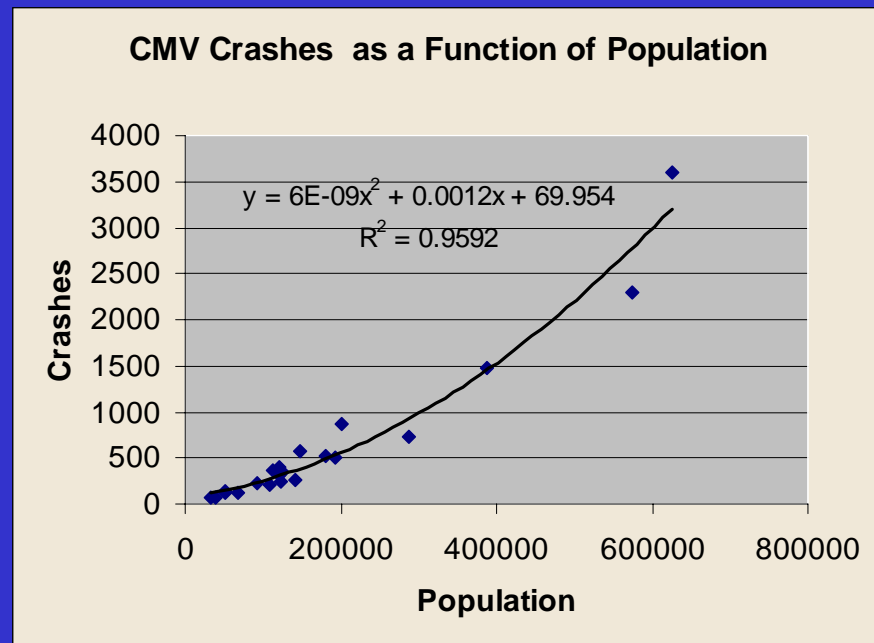
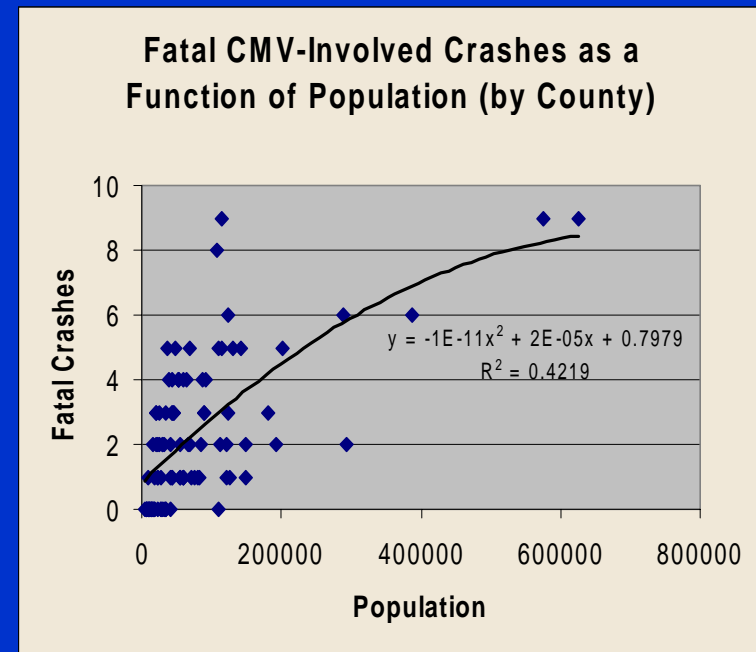
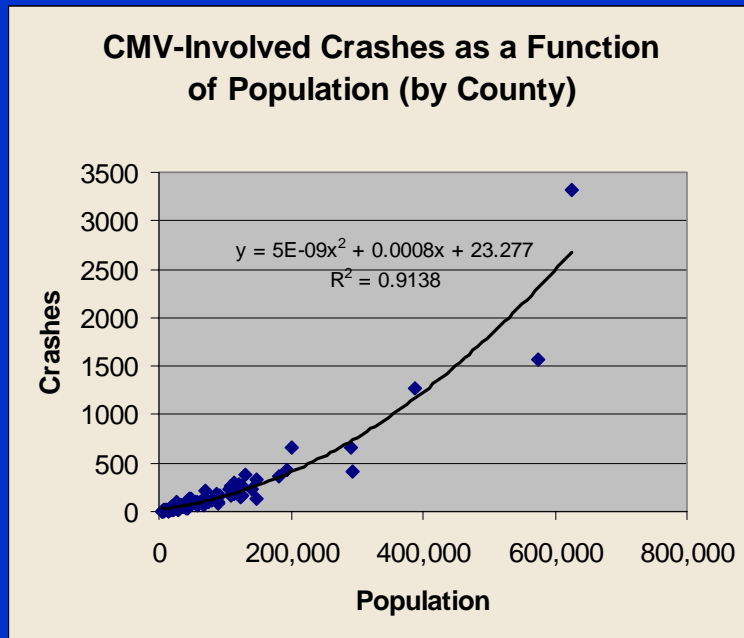


County	Population	Crashes
Alamance	121652	317
Brunswick	67266	117
Buncombe	193332	510
Cabarrus	120626	401
Cleveland	91751	228
Columbus	52090	121
Davidson	141365	260
Davie	32179	71
Durham	200716	861
Forsythe	288000	733
Gaston	181157	520
Guilford	388365	1484
Haywood	51620	135
Iredell	113500	366
Mecklenburg	624651	3604
New Hanover	148424	570
Orange	109352	205
Pender	38196	74
Randolph	124080	239
Rowan	124884	353
Wake	575057	2301

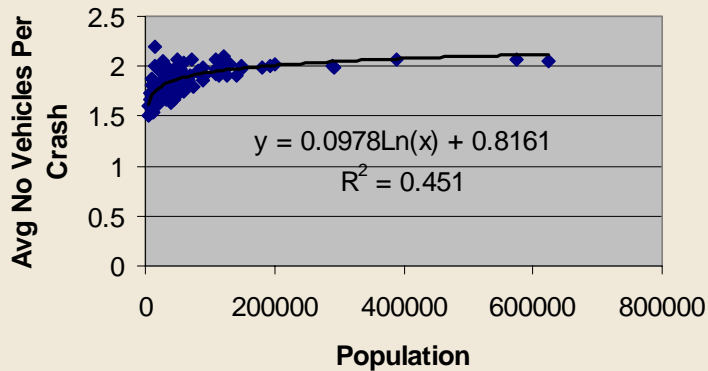


For the 21 North Carolina counties targeted by the DMV for increased CMV enforcement, the data show that the number of CMV-involved crashes was an increasing, positively accelerated function of the population of the county in which the crash occurred. The positively accelerated nature of the relationship indicates that crash rate (e.g, crashes per 100,000 population) does not remain constant, but rather increases with increases in population. In other words, population is not only an ‘exposure’ factor, but also a ‘risk’ factor. The chart shows that a second order polynomial provides a good fit to the data, accounting for 96 percent of the variance in the number of crashes

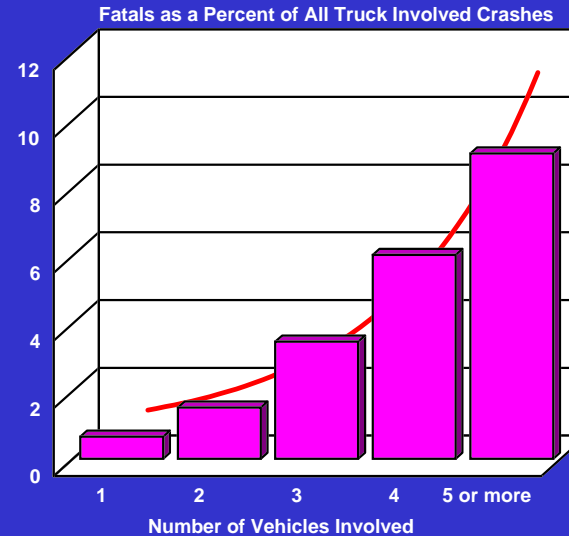


The data show that truck-involved crashes *statewide* in 1998 increased as a function of the population of the county in which the crash occurred, and that they increased in the same positively accelerated fashion characteristic of crashes in the 21 specially targeted counties. The  $R^2$  value indicates that population accounted for 91 percent of the variance in the number of crashes statewide. *Fatal* truck-involved crashes also increased as a function of local population, but as the  $R^2$  value indicates, less than half the variance in the number of fatal crashes can be accounted for by population alone. Notice that while fatal crashes were an increasing function of population, the function is negatively rather than positively accelerated (as in the case of crashes overall). Note too the wide dispersion of fatal crash frequencies at the lower population levels. . . indicating, in part, the higher likelihood of fatal crashes on rural, high speed roadways.

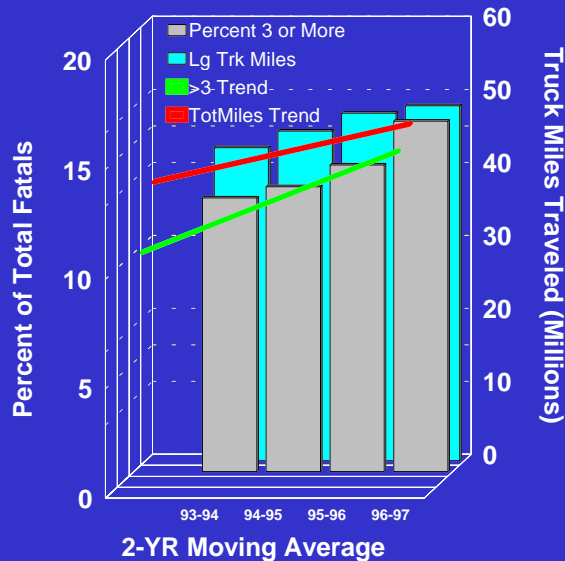
**Average Number of Vehicles Involved in a CMV-Related Crash as a Function of Population**



**Fatals as a Percentage of All Truck-Involved Crashes: The Role of Number of Vehicles Involved**  
(NC Data, 1993-1997)



**Percent of Large Truck Involved Fatal Crashes Involving Three or More Vehicles**



The data in the upper left for large truck-involved crashes in North Carolina for 1998 show that the *average* number of vehicles involved in a CMV-related crash increased as a (logarithmic) function of the population in the county of the crash. NC data in the upper right from 1993-1997 show that the likelihood of a CMV-involved crash being fatal increased as a function of the number of vehicles involved. The data in the lower left (same time frame) show multiple vehicle, CMV-related crashes increasing over time, and doing so at a rate faster than the increase in estimated truck miles traveled.