8. (Epidemic Models: HIV- S I R model)

The table below shows data on the HIV epidemic in Cuba from 1986 until 2000. Design a model which describes the epidemic spread of HIV in Cuba, and fit the data in the table. Which are the relevant parameters of your model? Try to introduce control mechanisms to lower the number of AIDS cases. Compare your control mechanism with the data of the given time period. You need to look into facts about HIV transmission and Cuba's control strategy via the Internet or in appropriate textbooks. You may assume that all of the cases were in Havana and that the population of Havana was essentially constant over this time period.

Year	HIV cases	AIDS cases	Death from AIDS
1986	99	5	2
1987	75	11	4
1988	93	14	6
1989	121	13	5
1990	140	28	23
1991	183	37	17
1992	175	71	32
1993	102	82	59
1994	122	102	62
1995	124	116	80
1996	234	99	92
1997	364	121	99
1998	362	150	98
1999	493	176	122
2000	545	251	142

HIV data from Cuba 1986-2000 (data from [42]).