

## POINT-EVENT REGRESSION MODELS

- **Logistic Regression Models:**

**Point Events:**  $s_i = \begin{cases} 1 & \text{if } i \text{ is diseased (etc.)} \\ 0 & \text{otherwise} \end{cases}$

**Probability Model:**

$$\Pr(s_i = 1) = \frac{\alpha \cdot \exp\left(\sum_{j=1}^q \beta_j x_{ij}\right)}{1 + \alpha \cdot \exp\left(\sum_{j=1}^q \beta_j x_{ij}\right)}$$

- **Poisson Regression Models:**

**Point Counts:**  $C_i =$  number of events in region  $R_i$

**Probability Model:**

$$\Pr(C_i = k) = \frac{\mu_i^k}{k!} \exp(-\mu_i)$$
$$\mu_i = \rho(R_i) \exp\left(\sum_{j=1}^q \beta_j x_{ij}\right)$$