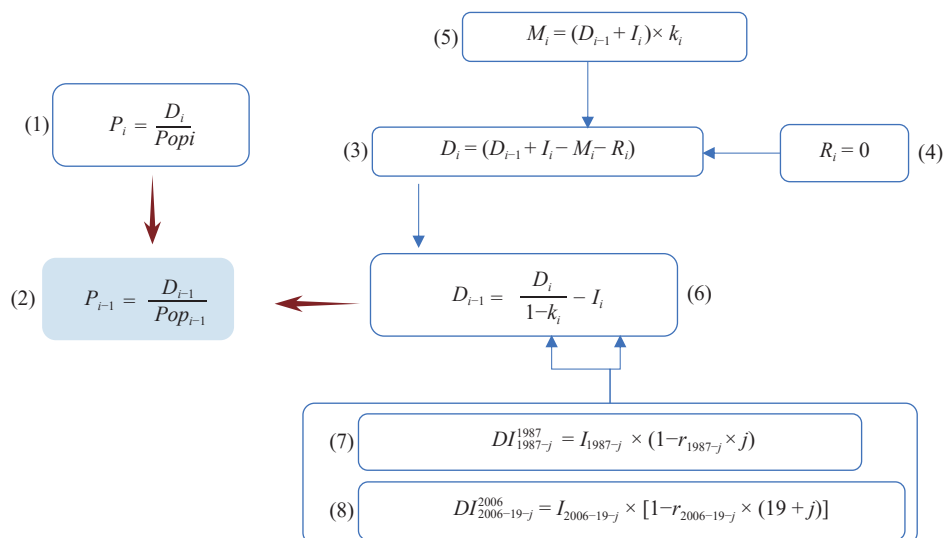


## Supplementary File



SUPPLEMENTARY FIGURE S1. The estimation process of the prevalence of disability.

Note: (1)  $P_i$  denotes the prevalence of disability in year  $i$ , which is equal to the ratio of the size of persons with disability in year  $i$  ( $D_i$ ) to the total population in year  $i$  ( $Pop_i$ ).  $Pop_i$  can be obtained from statistical yearbooks and literature.

(2)  $P_{i-1}$  denotes the prevalence of disability in year  $i - 1$ .

(3)  $D_i$  is formed on the basis of persons with disability in the last year  $i - 1$  ( $D_{i-1}$ ), by accumulating new persons with disabilities developed in year  $i$  ( $I_i$ ) and decaying deaths and rehabilitation of the persons with disabilities in that year.

(4)  $R_i$  denotes persons with disabilities who recovered in year  $i$ . Since very few disabilities can be fully healed through rehabilitation and may only change the degree but not the identification of disability, we assume that  $R_i$  is equal to 0.

(5)  $M_i$  denotes persons with disabilities who were dead in year  $i$ , including both those dead in  $D_{i-1}$  and those in  $I_i$ ;  $k_i$  denotes the death rate of persons with disabilities.

(6)  $D_{i-1}$  can be obtained by replacing the above parameters.

(7) & (8). In China National Sample Survey on Disability China National Sample Survey on Disability 1987 and 2006, we can obtain  $I_{1987}$  and  $I_{2006}$ . However, due to the presence of deaths of persons with disabilities, persons with disabilities who died before 1987 and 2006 were unable to report their time of disability occurrence during the survey window. Thus, the number of persons with disabilities reported in survey 1987 and 2006 occurred in years other than the year surveyed is not actually  $I_i$ , but is reduced by a certain rate of death  $r$  from that year to 1987 or 2006.

$DI_i^{1987}$  and  $DI_i^{2006}$  denote persons with disabilities reported in survey 1987 and 2006 occurred in year  $i$ , and persons with disabilities occurred in year 1913–2006 were both reported in survey 1987 and 2006. Then,  $r$  and  $I$  during 1913–1987 can be calculated from equations (7) and (8). We assumed that  $k$  during 1913–1987 was linearly altered from  $r_{1913}$  to  $r_{1987}$ , and  $k$  and  $r$  during 1890–1912 and during 1988–2005 were equal to  $r_{1913}$  and  $r_{1987}$ , respectively. Then  $D_i$  from 2006 to the year before can then be obtained.