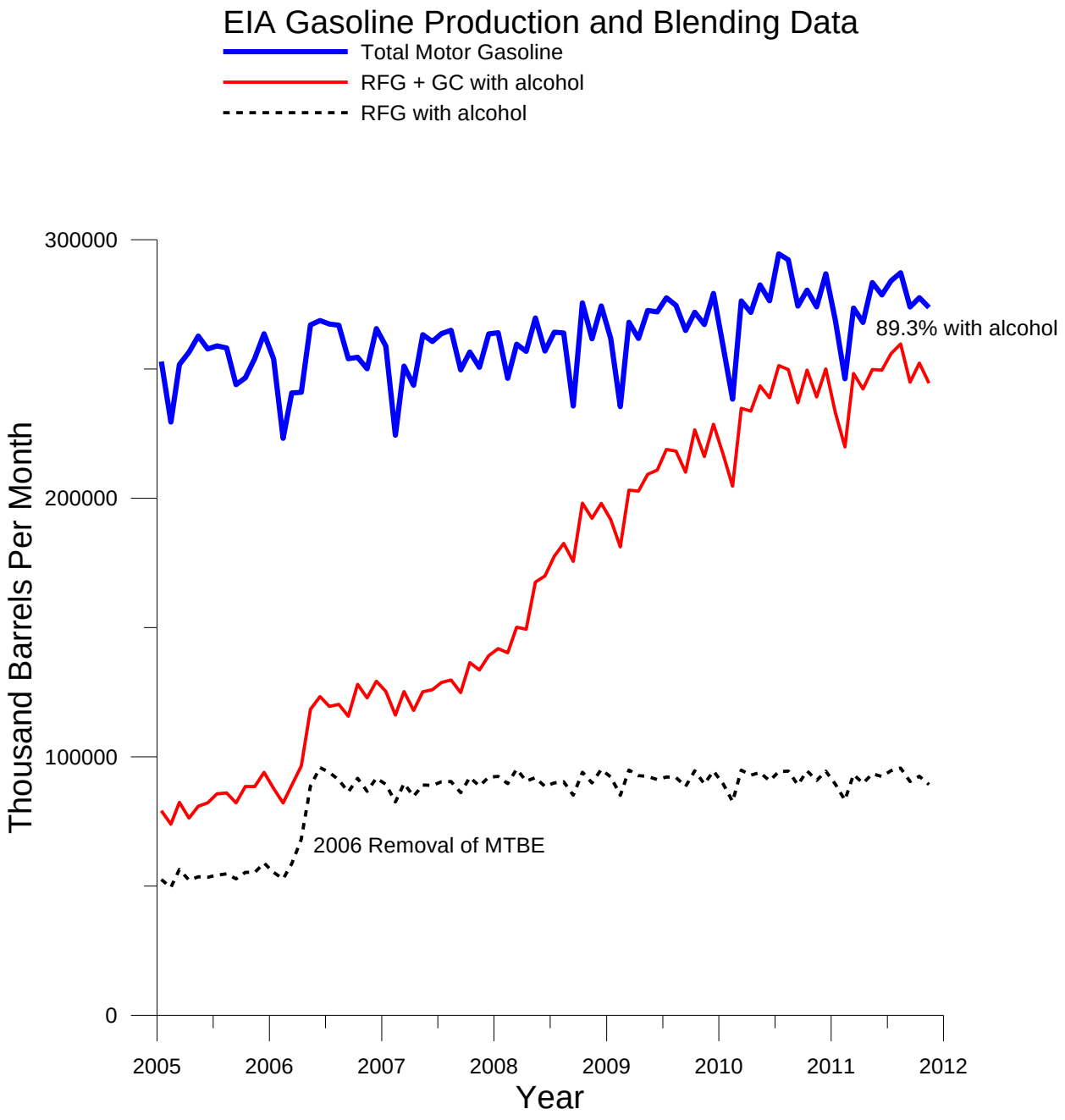
Clean Air Act Amendments of 1990

- Established framework for U.S. gasoline composition
  - Final lead phase out (1996)
  - Reformulated, conventional and oxygenated gasoline programs
    - Reformulated (RFG) – benzene < 1%; oxygenated additive until 2006
    - Conventional (CG) – benzene limited by anti-dumping provision – oxygenates boost octane
    - Oxygenated (OG) – control CO emissions in winter in selected cities
  - Mobile Sources Air Toxics Act (MSAT) 2007
    - Reduce benzene to 0.62% all U.S.
  - For more information:
    - Gasoline Composition Regulations Affecting L.U.S.T. Sites, 2010, EPA EPA/600/R-10/001

Reformulated and Conventional Gasoline

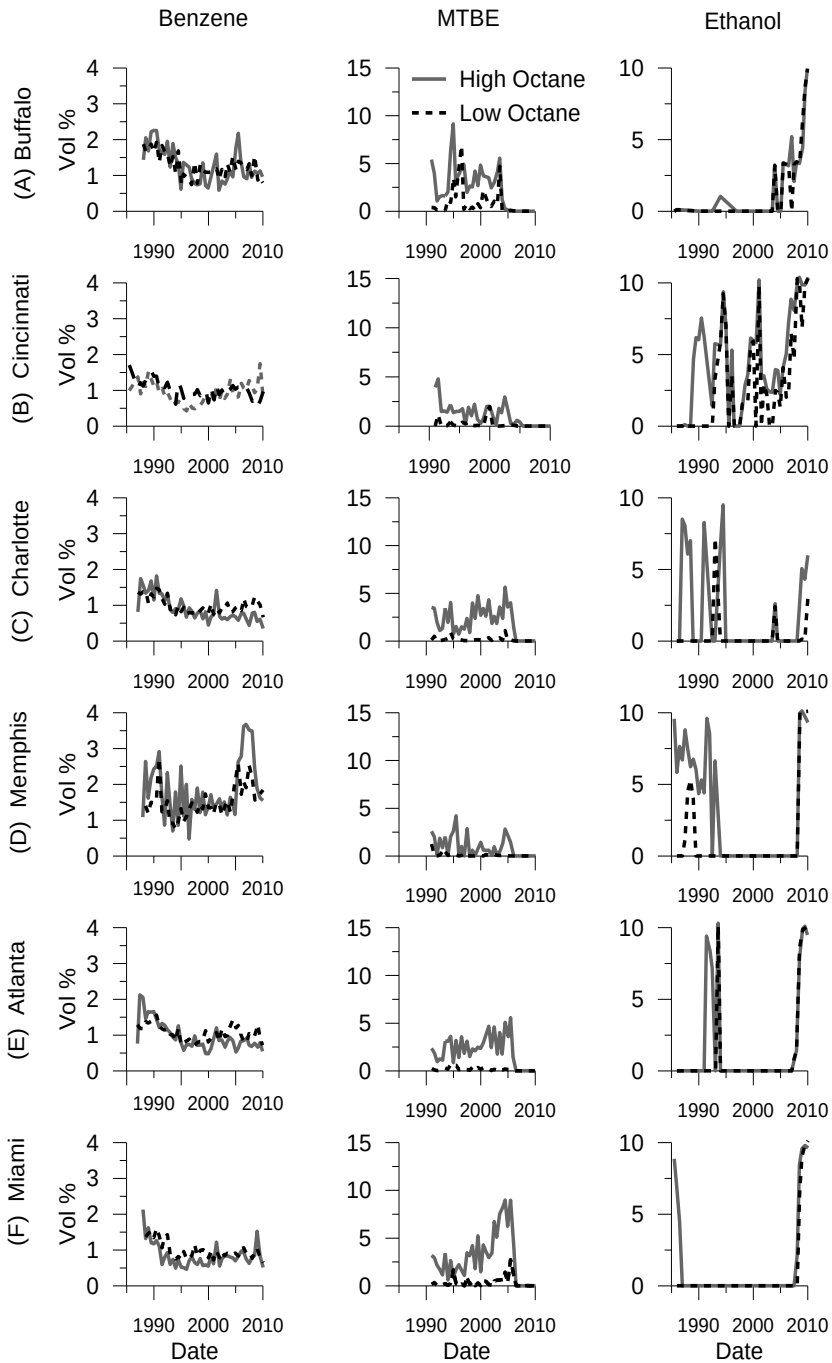


Whole county boundaries shown for partial counties: Grundy & Kendall in Illinois, Bullitt & Oldham in Kentucky. Not represented: above 4500' on White Face Mountain in Essex County, New York. All areas not indicated on the map use conventional gasoline.

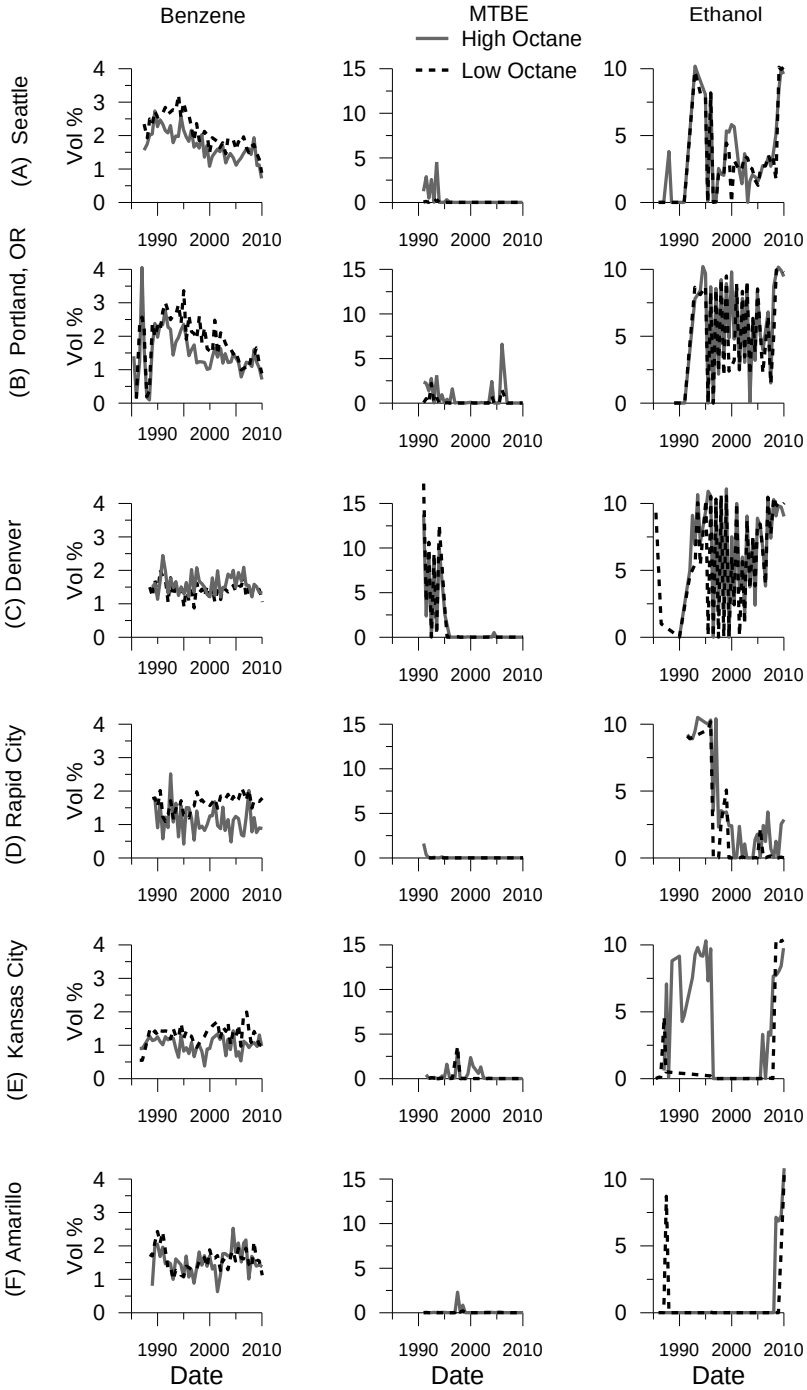

EIA Gasoline Production and Blending Data
Total Motor Gasoline
RFG + GC with alcohol
RFG with alcohol
300000
200000
100000
0
Thousand Barrels Per Month
89.3% with alcohol
2006 Removal of MTBE
2005
2006
2007
2008
2009
2010
2011
2012
Year

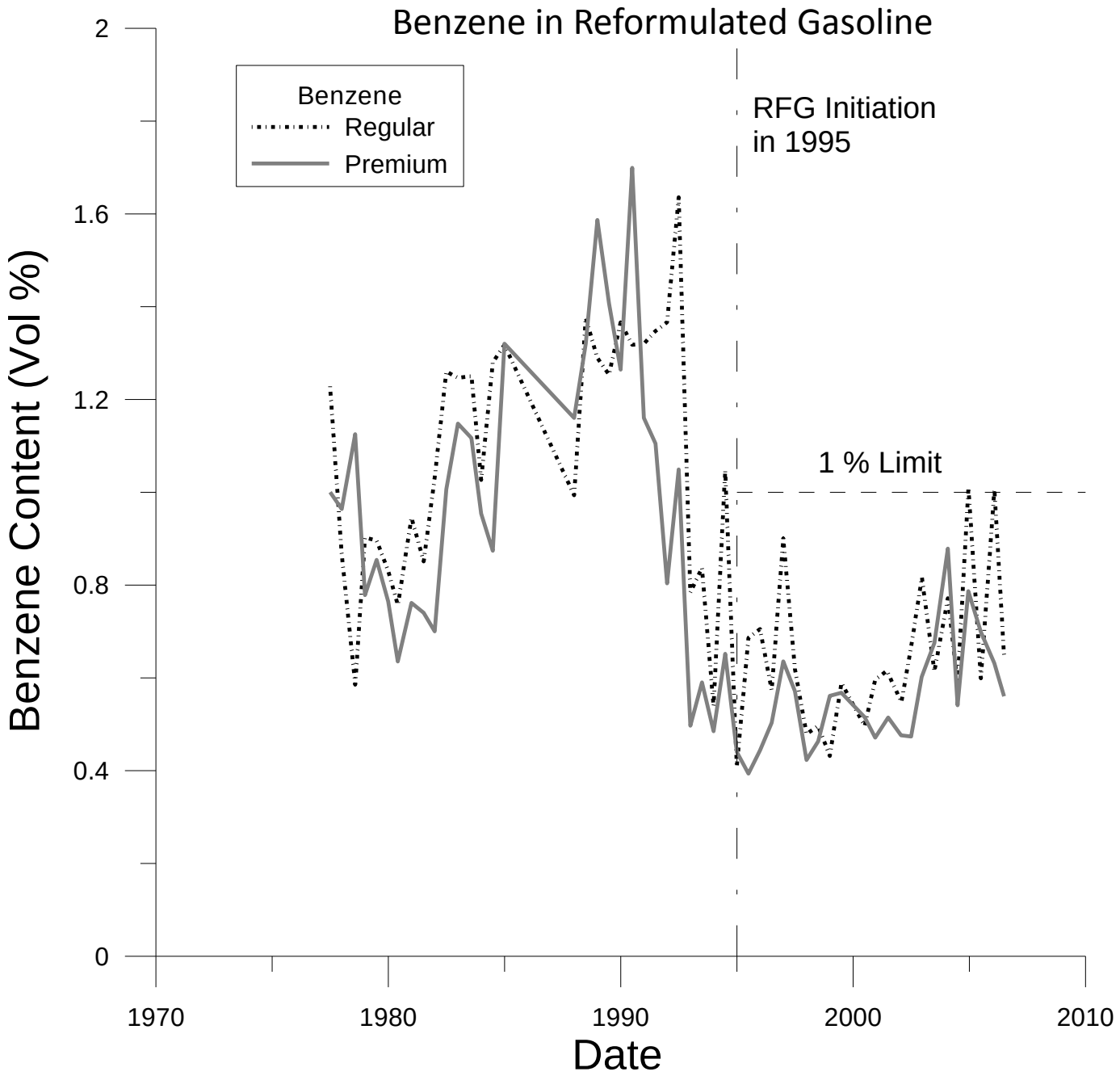
Some of the 10%

Conventional Gasoline
east of the Mississippi

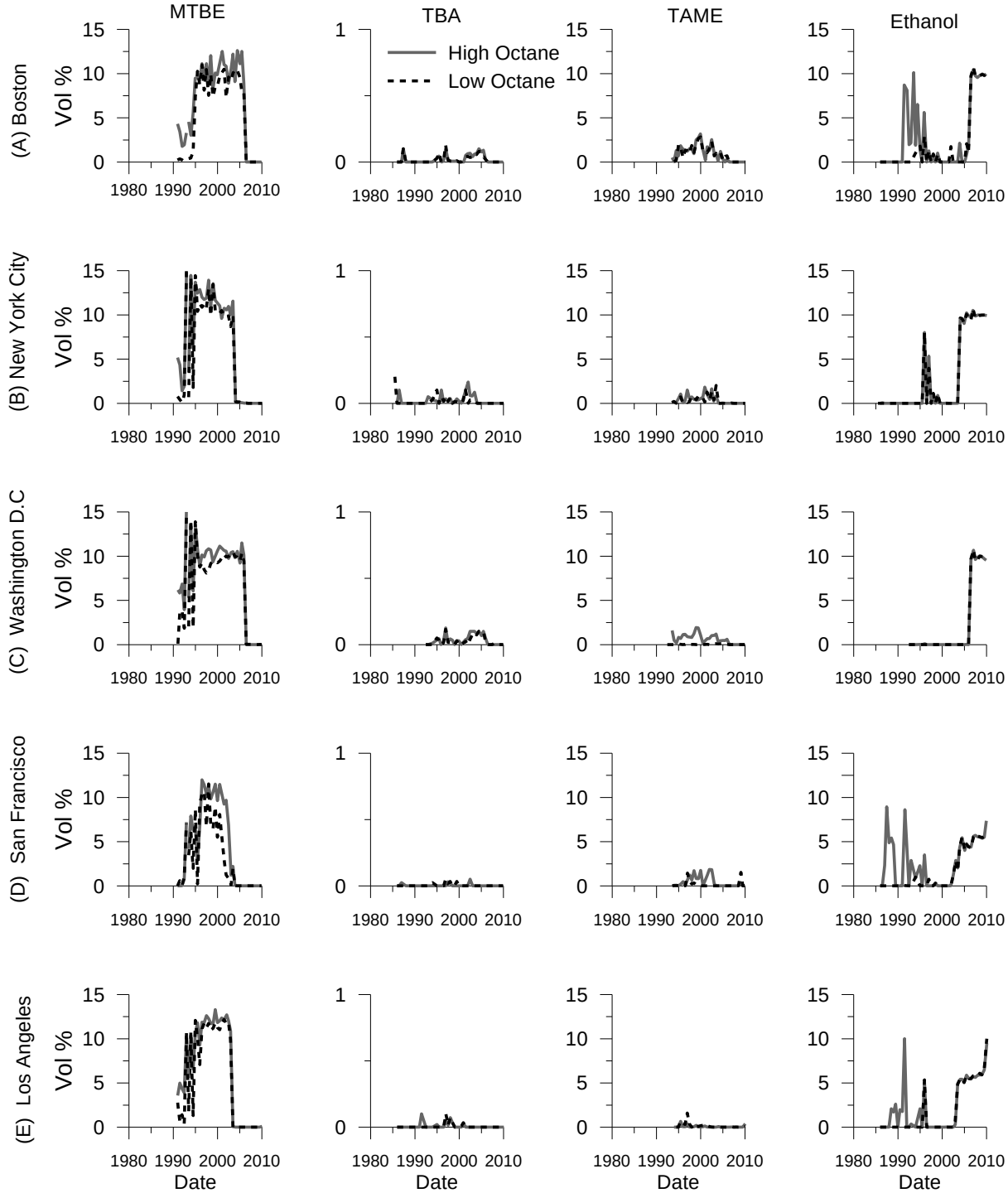


Conventional Gasoline
west of the Mississippi

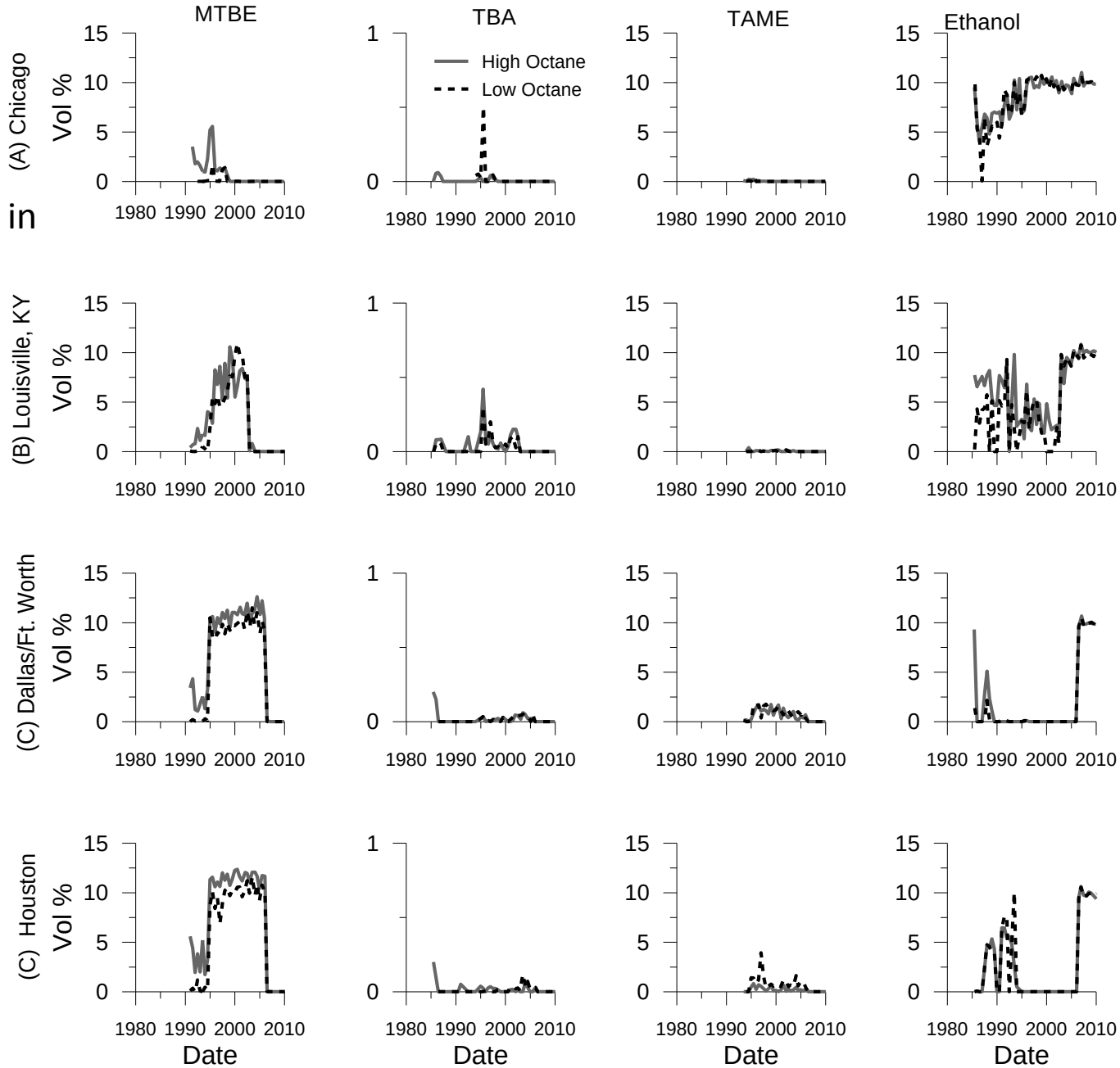



Benzene in Reformulated Gasoline
Benzene
Regular
Premium
RFG Initiation
in 1995
1 % Limit
Benzene Content (Vol %)
2
1.6
1.2
0.8
0.4
0
1970
1980
1990
2000
2010
Date

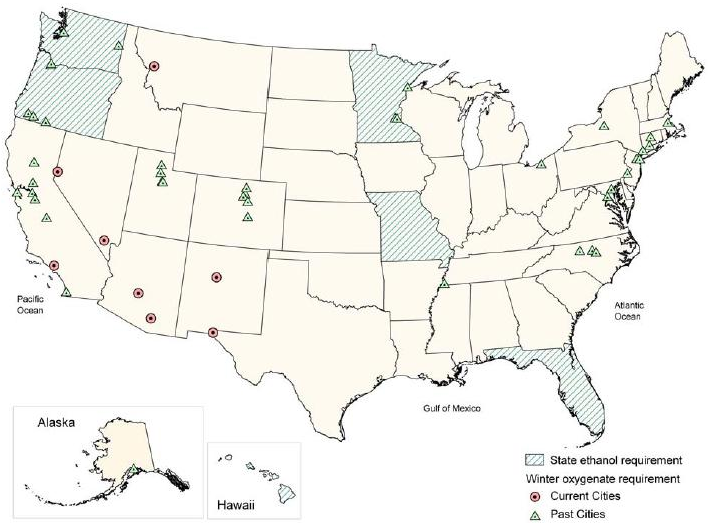
Reformulated gasoline on the east and west coasts

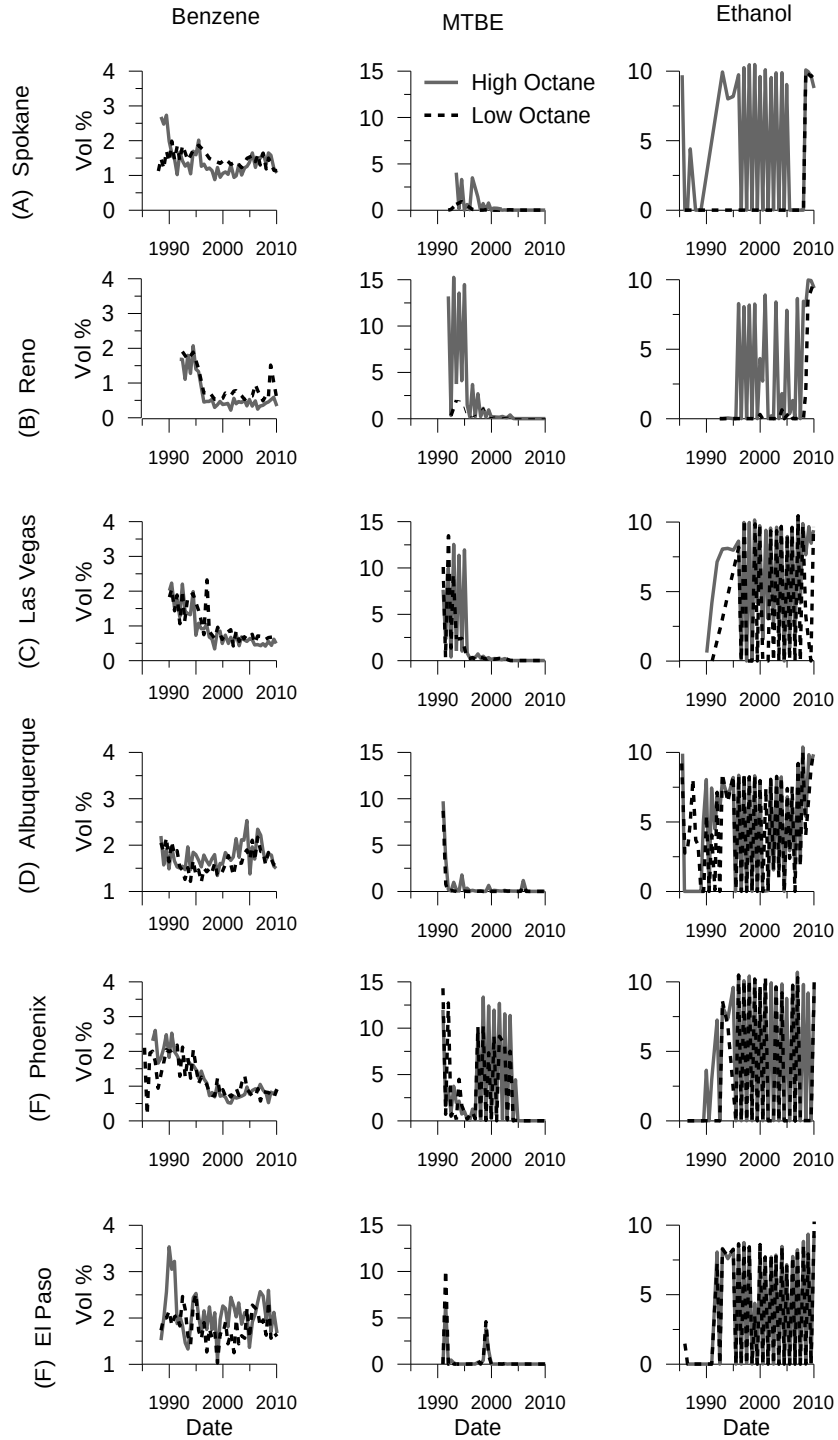


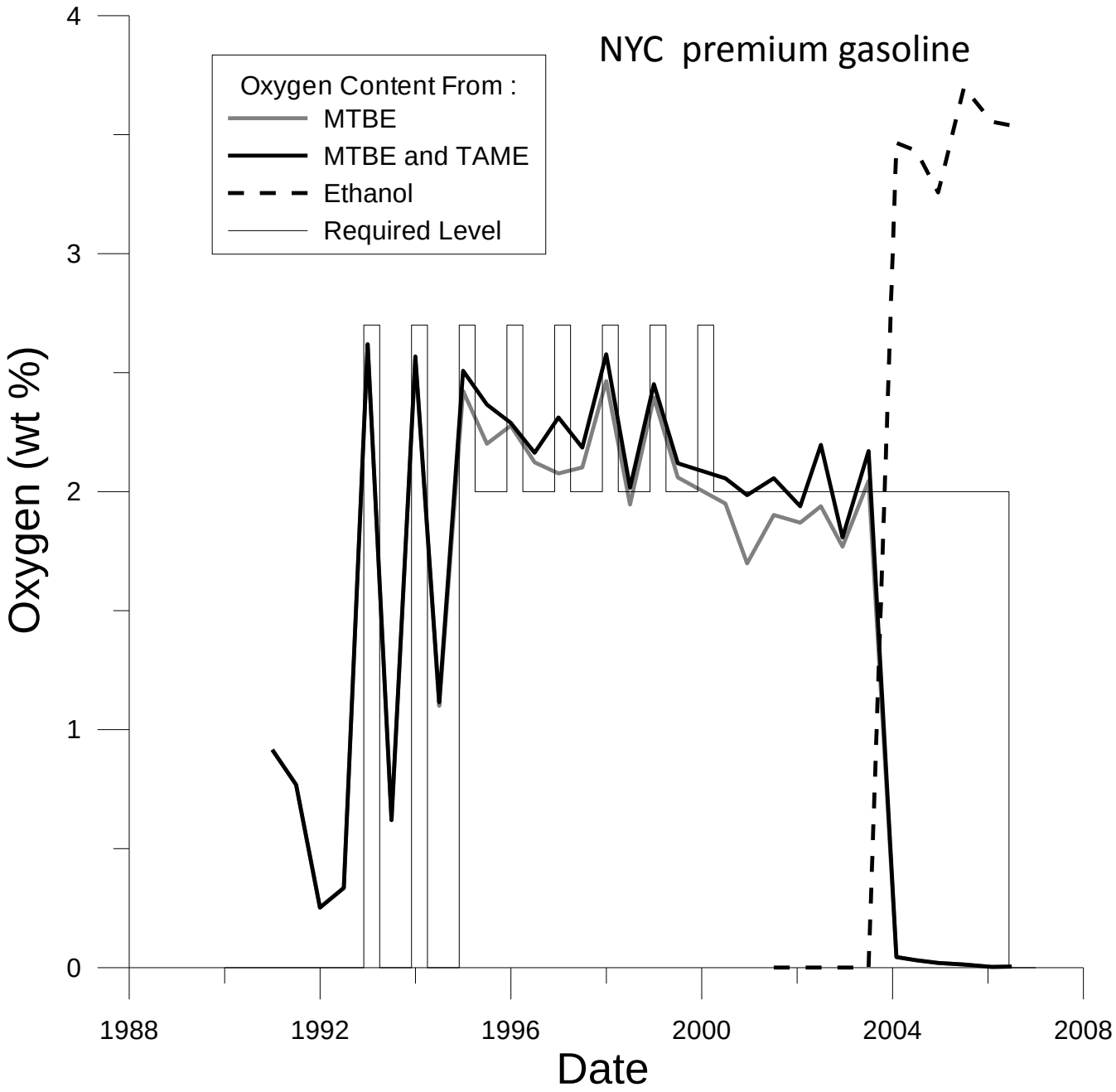
Reformulated gasoline in the mid-continent



Oxygenated Gasoline






NYC premium gasoline
Oxygen Content From :
MTBE
MTBE and TAME
Ethanol
Required Level
Oxygen (wt %)
0
1
2
3
4
1988
1992
1996
2000
2004
2008
Date

National Risk Management Research Laboratory

- Although this work was reviewed by EPA and approved for presentation, it may not necessarily reflect official Agency policy.

Resources

- For EPA/ORD research on tanks

  http://www.epa.gov/nrmrl/gwerd/gw/tanks.html
- Gasoline Composition Regulations Affecting L.U.S.T. Sites, 2010, EPA EPA/600/R-10/001
- Composition and Behavior of Fuel Ethanol, 2009, EPA 600/R-09/037