

INDIVIDUAL VACCINATION CHOICE AND OPTIMAL BUDGET ALLOCATION FOR VACCINATION CAMPAIGN

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The paper aims to investigate optimal budget allocation for vaccination campaign when vaccination is voluntary for a pediatric infectious disease like Measles. We use evolutionary game theory to build the model of individual vaccination decision and use optimal control theory to determine the budget allocated that minimize the cost of disease control. We assume public health program disburse fund over time that works as incentive for individual vaccinations. We consider two different scenarios- Firstly, we assume public health program disburse fund over time that works as incentive for individual vaccinations. In the second phase of problem, we may assume that there two explicit populations (connected through migration) having same disease and there is in addition a third-party budget to allocate to the two populations so that it can minimize the disease. We formulate the above situation as an optimal control problem and the solution using Pontryagin's Maximum Principle.

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