OMICS Group Conferences
Accelerating Scientific Discovery

International Conference on
Omics Studies

September 4-6, 2013 Holiday Inn, Orlando-FL, USA

Computing exact confidence intervals for informational odds ratios in cancer genomic association studies

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Abstract

Traditionally, odds ratios (ORs) have been used as the effect measure in cancer studies of genomic association. However, ORs lack collapsibility and will yield biased estimates when adjusting for variables that are not true confounders. In contrast, adjusted informational odds ratios (IOR) are collapsible. While asymptotic confidence intervals (CI) for IORs have adequate nominal coverage for large sample sizes, they do not perform well for small sample sizes. Because IORs are a marginal relative effects estimate, existing exact CIs also are known to be overly conservative. In this presentation we demonstrate how to estimate an exact confidence for IOR that has better nominal coverage than currently available exact procedures.

Biography

Dr. Jimmy Efird is an Associate Member of the Leo Jenkins Cancer at Brody School of Medicine. Additionally, he holds a joint appointment as Associate Professor in the Department of Public Health and as Epidemiologist/Chief Statistician (Director, Shared Resources) in the Center for Health Disparities. Dr. Efird received his Ph.D. from Stanford University (Epidemiology with a concentration in Biostatistics). His expertise includes statistical methods for assessing gene-environment interaction, clinical trial design, computing power and sample size for correlated samples, and multiplicity adjustment for confidence intervals. He has over 100 publications in scientific journals and technical proceedings. Additionally, Dr. Efird serves as a Senior Consultant for The NCRR-funded RCMI Translational Research Network Data and Technology Coordinating Center.