

Abstract

Relations that are true at all time and all places such as the laws of motion are postulated by reasoning and verified using data generated thru experiments. When the laws relate to non-living things as in physics and chemistry and when errors in observations are random, repeating experiments and deriving laws based on more information will lead to more accurate results. Hence, the larger the sample the better the results.

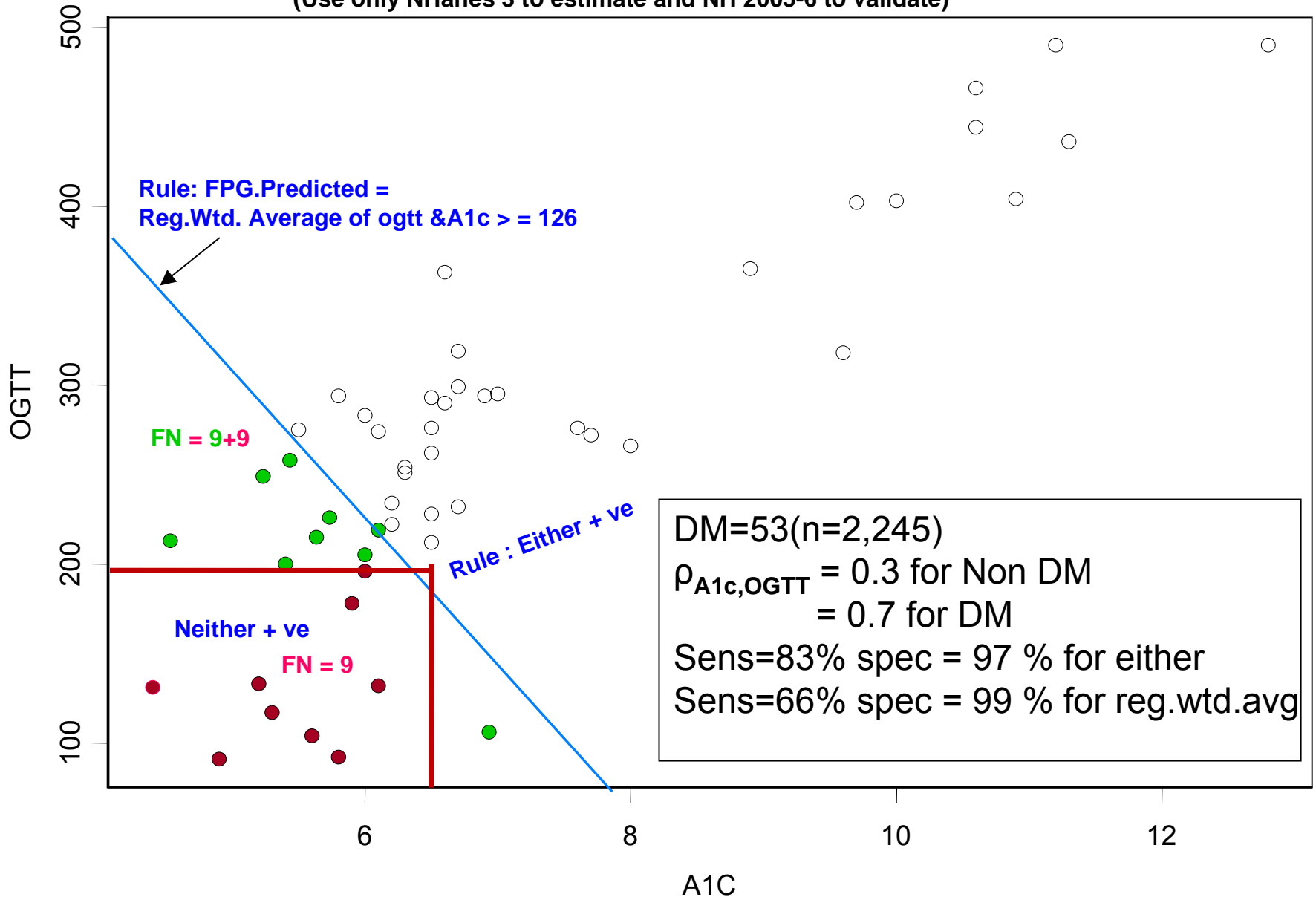
An interesting question is: Will more information always help to derive more accurate relations when objects studied are living organisms as in biology and social sciences? For example, does repeating a diagnostic test or performing a confirmatory test help to increase diagnostic accuracy?

Using data for 4,435 persons from the National Health and Nutrition Examination Survey in the U.S., we show how repeated tests can decrease diagnostic accuracy. Statistical designs and methods used to discover relations in physical sciences cannot be used without appropriate modifications or extensions in social sciences.

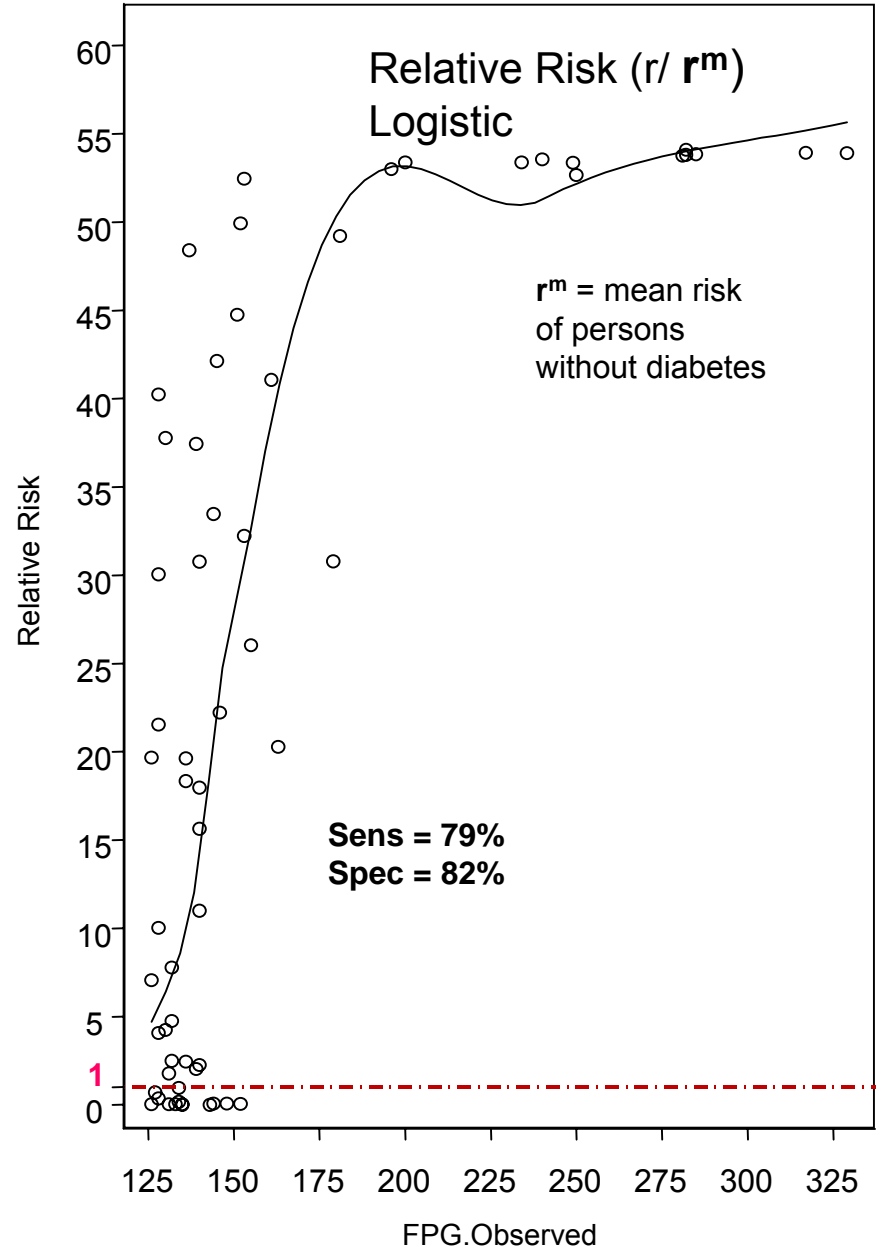
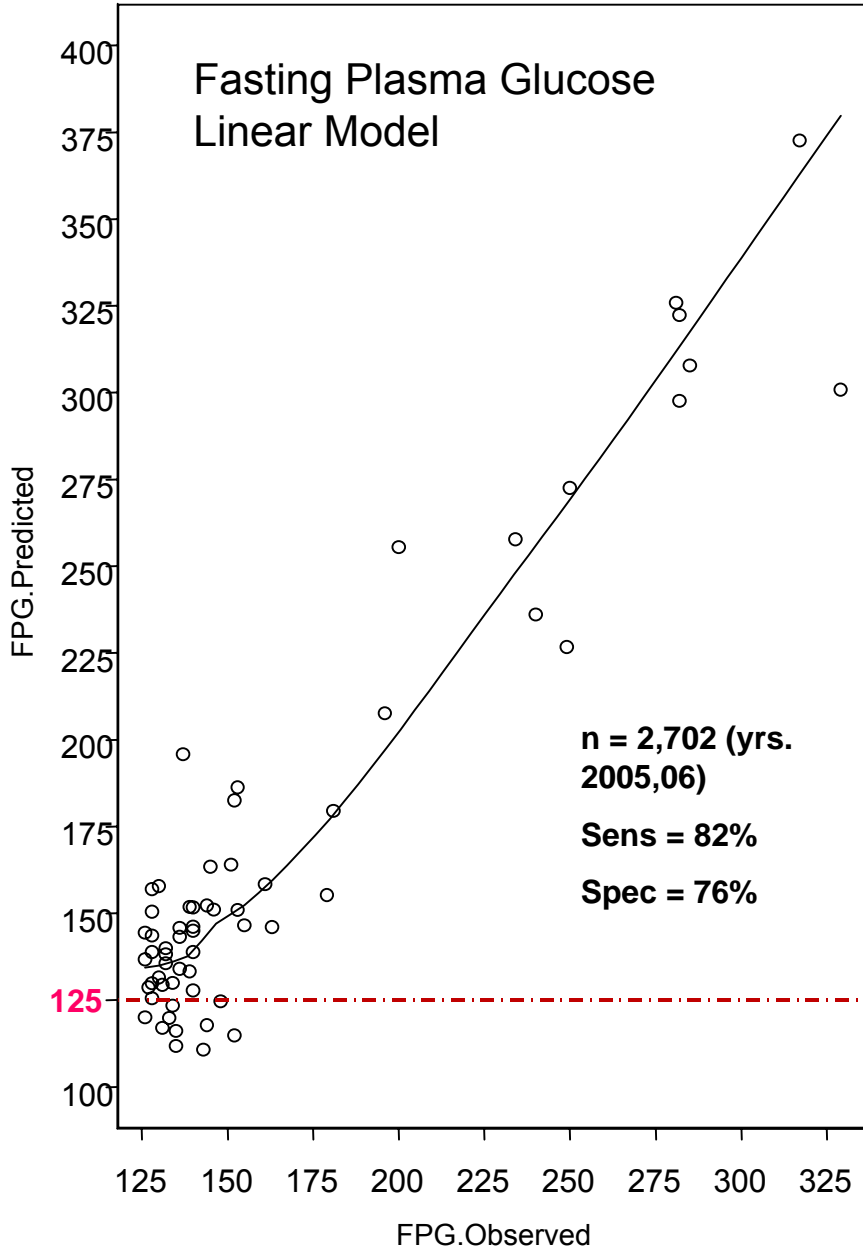
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Screening for Diabetes using A1C and Glucose Tolerance Tests

(Use only NHanes 3 to estimate and NH 2005-6 to validate)

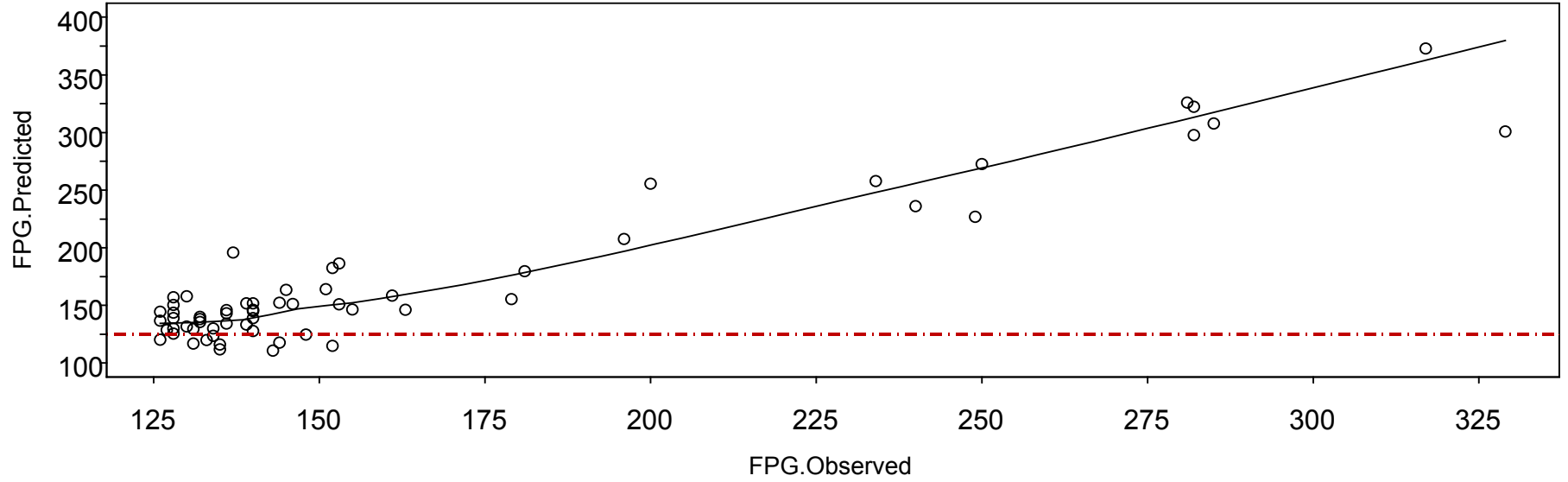


Screening for Undiagnosed Diabetes

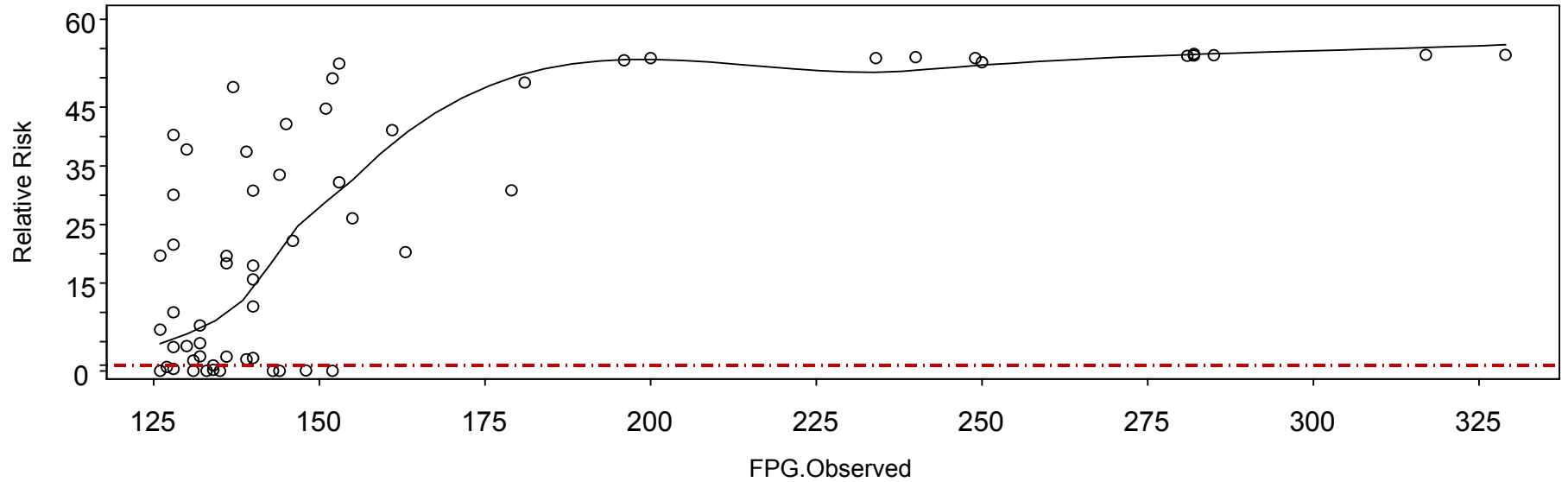


Screening for Undiagnosed Diabetes

Fasting Plasma Glucose



Relative Risk



Screening for Undiagnosed Diabetes-Non-DM

