

# **Simplified lesson in capture-recapture methods and controversy regarding their epidemiological application**

**Gary S. Goldman, PhD**

P.O. Box 847

Pearblossom, CA 93553

Phone: 1-661-944-5661 Fax: 1-661-944-4483

Email: pearblossominc@aol.com

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## **Abstract**

Capture-recapture methods, while not providing exact results, are an inexpensive approach to estimating the under-reporting of a given disease. Especially since 1980, capture-recapture has been commonly used in many surveillance and epidemiological studies. Most studies derive estimates of disease incidence rates based solely on the number of cases enumerated. These rates are typically biased low since 100% enumeration of cases is rarely achieved and more typically varies from 10% to 80%. The incidence rates in such studies are virtually uninterpretable and merely reflect the degree of reporting completeness. However, when two or more ascertainment sources are utilized to obtain reports of cases, the duplicate cases found in the ascertainment sources can be used to derive ascertainment-corrected incidence rates. It is then possible to compare results obtained in one study with that of other studies that have likewise derived ascertainment-corrected incidence rates, even though the percentage of reporting completeness may vary in the different studies. When only two sources are used in capture-recapture methods, the estimate should be checked against a criterion (“gold”) standard to validate the result. Public health officials were initially skeptical of application of capture-recapture methods to varicella disease due the seasonal distribution of cases; application of the method to herpes zoster cases also met with resistance due to the comparatively few cases reported.

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