Case 8 – Lead
Statistics 8801
Spring Semester 2009
to be discussed April 3

Lead is a nasty poison. It never degrades, and if children eat it, it can cause brain damage. In the past, lead was used as a gasoline additive. As cars drove down the road, they sent a steady stream of lead out through their exhausts. Lead was also used in house paint, and as paint chipped away from the walls, the lead would fall to the ground and mix with the soil there. Both uses tailed off starting in the 1970s and had ended by the late 1980s.

We worry now about children playing in soil contaminated by lead and possibly eating it. Attorneys would like to sue the companies whose products caused this contamination, but they don't know whether to sue gasoline or paint manufacturers. They plan to measure lead in soil in various places to try to decide whether it is coming from auto exhausts or paint chips.

Sketch a plan of a neighborhood with roads, houses with yards, a park, a school, a freeway, and shops. Set up a scheme for sampling in this neighborhood to estimate how much lead is in the soil, and to decide whether it came from house paint or from car exhausts. Also figure out what other information you would want to record about the community. What sort of statistical analysis would you apply to the data you got from your investigation?

You have been hired by the attorneys, and your presentation is a presentation for the attorneys and the neighborhood committee.

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