**Online-Only Supplementary Material**

Supplementary Table 1. Rank Order of Parental Reasons for Vaccine Hesitancy among All Teens, 2010-2015

Supplementary Table 2. Rank Order of Parental Reasons for Vaccine Hesitancy among Unvaccinated Teens by Sex, 2010-2015

Supplementary Table 3. Rank Order of Parental Reasons for Vaccine Hesitancy among Undervaccinated Teens by Sex, 2010-2015

**Supplementary Table 1. Rank Order of Parental Reasons for Vaccine Hesitancy among All Teens, 2010-2015**

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| --- |
| **All Teens (n=38,405)a** |
| **Rank** | **Parental Reason** | **Wgt %**  | **95% CI** |
| 1 | Not Needed/Necessary | 22.5  | 21.7, 23.2 |
| 2 | Not Recommended | 15.9  | 15.3, 16.6 |
| 3 | Lack of Knowledge | 12.8  | 12.2, 13.4 |
| 4 | Not Sexually Active | 12.1  | 11.5, 12.7 |
| 5 | Safety Concerns/Side Effects | 10.1  | 9.6, 10.7 |
| 6 | Child is Maleb | 5.1  | 4.8, 5.5 |
| 7 | Not Appropriate Age | 4.2  | 3.9, 4.6 |
| 8 | Family/Parental Decision | 2.6  | 2.3, 2.9 |
| 9 | Not a School Requirement | 2.2  | 1.9, 2.5 |
| 10 | Costs | 1.7  | 1.5, 2.0 |
| 11 | More Info/New Vaccine | 1.7  | 1.5, 2.0 |
| 12 | Other Reason | 1.6  | 1.3, 1.8 |
| 13 | Child Fearful | 1.5  | 1.2, 1.8 |
| 14 | Child Should Make Decision | 1.0  | 0.8, 1.3 |
| 15 | No Doctor or Doctor’s Visit Not Scheduled | 0.8  | 0.7, 1.0 |
| 16 | Already Up-to-Date | 0.8  | 0.6, 1.0 |
| 17 | Handicapped/Special Needs/Illness | 0.7  | 0.6, 0.9 |
| 18 | Don’t Believe in Immunizations | 0.7  | 0.6, 0.8 |
| 19 | Religion/Orthodox | 0.6  | 0.4, 0.8 |
| 20 | Increased Sexual Activity Concern | 0.5  | 0.4, 0.6 |
| 21 | Effectiveness Concern | 0.2  | 0.2, 0.3 |
| 22 | Not Available | 0.1  | 0.1, 0.2 |
| 23 | Time | 0.1  | 0.05, 0.2 |
| 24 | College Shot | 0.1  | 0.02, 0.1 |
| 25 | Already Sexually Active | 0.03  | 0.01, 0.1 |
| 26 | No OB/GYNc | 0.02  | 0.002, 0.03 |

Abbreviations: Wgt % = weighted percentage; 95% CI = 95% confidence interval.

aIncludes all unvaccinated and undervaccinated teens eligible for the reason analysis regardless of sex.

bValid response only for males.

cValid response only for females.

**Supplementary Table 2. Rank Order of Parental Reasons for Vaccine Hesitancy among Unvaccinated Teens by Sex, 2010-2015**

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| --- | --- |
| **Females (n=11,833)** | **Males (n=24,456)** |
| **Rank** | **Parental Reason** | **Wgt %**  | **95% CI** | **Rank** | **Parental Reason** | **Wgt %**  | **95% CI** |
| 1 | Not Needed/Necessary | 20.5  | 19.3, 21.7 | 1 | Not Needed/Necessary | 23.7  | 22.8, 24.7 |
| 2 | Safety Concerns/Side Effects | 17.9  | 16.7, 19.1 | 2 | Not Recommended | 19.2  | 18.4, 20.1 |
| 3 | Not Sexually Active | 14.3  | 13.2, 15.3 | 3 | Lack of Knowledge | 13.1  | 12.4, 13.9 |
| 4 | Lack of Knowledge | 12.0  | 10.9, 13.1 | 4 | Not Sexually Active | 11.6  | 10.8, 12.4 |
| 5 | Not Recommended | 9.1  | 8.2, 10.0 | 5 | Child is Male | 8.0  | 7.5, 8.6 |
| 6 | Not Appropriate Age | 5.4  | 4.7, 6.0 | 6 | Safety Concerns/Side Effects | 6.3  | 5.7, 6.8 |
| 7 | Family/Parental Decision | 3.8  | 3.2, 4.3 | 7 | Not Appropriate Age | 3.7  | 3.3, 4.1 |
| 8 | More Info/New Vaccine | 3.1  | 2.5, 3.6 | 8 | Not a School Requirement | 2.5  | 2.1, 2.9 |
| 9 | Costs | 2.0  | 1.5, 2.5 | 9 | Family/Parental Decision | 2.1  | 1.8, 2.4 |
| 10 | Other Reason | 1.9  | 1.4, 2.4 | 10 | Costs | 1.5  | 1.2, 1.8 |
| 11 | Child Fearful | 1.7  | 1.2, 2.1 | 11 | Other Reason | 1.4  | 1.2, 1.7 |
| 12 | Not a School Requirement | 1.6  | 1.2, 2.1 | 12 | Child Fearful | 1.2  | 0.9, 1.6 |
| 13 | Child Should Make Decision | 1.6  | 1.0, 2.1 | 13 | More Info/New Vaccine | 1.1  | 0.9, 1.4 |
| 14 | Religion/Orthodox | 1.2  | 0.6, 1.9 | 14 | No Doctor or Doctor’s Visit Not Scheduled | 1.0  | 0.8, 1.2 |
| 15 | Don’t Believe in Immunizations | 1.0  | 0.7, 1.3 | 15 | Child Should Make Decision | 0.7  | 0.5, 0.9 |
| 16 | Handicapped/Special Needs/Illness | 0.9  | 0.6, 1.1 | 16 | Don’t Believe in Immunizations | 0.6  | 0.4, 0.7 |
| 17 | Increased Sexual Activity Concern | 0.6  | 0.4, 0.8 | 17 | Handicapped/Special Needs/Illness | 0.5  | 0.3, 0.6 |
| 18 | No Doctor or Doctor’s Visit Not Scheduled | 0.5  | 0.3, 0.7 | 18 | Increased Sexual Activity Concern | 0.4  | 0.3, 0.6 |
| 19 | Already Up-to-Date | 0.4  | 0.2, 0.6 | 19 | Already Up-to-Date | 0.4  | 0.3, 0.5 |
| 20 | Effectiveness Concern | 0.4  | 0.2, 0.6 | 20 | Religion/Orthodox | 0.4  | 0.3, 0.5 |
| 21 | Not Available | 0.1  | 0, 0.2 | 21 | Not Available | 0.1  | 0.1, 0.2 |
| 22 | No OB/GYN | 0.1  | 0.007, 0.1 | 22 | Effectiveness Concern | 0.1  | 0.1, 0.2 |
| 23 | Time | 0.05  | 0, 0.1 | 23 | College Shot | 0.1  | 0.02, 0.2 |
| 24 | College Shot | 0.02  | 0.002, 0.04 | 24 | Time | 0.1  | 0.02, 0.1 |
| 25 | Already Sexually Active | 0.01  | 0, 0.03 | 25 | Already Sexually Active | 0.05  | 0.01, 0.1 |

Abbreviations: Wgt % = weighted percentage; 95% CI = 95% confidence interval.

**Supplementary Table 3. Rank Order of Parental Reasons for Vaccine Hesitancy among Undervaccinated Teens by Sex, 2010-2015**

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| --- | --- |
| **Females (n=1,075)** | **Males (n=1,041)** |
| **Rank** | **Parental Reason** | **Wgt %**  | **95% CI** | **Rank** | **Parental Reason** | **Wgt %**  | **95% CI** |
| 1 | Not Needed/Necessary | 20.4  | 16.3, 24.5 | 1 | Not Recommended | 21.3  | 16.1, 26.5 |
| 2 | Not Recommended | 15.0  | 11.8, 18.3 | 2 | Not Needed/Necessary | 20.5  | 16.0, 25.0 |
| 3 | Lack of Knowledge | 13.5  | 10.0, 16.9 | 3 | Lack of Knowledge | 14.2  | 10.6, 17.9 |
| 4 | Safety Concerns/Side Effects | 12.4  | 8.2, 16.6 | 4 | Already Up-To-Date | 8.3  | 4.1, 12.5 |
| 5 | Not Sexually Active | 7.3  | 5.2, 9.5 | 5 | Safety Concerns/Side Effects | 6.0  | 3.6, 8.3 |
| 6 | Already Up-To-Date | 5.7  | 3.1, 8.2 | 6 | Not Sexually Active | 5.1  | 3.0, 7.1 |
| 7 | Not Appropriate Age | 5.2  | 1.8, 8.6 | 7 | Child is Male | 4.2  | 1.9, 6.4 |
| 8 | Handicapped/Special Needs/Illness | 3.4  | 0.3, 6.5 | 8 | Child Fearful | 3.5  | 0, 7.7 |
| 9 | Child Fearful | 3.3  | 0.9, 5.7 | 9 | Costs | 2.7  | 0.4, 5.0 |
| 10 | Not a School Requirement | 3.3  | 1.6, 5.0 | 10 | Child Should Make Decision | 2.4  | 0, 5.2 |
| 11 | Costs | 2.7  | 1.3, 4.2 | 11 | Not a School Requirement | 2.4  | 1.3, 3.5 |
| 12 | Family/Parental Decision | 2.7  | 1.3, 4.2 | 12 | Not Appropriate Age | 2.3  | 1.1, 3.4 |
| 13 | Other Reason | 0.9  | 0.3, 1.5 | 13 | Other Reason | 1.7  | 0.5, 2.8 |
| 14 | Child Should Make Decision | 0.9  | 0.1, 1.6 | 14 | Handicapped/Special Needs/Illness | 1.3  | 0.2, 2.5 |
| 15 | No Doctor or Doctor’s Visit Not Scheduled | 0.8  | 0.2, 1.5 | 15 | Time | 1.2  | 0.02, 2.4 |
| 16 | More Info/New Vaccine | 0.7  | 0.1, 1.2 | 16 | Family/Parental Decision | 1.1  | 0.4, 1.9 |
| 17 | Time | 0.5  | 0, 1.2 | 17 | No Doctor or Doctor’s Visit Not Scheduled | 0.8  | 0.1, 1.5 |
| 18 | Don’t Believe in Immunizations | 0.3  | 0, 0.7 | 18 | Don’t Believe in Immunizations | 0.4  | 0, 1.1 |
| 19 | Increased Sexual Activity Concern | 0.3  | 0.02, 0.5 | 19 | Increased Sexual Activity Concern | 0.3  | 0, 0.6 |
| 20 | Effectiveness Concern | 0.2  | 0, 0.5 | 20 | More Info/New Vaccine | 0.3  | 0, 0.6 |
| 21 | Not Available | 0.2  | 0, 0.5 | 21 | Not Available | 0.03  | 0, 0.1 |
| 22 | Religion/Orthodox | 0.1  | 0, 0.4 | 22 | Effectiveness Concern | 0.02  | 0, 0.1 |
| 23 | College Shot | 0.1  | 0, 0.2 | -- | Already Sexually Active | NR | a |
| 24 | Already Sexually Active | 0.03  | 0, 0.1 | -- | College Shot | NR | a |
| -- | No OB/GYN | NR | a | -- | Religion/Orthodox | NR | a |

Abbreviations: Wgt % = weighted percentage; 95% CI = 95% confidence interval; NR = no responses.

aUnable to estimate a confidence interval.