Table S1. Sensitivity analysis for cross sectional review of HPV vaccination at Telluride Medical Center (TMC) pre- and post-intervention, 2019-2021

|                                      | Pre-Intervention (n=402) | Post-Intervention (n=99) | Post-Intervention, Overlaps Removed (n=72) |
|--------------------------------------|--------------------------|--------------------------|---------------------------------------------|
|                                      | n (%)                    | n (%)                    | p-value | n (%) | p-value |
| Age at time of visitc                |                          |                          |         |       |         |
| 10-14                                | 138 (34.3)               | 21 (21.2)                | **0.05  | 13 (18.1) |
| 15-18                                | 129 (32.1)               | 29 (29.3)                |         | 15 (20.8) |
| 19-28                                | 135 (33.6)               | 49 (49.5)                |         | 44 (61.1) |
| Wellness visit: Annual physical or well child check |                          |                          | 0.1656  | 0.9971 |
| No                                   | 296 (73.6)               | 66 (66.7)                |         | 53 (73.6) |
| Yes                                  | 106 (26.4)               | 33 (33.3)                |         | 19 (26.4) |
| Other visit: non-wellness visit (acute care or other) |                          |                          | *0.1222 | 0.891  |
| No                                   | 103 (25.6)               | 33 (33.3)                |         | 19 (26.4) |
| Yes                                  | 299 (74.4)               | 66 (66.7)                |         | 53 (73.6) |
| UTD on HPV: Up to date on HPV at beginning of visit |                          |                          | 0.3704  | **0.017 |
| No                                   | 236 (58.7)               | 63 (63.6)                |         | 53 (73.6) |
| Yes                                  | 166 (41.3)               | 36 (36.4)                |         | 19 (26.4) |
| Due for HPV: at time of visit        |                          |                          | ***0.0035 | ***0.0003 |
| No                                   | 259 (64.4)               | 79 (79.8)                |         | 62 (86.1) |
| Yes                                  | 143 (35.6)               | 20 (20.2)                |         | 10 (13.9) |
| Received HPV: at visit in question   |                          |                          | 0.8533  | 0.4578 |
| No                                   | 363 (90.3)               | 90 (90.9)                |         | 67 (93.1) |
| Yes                                  | 39 (9.7)                 | 9 (9.1)                  |         | 5 (6.9) |
| Missed opportunity: patient was due for vaccine but did not receive it at visit |                          |                          | ***0.0020 | ***0.0014 |
| No                                   | 315 (78.4)               | 91 (91.9)                |         | 68 (94.4) |
| Yes                                  | 87 (21.6)                | 8 (8.1)                  |         | 4 (5.6) |
| Due now: based on current date, patient is due for booster or initial vaccine |                          |                          | ***<.0001 | ***<.0001 |
| No                                   | 282 (70.2)               | 91 (91.9)                |         | 68 (94.4) |
| Yes                                  | 120 (29.9)               | 8 (8.1)                  |         | 4 (5.6) |
| Declines: patient or parent declined at time of visit |                          |                          | 0.6281  | 0.3737 |
| No                                   | 381 (94.8)               | 95 (96.0)                |         | 70 (97.2) |
| Yes                                  | 21 (5.2)                 | 4 (4.0)                  |         | 2 (2.8) |
| No records: patient does not have any vaccine records on file |                          |                          | ***<.0001 | ***<.0001 |
| No                                   | 312 (77.6)               | 56 (56.6)                |         | 29 (40.3) |
| Yes                                  | 90 (22.4)                | 43 (43.4)                |         | 43 (59.7) |

*aCross sectional retrospective chart review performed for patients (ages 10-28 years) visiting the clinic between 09/01/2019 and 12/01/2019 (pre-intervention) or between 01/15/2021 and 03/15/2021 (post-intervention). TMC is a rural (CMS RHC, FORHP, FAR level=4, RUCA=10.0, RUCG=9, UIC=12, MUA, and HPSA for primary care and mental health) medical center located in Colorado.*

*bP-values shown. Pearson $\chi^2$ with probability calculated for categorical variables. No overlap in 95% CIs, with normal distribution assumption, of median age pre- and post-intervention was witnessed and was confirmed in sensitivity analysis. (Pre-intervention: kurtosis= -0.96, skewness= 0.50; Post-intervention: kurtosis= -1.37, skewness= 0.09; Limited post-intervention: kurtosis= -1.28, skewness= -0.30). *Significant at $\alpha \leq 0.1$, **significant at $\alpha \leq 0.05$, ***significant at $\alpha \leq 0.01$*

cAge collected as a continuous variable (Pre-intervention $\bar{X}=17.47$, M=17, s=4.72; Post-intervention $\bar{X}=18.99$, M=18, s=4.61; Limited post-intervention: $\bar{X}=19.85$, M=21, s=4.73).

dThose without a vaccine record on file and not up-to-date, have an "unknown" HPV vaccination status (pre-intervention n=90, 38.1% of those not up-to-date; post-intervention n=43, 68.3% of those not up-to-date).