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Analysis of QD Technologies, QD Solution
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Background

Biotech and pharmaceutical researchers and manufacturers are often confronted with existing networked databases. Analytical approaches involving large central data warehouses are cumbersome and slow even though they are expensive to build and maintain. Data marts containing extracted, transformed and consolidated information from source databases may exclude valuable data which may impede discovery and innovation. Researchers are often simply unable to gain useful insights from ad hoc queries using standard data marts.

The QD Solution

QD Technology takes advantage of increased desktop power and compresses research, laboratory and clinical databases before delivering them securely to a researcher's desktop or laptop. The convenience and speed of the compressed read-only database allows the use of tools without direct connection to the network.

Testing the QD product

A broad array of tools was tested to confirm performance using laptops or desktops. For the purposes of this study we used a Dell with duo CPU 2.66 Hz, 2 GB RAM, and 160 GB drive, running Windows XP SP3. MS SQL and Oracle databases obtained from network servers had over two hundred tables with complex dependencies. The original and laptop databases were subjected to typical tools to determine ease of use and performance.

A database of clinical information was analyzed using SAS® Statistics (NB: SAS® product sourced from SAS Institute Inc., SAS Campus Drive, Cary, NC 27513). The data was plotted using P value versus Relative Risk Reduction. The SAS® tool was applied to the source database and then to the laptop database and yielded the same report (see below).

The query time was reduced from twenty (20) minutes to less than one (<1) minute.

The P value is the probability that an observed or greater difference occurred by chance, if it is assumed that there is no real difference between the effects of the interventions. If this probability is less than 1/20 (when the P value is <0.05), then the result is

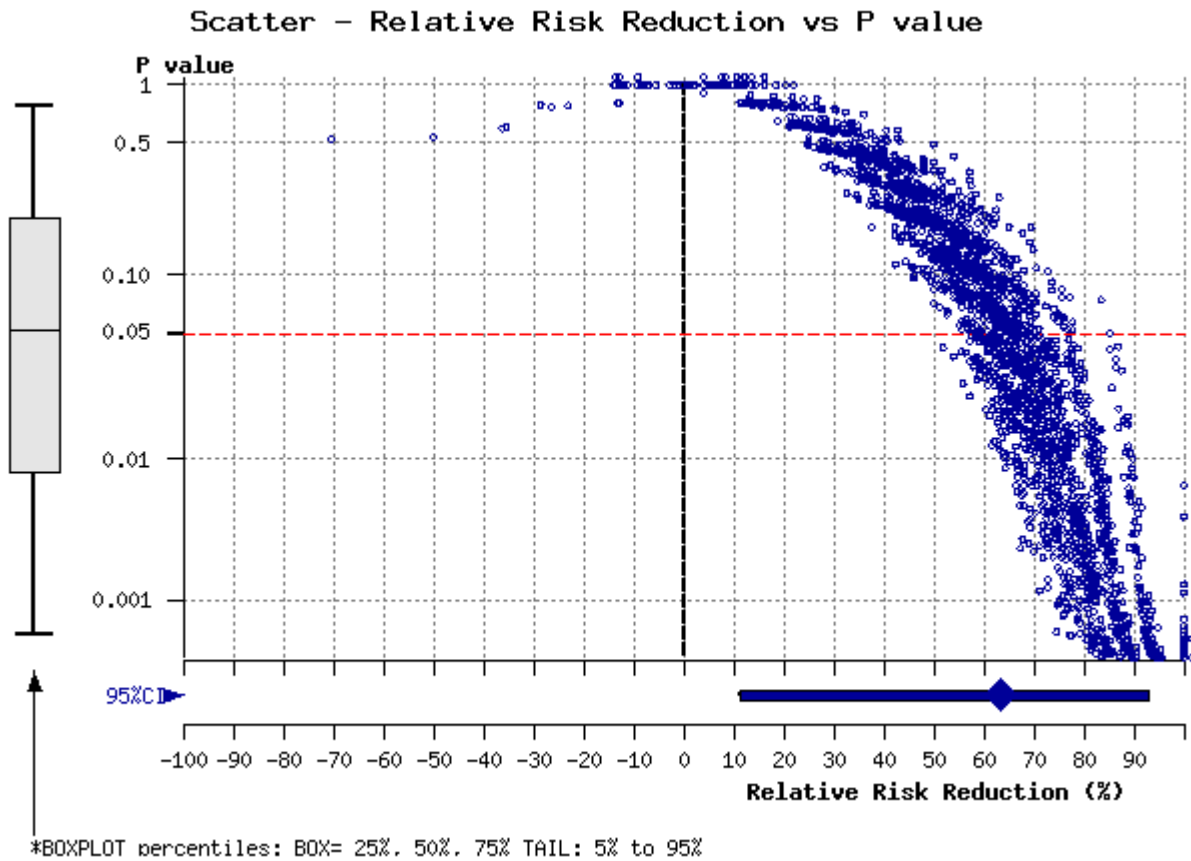
conventionally regarded as being statistically significant. The Relative Risk (RR) reduction is the reduction in the number of times more likely ($RR > 1$) or less likely ($RR < 1$) an event is to happen in one group compared with another. It is the ratio of the absolute risk (AR) for each group, analogous to the odds ratio (OR) for rare events.

We define relative risk as the absolute risk (AR) in the intervention group divided by the AR in the control group. It is to be distinguished from the odds ratio (OR) which is the ratio of events over non-events in the intervention group over the ratio of events over non-events in the control group. In the USA, odds ratios are sometimes known as rate ratios or relative risks.

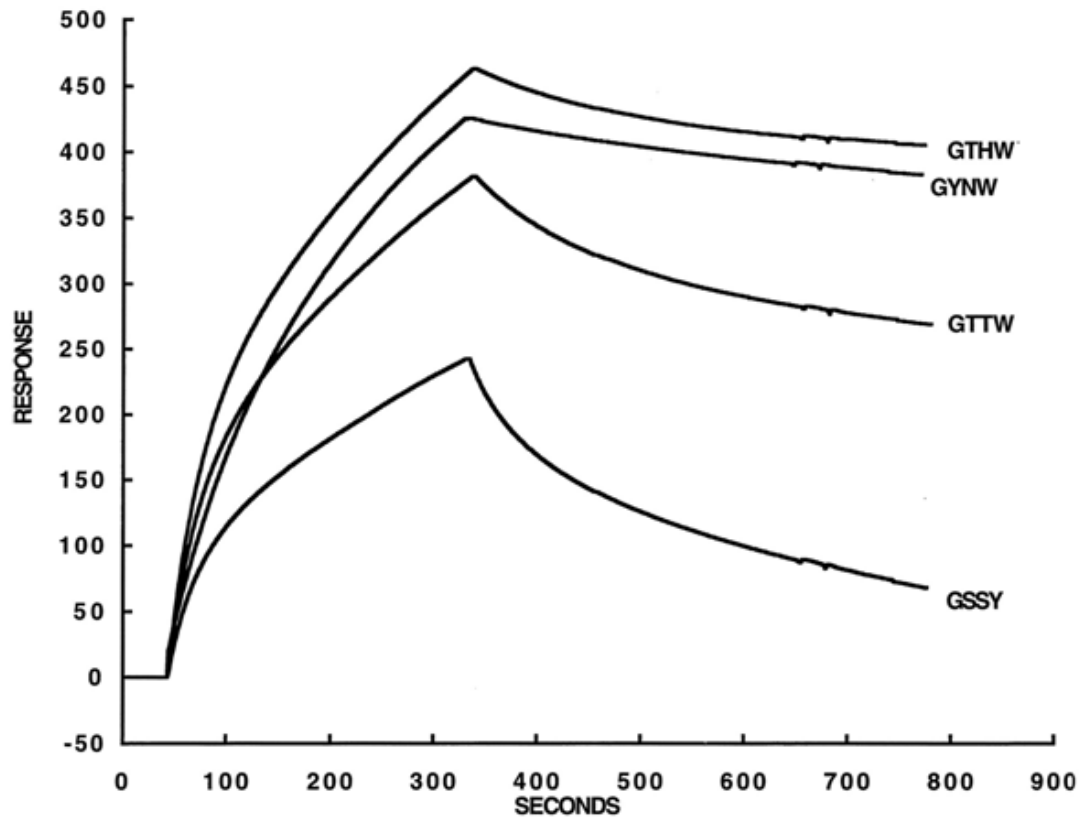


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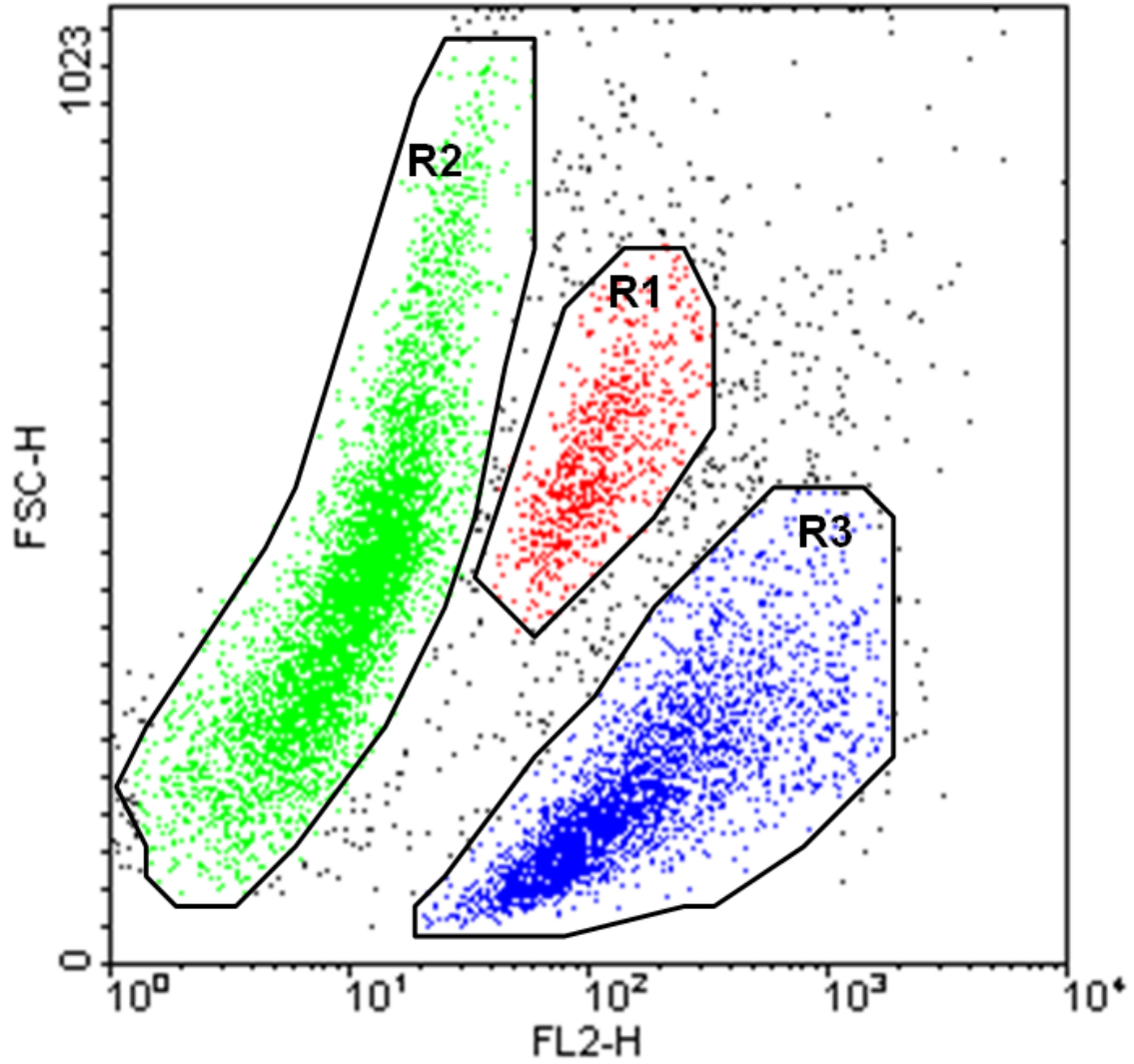
Clinical Trials



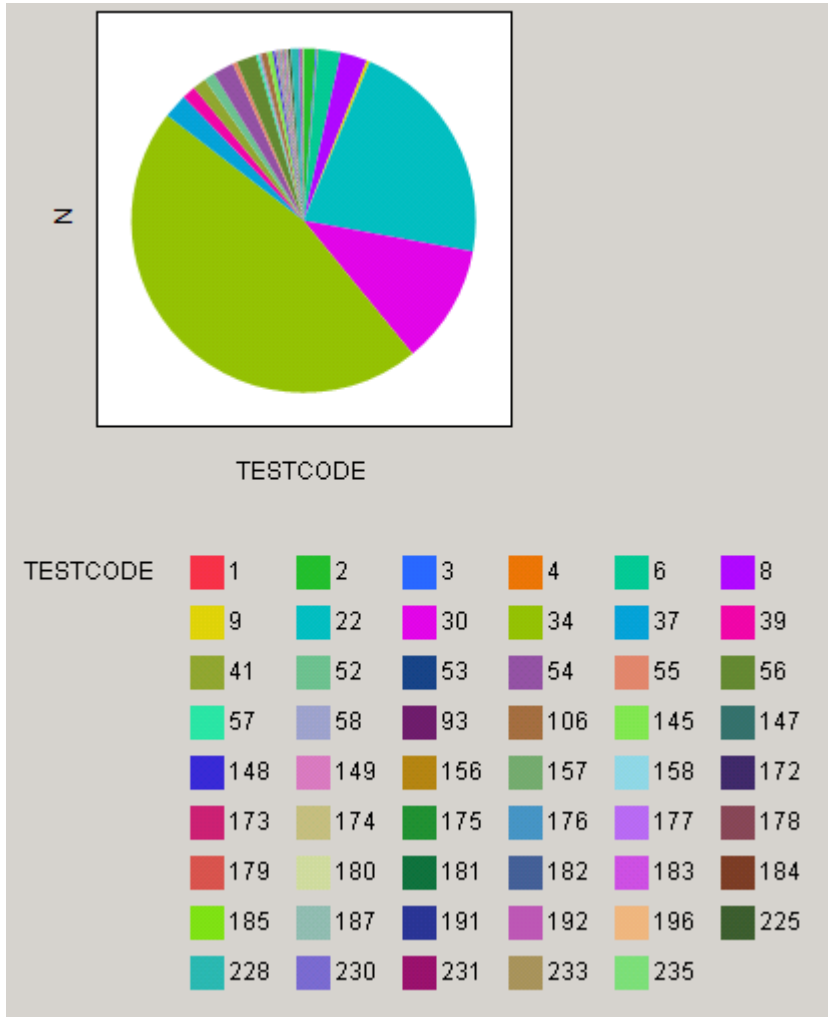
A laboratory database was queried for binding data using MS Excel. The performance improvement was from 20 seconds to 1 ½ seconds. The cell binding profiles over time are shown below.



Analysis of a population of cells from a flow cytometry laboratory database was conducted. The performance improvement was from 10 seconds to < 1 second.



Analysis of tests performed in the laboratory was queried from a laboratory database. A pie chart of the number of tests for a one-year period was produced using SAS®. Performance improved from 5 seconds to < 1 second.



Since the laptop database is read-only and unalterable, it fulfills the requirements for 21 CFR Part 11. Also, the database can be accessed for standard and ad hoc queries without IT network support. The encryption option was used on the “laptop” database, so that the data would be protected if the laptop was lost.

Report Findings

The tools provided by QD Technology allowed the individual to control and use data more effectively and efficiently.