**Supplementary Table 3. All variables used in the full model**

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| --- | --- | --- |
| **Category** | **Variable** | **Description** |
| Demographics | Age | 11-12, 13-15, 16-17 |
|  | Sex | Female, male, unknown |
|  | Gender | Female, male, transgender, unknown |
|  | Language | English, non-English, unknown |
|  | Race | White, Asian, Black, Hawaiian Pacific Islander, American Indian, other, unknown |
|  | Ethnicity | Hispanic, non-Hispanic |
|  | Insurance | Medicaid, commercial |
|  | Membership length | <1 year |
| Clinical characteristics | Visit count | Number of visits (capped at 3) |
|  | Other vaccinations | # of other vaccinations (capped at 5) |
| Provider | Provider sex | Female, male, not available (NA), unknown |
|  | Classification | Family practice, pediatrics, Other, unknown or no primary care provider (PCP) |
| Community | Region | Portland, Salem/Eugene, Vancouver/Longview |
|  | Urban | Yes/no |
|  | Time to provider (time rank) | 1-10 m, 11-20, 20-30, 30+ m |
|  | Community income rank | 1-4 |
|  | population density | 500-1000/Sq mile, <500, >1000/Sq mile |