



Business Analytics



Data Warehousing

Purdue University School of Veterinary Medicine

CLIENT SITUATION

The Purdue University School of Veterinary Medicine (SVM) prides itself in its teaching and research capabilities, as well as the extensive learning resources it makes available to its students, faculty and staff. Its mission is to develop, implement and disseminate innovative approaches to veterinary and biomedical education.

One learning resource that the SVM maintains and makes extensive use of is the Banfield Pet Hospital® database. The database provides the school with essential information related to the proper diagnosis and treatment of companion animals from 500 Banfield hospital locations in 44 states. The information is used to promote evidence-based veterinary healthcare, evaluate health outcomes, and characterize the frequency and distribution of disease and to provide early warning of emerging infectious diseases and possible acts of bioterrorism.

Researchers use the database to answer important research questions through application of SAS and ESRI software and development of custom programs for reporting and analysis. The programs required a high level of programming expertise and take a great deal of time to write and run. A significant increase in the use of the database brought this problem to a head. Analysts were not able to get the information they needed within the time they desired.

To advance the Purdue SVM's mission, the University turned to COMSYS National SAS Practice. The SVM needed to:

- Increase the access speed for reporting and analysis tasks
- Eliminate complex programming necessary to access data
- Make the database more user-friendly
- Expand graphical and geo-statistical presentation of data to enhance analysis capabilities
- Promote shared information within the veterinary community
- Expand research awareness among veterinary schools and clinics
- Develop collaboration among industry experts for experiments and research
- Strengthen the communication network to increase disease control and maintenance

COMSYS SOLUTION

COMSYS National SAS Practice worked with the Purdue SVM, the Centers for Disease Control (CDC) and the Banfield Pet Hospital to create a web portal and data warehouse to support fast interactive reporting of all information contained in the pet database. We created a user-friendly platform in which researchers could easily request and utilize the data needed. The efficiencies created through the web portal and data warehouse allow for quick turnaround time for report and task requests.

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The data warehouse connects the pet database, the SVM and the CDC to create a comprehensive resource for all users. COMSYS National SAS Practice used Oracle 10g to create the data warehouse. We first worked with the SVM to identify the required analysis functions and the data to support these projected analyses. The data was then modeled and database structures were created within an Oracle warehouse to support fast dynamic analysis of a very large amount of data. To provide the functionality needed, it was necessary to be able to slice and dice gigabytes of data across many dimensions to produce analyses that would run in a few seconds.

New data structures such as index organized tables and materialized views were constructed to provide this high speed dynamic reporting. For ease of use and wide access to many projected users a front end web application was developed using SAS and Java. This application allows the users to dynamically create prospective studies based on millions of office visits and provide completed analyses interactively in a few seconds. Dimensions for analyses include time range, species, diagnoses, lab results, exam results, treatments, location, hospital and pet attributes such as age, weight and breed. Outputs include tabular reports, charts, time plots, forecasts and maps.

CLIENT BENEFITS

The Purdue SVM can now use the pet database for ongoing, proposed and future prospective studies such as:

- Efficacies of treatments
- Associations between diseases and treatments
- Associations between treatments and adverse reactions
- Associations between treatments and future health
- Associations of treatment effects with pet attributes
- Comparisons of treatments using statistical methods such as ANOVA

The SVM now has graphical capabilities for the presentation of data for analysis. They now have the ability to study the effectiveness of treatments over time with subpopulations.

Future uses of the web portal and data warehouse include forecasting levels and locations of diseases and outbreaks, early diagnosis and tracking of outbreaks, alerting veterinarians of important conditions, diagnosis, alerting and tracking of possible acts of bioterrorism.

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