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## Appendix:  Supplemental tables and figures.

**Denver Risk Score components**
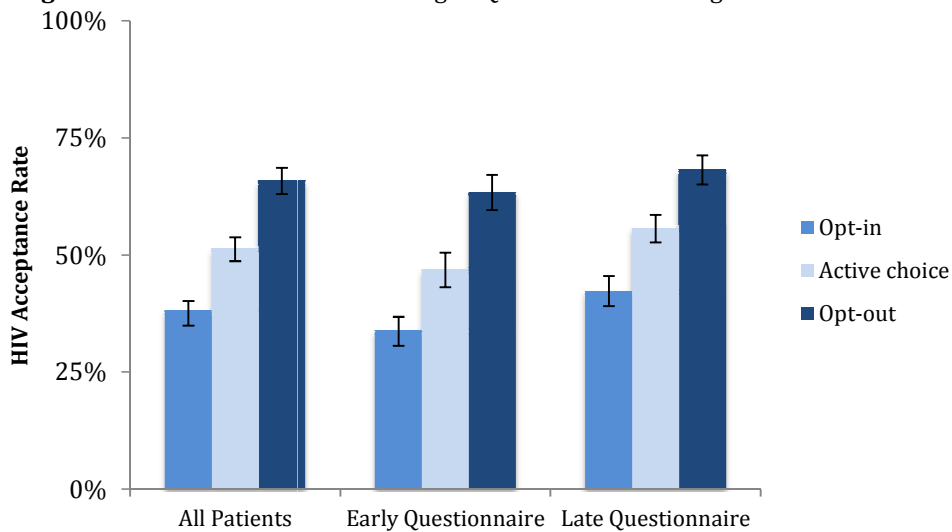
**Table A.**  Denver Risk Score

| Variable | Points |
|---|---|
| Age | |
|   <22 or >60 | 0 |
|   22-25 or 55-60 | 4 |
|   26-32 or 47-54 | 10 |
|   33-46 | 12 |
| Gender | |
|   Male | 21 |
| Race / Ethnicity | |
|   Black | 9 |
|   Hispanic | 3 |
|   Other | 0 |
|   White | 0 |
| Sexual Practices | |
|   Sex with a male | 22 |
|   Vaginal intercourse | -10 |
|   Receptive anal intercourse | 8 |
| Other risk factors | |
|   Injection drug use | 9 |
|   Past HIV testing | -4 |

**Questionnaire timing**

Patients who were offered the questionnaire prior to being offered the HIV test were less likely to accept
testing than those who were offered the HIV test first: absolute difference of -8.6% (-13.3% to -3.9%)
across all treatments. Figure A illustrates the test acceptance percentage for patients under each default
treatment assignment separately for those assigned to early and late questionnaire timing.

**Figure A.**  HIV Consent Rate According to Questionnaire Timing

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**Risk of infection**

We conducted sensitivity analyses using two alternate risk measure specifications, below. First we specified risk as a binary indicator of any risk;.second we estimated "Denver HIV Risk Score" as a count of risks, specified as a continuous variable.

*Any risk*. First, we constructed an indicator variable, *anyrisk*, equal to 1 if patients reported any of the following:
- sex with more than one men and less than 100% condom use,
- sex with more than one women and less than 100% condom use,
- men who have sex with more than one man,
- use of heroin, cocaine, methamphetamines,
- subjective risk of infection $\geq 2$ out of 10, or
- sharing needles.

There were 2,024 patients with none of these risk factors, and 2,776 patients identified as at risk by this indicator. Among those completing the questionnaire, 2,010 reported no risk factors and 1,850 reported at least one risk factor. Acceptance percentages were higher among those reporting risk factors than those reporting none (60.8% versus 45.8 %: difference 15.0% [12.3 to 17.8%]).

Multivariate ordinary least squares (OLS) regression results of HIV acceptance on treatment assignments and the risk indicator are presented in **Table B.** Column 1 presents the estimated effects from regressing acceptance on default treatments and the risk indicator; the base test acceptance percentage (opt-in, no risk) is 32.2%. Column 2 shows the results of a model that includes interactions between the treatment assignments and *anyrisk*; the base test acceptance percentage is 29.9% (interaction terms not presented).

| **Table B.** Any risk of infection | 1 | 2 |
|---|---|---|
| **Treatment assignment** | | |
| Active choice | 13.2*** | 15.6*** |
| | (9.6 to 16.9) | (10.3 to 21.0) |
| Opt-out | 27.5*** | 31.9*** |
| | (24.2 to 30.8) | (27.5 to 36.3) |
| **Any risk of infection** | 15.0*** | 19.8*** |
| | (12.3 to 17.8) | (15.2 to 24.3) |
| **Interactions** | | |
| Active choice x Any risk | | -4.9 |
| | | (-12.5 to 2.6) |
| Opt out x Any risk | | -9.2*** |
| | | (-15.9 to -2.6) |
| **Constant** | 32.2 | 29.9 |
| | (29.4 to 35.0) | (27.0 to 32.8) |
| **Observations** | 3,860 | 3,860 |

Outcome is HIV test acceptance.
Constant is the estimated test acceptance percentage under the base case:
opt-in, no risk.
95% confidence intervals in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

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*Denver HIV Risk Score as a count variable.* Second, we examined the relationship between Denver HIV Risk Score and HIV test acceptance percentages using Denver HIV Risk Score as a continuous variable. **Table C** presents the results of two multivariable linear probability model regressions of HIV acceptance with the Denver HIV Risk Score as a continuous variable; each coefficient is presented as a percentage with 95% confidence intervals estimated using standard errors clustered at the day-zone level. Column 1 presents a model with treatment assignments, Denver HIV Risk Score, and an indicator for patients who did not complete questionnaire; column 2 adds to that interaction terms between the treatment assignments and the Denver HIV Risk Score. As with the low-, intermediate-, and high-risk groups tested in the manuscript, likelihood of test acceptance increases with increased Denver HIV Risk Score. Treatment effect estimates for the base Denver HIV Risk Score of zero are higher than the average effect in column 1, with statistically significantly smaller opt out effects as risk increases, mirroring the main results reported in Table 2 of the manuscript for those coded at High Risk.

**Table C.** HIV Acceptance Percentage: Denver HIV Risk as Continuous Variable

|  | 1 | 2 |
|---|---|---|
| **Treatment assignment** | | |
| Active choice | 13.4*** | 18.2*** |
| | (9.9 to 16.8) | (10.6 to 25.8) |
| Opt-out | 27.8*** | 36.0*** |
| | (24.5 to 31.2) | (28.2 to 43.8) |
| **Denver HIV Risk Score** | 0.28*** | 0.60*** |
| | (0.17 to 0.38) | (0.26 to 0.60) |
| **Active choice x Risk Score** | | -0.17 |
| | | (-.04 - 0.07) |
| **Opt-out x Risk Score** | | -0.29*** |
| | | (-0.54 to -0.05) |
| **Refused questionnaire** | -6.9*** | -7.0*** |
| | (-19.4 to -3.5) | (-10.4 to -3.6) |
| **Constant** | 31.7 | 27.4 |
| | (27.9 to 35.5) | (21.9 to 32.8) |
| **Observations** | 3,860 | 3,860 |

Constant is the estimated test acceptance percentage under the base case: opt-in, no risk.
95% confidence intervals in parentheses.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

*Denver HIV Risk Score components.* **Table D** presents the results from two multivariate OLS regressions of HIV test acceptance on the components of the Denver HIV Risk Score; each coefficient is presented as a percentage point difference with 95% confidence intervals calculated from standard errors clustered at the day-zone level. Each of the components is an indicator variable, including the age categories (base age is less than 22 or greater than 60 years old).

The coefficients on active choice and opt out (13.6 and 27.6, respectively) are significant at the $p<0.001$ level and similar to those found using risk categories and continuous risk score (methods from manuscript and in Appendix Table A, respectively). Each of the components is significant at the $P<0.01$ level with the exceptions of age 33-46 (5.9, 95% CI 1.05 to 10.7); age 22-25 or 55-60 years and previously tested for HIV were not significantly different than zero. Column 2 presents the same model as column 1, with the addition of interaction terms for each of the risk factors with each of the treatment assignments.

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**Table D.** HIV Test Acceptance: Denver HIV Risk Score Components

| | (1) | (2) |
|---|---|---|
| **Treatment assignment** | | |
| Active choice | 13.6*** (10.2 to 17.1) | 20.0** (4.1 to 35.9) |
| Opt out | 27.6*** (24.2 to 30.9) | 25.4*** (9.4 to 41.4) |
| **Risk factor** | | |
| DR age 4 | 2.3 (-2.6 to 7.2) | -2.7 (-8.5 to 8.0) |
| Active choice x DR age 4 | | -1.7 (-13.9 to 10.5) |
| Opt out x DR age 4 | | 10.4* (-1.9 to 22.8) |
| DR age 10 | 7.4*** (2.7 to 12.1) | 8.8** (0.9 to 16.8) |
| Active choice x DR age 10 | | -6.2 (-17.6 to 5.3) |
| Opt out x DR age 10 | | 3.2 (-8.2 to 14.6) |
| DR age 12 | 5.9** (1.1 to 10.7) | 5.1 (-2.9 to 13.2) |
| Active choice x DR age 12 | | -5.5 (-17.2 to 6.2) |
| Opt out x DR age 12 | | 9.2 (-2.6 to 21.0) |
| Male | 14.3*** (6.9 to 21.7) | 19.4 (6.5 to 32.2) |
| Active choice x Male | | -10.2 (-28.2 to 0.7) |
| Opt out x Male | | -3.5 (-21.2 to 14.2) |
| Black | 6.1*** (2.7 to 9.4) | 6.6** (0.9 to 12.2) |
| Active choice x Black | | -1.0 (-9.2 to 7.2) |
| Opt out x Black | | -0.4 (-8.2 to 7.5) |
| Latino | 7.6*** (4.1 to 11.1) | 4.2 (-1.7 to 10.1) |
| Active choice x Latino | | 5.1 (-1.8 to 13.5) |
| Opt out x Latino | | 4.4 (-3.8 to 12.6) |
| Vaginal sex | -11.3*** (-186.4 to -6.2) | -15.2*** (24.1 to 6.3) |
| Active choice x Vaginal sex | | 7.3 (-5.3 to 19.9) |
| Opt out x Vaginal sex | | 3.8 (-8.3 to 16.0) |
| Anal sex | -18.6*** (-28.3 to -9.0) | -23.6*** (-40.7 to -6.4) |
| Active choice x Anal sex | | 10.9 (-14.0 to 35.9) |
| Opt out x Anal sex | | 1.3 (-22.4 to 25.1) |
| Sex with male | 16.4*** (10.1 to 22.6) | 20.1*** (9.7 to 30.6) |
| Active choice x Sex with male | | -5.1 (-19.8 to 9.6) |
| Opt out x Sex with male | | -5.2 (-19.6 to 9.3) |
| IV drug use | 7.9*** (2.7 to 13.2) | 12.2** (2.9 to 21.5) |
| Active choice x IV drug use | | -6.2 (-19.8 to 7.4) |
| Opt out x IV drug use | | -5.4 (-18.0 to 7.3) |
| Previously tested | 2.8 (-0.8 to 6.5) | 3.8 (-2.7 to 10.3) |
| Active choice x Previously tested | | -0.2 (-9.4 to 8.9) |
| Opt out x Previously tested | | -2.9 (-11.7 to 5.9) |
| Did not complete questionnaire | -13.0*** (-17.8 to -8.3) | -13.2*** (-17.9 to -8.4) |
| Constant | 22.3 (15.5 to 29.2) | 20.4 (9.2 to 31.6) |
| Observations | 4,800 | 4,800 |

HIV test acceptance is dependent variable. Constant represents the test acceptance percentage under the base case, opt-in testing. Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
"DR" represents Denver HIV Risk Score. DR age 4: age 22-25 or 55-60. DR age 10: age 26-32 or 47-54. DR age 12: age 33-46

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**Table E** presents results from four OLS regressions of acceptance of HIV test on several risk factors and demographics. The Denver HIV Risk Score categories for age are the only Denver HIV Risk Score elements used for these models. Column 1 combines the results of several univariate regressions, each of which is presented as an odds ratio with standard errors clustered at the day-zone level. The Treatment Assignment coefficients are from a model including only dummies for Active Choice and Opt Out; each of the other sets of rows includes these variables plus just that risk factor. Column 2 likewise presents the results of multiple logit regressions of acceptance on each risk factor, with the addition of interaction terms between the treatment assignments and the risk factors (the active choice and opt-out coefficients are omitted here, as they vary with each regression).
Columns 3 and 4 present the results of multivariate OLS regressions of HIV acceptance on all of the risk factors entered together in the model; column 4 adds the full set of interaction terms in a single model.

Table E. HIV Test Acceptance: Demographics and Behaviors

|  | Univariate analysis | | Multivariate analysis | |
| --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) |
| **Treatment assignment** | | | | |
| Active choice | 13.3*** | | 14.2*** | 22.0*** |
|  | (9.8 to 16.7) | - | (10.4 to 17.9) | (6.3 to 37.7) |
| Opt out | 27.8*** | | 27.4*** | 24.4*** |
|  | (24.4 to 31.2) | - | (23.7 to 31.1) | (8.8 to 39.9) |
| **Risk factor** | | | | |
| DR age 4 | -3.8** | -6.3** | 1.8 | -0.32 |
|  | (-7.1 to -0.4) | (-12.0 to -0.7) | (-3.5 to 7.1) | (-12.7 to 6.2) |
| Active choice x DR age 4 | | 2.5 | | 0.6 |
|  | | (-5.6 to 10.6) | | (-13.2 to 14.4) |
| Opt out x DR age 4 | | 5.3 | | 14.4** |
|  | | (-2.6 to 13.2) | | (0.6 to 28.1) |
| DR age 10 | 4.5*** | 6.6** | 6.3** | 8.3* |
|  | (1.5 to 7.5) | (1.6 to 11.6) | (1.2 to 11.5) | (-6.7 to 17.2) |
| Active choice x DR age 10 | | -2.8 | | -9.0 |
|  | | (-10.0 to 4.4) | | (-21.9 to 3.9) |
| Opt out x DR age 10 | | -4.9 | | 3.8 |
|  | | (-11.7 to 1.8) | | (-8.8 to 16.3) |
| DR age 12 | 1.4 | 1.4 | 5.7** | 4.3 |
|  | (-1.8 to 4.6) | (-3.9 to 6.7) | (0.5 to 10.9) | (-4.7 to 13.2) |
| Active choice x DR age 12 | | -2.0 | | -4.7 |
|  | | (-9.6 to 5.5) | | (-17.9 to 8.4) |
| Opt out x DR age 12 | | 3.1 | | 9.3 |
|  | | (-4.1 to 10.4) | | (-3.6 to 22.2) |
| Male | -3.7*** | -2.2 | -4.8*** | -3.7 |
|  | (-6.6 to -0.8) | (-7.0 to 2.7) | (-8.0 to -1.7) | (-9.3 to 1.8) |
| Active choice x Male | | -2.8 | | -4.0 |
|  | | (-9.7 to 4.0) | | (-11.7 to 3.6) |
| Opt out x Male | | 0.4 | | 1.2 |
|  | | (-6.3 to 7.3) | | (-6.5 to 8.8) |
| American Indian / Alaska Native | 19.8*** | 15.1 | 16.0*** | 11.6 |
|  | (8.2 to 31.4) | (-8.9 to 39.0) | (4.4 to 27.7) | (-15.8 to 39.0) |
| Active choice x AIAN | | 0.4 | | 4.2 |
|  | | (-33.5 to 34.3) | | (-32.6 to 40.9) |
| Opt out x AIAN | | 4.6 | | 7.4 |
|  | | (-23.1 to 32.3) | | (-24.0 to 38.8) |

(continued below)

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**Table E.** HIV Test Acceptance: Demographics and Behaviors (continued)

| | Univariate analysis | | Multivariate analysis | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Asian | -8.2*** | -11.3*** | -3.0 | -5.7 |
| | (-13.1 to -3.4) | (-19.5 to -3.2) | (-8.6 to 2.7) | (-15.8 to 4.3) |
| Active choice x Asian | | 6.8 | | 8.4 |
| | | (-4.8 to 18.4) | | (-5.4 to 14.8) |
| Opt out x Asian | | -0.7 | | 0.5 |
| | | (-12.5 to 11.1) | | (-13.8 to 14.9) |
| Black | 1.203** | 5.0* | 6.0*** | 6.6** |
| | (0.093) | (-0.4 to 10.4) | (2.2 to 9.9) | (0.1 to 13.0) |
| Active choice x Black | | -1.4 | | 1.1 |
| | | (-9.3 to 6.4) | | (-8.5 to 10.8) |
| Opt out x Black | | -2.4 | | -1.0 |
| | | (-9.9 to 5.1) | | (-10.3 to 8.2) |
| Native Hawaiian/Pacific Islander | -3.1 | -10.0 | -0.3 | 4.2 |
| | (-11.6 to 5.3) | (-23.4 to 3.3) | (-9.5 to 8.8) | (-12.4 to 20.7) |
| Active choice x NHPI | | 11.2 | | -4.7 |
| | | (-8.2 to 30.5) | | (-27.6 to 18.2) |
| Opt out x NHPI | | 7.5 | | -6.2 |
| | | (-11.8 to 26.9) | | (-29.1 to 16.6) |
| Latino | 7.0*** | 3.1 | 6.6*** | 3.4 |
| | (3.7 to 10.3) | (-2.4 to 8.6) | (2.8 to 10.3) | (-3.0 to 9.7) |
| Active choice x Latino | | 5.7 | | 5.5 |
| | | (-2.3 to 13.8) | | (-3.8 to 14.7) |
| Opt out x Latino | | 5.4 | | 4.2 |
| | | (-2.4 to 13.1) | | (-5.0 to 13.5) |
| Education ≥ High school | -2.0 | -0.4 | -6.3*** | -5.1 |
| | (-5.0 to 0.9) | (-5.3 to 4.4) | (-9.9 to -2.9) | (-11.3 to 1.1) |
| Active choice x Educ ≥ HS | | -1.9 | | -2.1 |
| | | (-8.9 to 5.0) | | (-11.0 to 6.8) |
| Opt out x Educ ≥ HS | | -3.7 | | -1.9 |
| | | (-10.7 to 3.3) | | (-10.5 to 6.6) |
| LGB identity | 6.0*** | 12.1*** | 1.7 | 7.8 |
| | (1.6 to 10.4) | (4.7 to 19.5) | (-2.9 to 6.2) | (-0.01 to 6.6) |
| Active choice x LGB identity | | -3.3 | | -4.6 |
| | | (-13.5 to 6.9) | | (-15.5 to 6.4) |
| Opt out x LGB identity | | -14.7*** | | -13.5** |
| | | (-24.7 to -4.6) | | (-24.3 to -2.7) |
| Sex with HIV-infected person | 11.3*** | 16.5 | 0.6 | 1.3 |
| | (3.1 to 19.5) | (2.4 to 30.6) | (-8.1 to 9.3) | (-13.3 to 15.9) |
| Active choice x Sex w/ HIV | | 3.6 | | 10.1 |
| | | (-15.6 to 22.9) | | (-10.6 to 30.8) |
| Opt out x Sex w/ HIV | | -19.2* | | -13.0 |
| | | (-39.1 to 0.7) | | (-33.4 to 7.4) |
| Share needles | 10.9*** | 12.6** | 1.1 | -1.3 |
| | (4.5 to 17.4) | (0.6 to 24.6) | (-8.1 to 9.2) | (-15.7 to 13.1) |
| Active choice x Share needles | | -7.2 | | 0.9 |
| | | (-23.8 to 9.2) | | (-19.0 to 20.7) |
| Opt out x Share neeles | | -0.4 | | 6.9 |
| | | (-15.4 to 14.5) | | (-11.1 to 25.0) |

(continued below)

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**Table E.** HIV Test Acceptance: Demographics and Behaviors (continued)

| | Univariate analysis | | Multivariate analysis | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Probability of infection ≥ 2 | 17.2*** | 25.9*** | 11.0*** | 17.0*** |
| | (13.3 to 21.2) | (18.9 to 32.9) | (6.8 to 15.2) | (9.4 to 24.7) |
| Active choice x Probability ≥ 2 | | -7.3 | | -4.1 |
| | | (-17.1 to 2.5) | | (-14.7 to 6.5) |
| Opt out x Probability ≥ 2 | | -18.9*** | | -14.7 |
| | | (-28.5 to -9.4) | | (-25.2 to -4.1) |
| Risky sex | 6.4*** | 8.6*** | 10.3*** | 9.7*** |
| | (3.5 to 9.2) | (3.7 to 13.5) | (7.0 to 13.7) | (3.5 to 15.8) |
| Active choice x Risky sex | | -1.9 | | -6.6 |
| | | (-8.9 to 4.9) | | (-18.6 to 5.5) |
| Opt out x Risky sex | | -2.1 | | 1.1 |
| | | (-9.2 to 5.0) | | (-7.5 to 9.7) |
| Risky drug use | 13.4*** | 18.4*** | 7.7*** | 10.7** |
| | (9.8 to 17.1) | (11.8 to 25.0) | (3.1 to 12.2) | (2.2 to 19.2) |
| Active choice x Risky drug use | | -9.9** | | -6.4 |
| | | (-19.4 to -0.3) | | (-18.4 to 5.7) |
| Opt out x Risky drug use | | -6.4 | | -2.1 |
| | | (-15.1 to 2.3) | | (-13.6 to 9.3) |
| Refused questionnaire | -7.2*** | -7.4*** | -0.3 | -18.8 |
| | (-10.7 to -3.6) | (-13.2 to -1.6) | (-19.8 to 19.1) | (-51.8 to 14.2) |
| Active choice x Refused quest. | | 0.2 | | 29.2 |
| | | (-8.2 to 8.6) | | (-16.6 to 75.1) |
| Opt out x Refused questionnaire | | 2.6 | | 18.0 |
| | | (-5.9 to 11.1) | | (-27.7 to 63.6) |
| **Observations** | 4,800 | 4,800 | 4,800 | 4,800 |

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

As a supplement to Figure 3 in the manuscript, we provide here the number of patients accepting and offered tests under each treatment assignment by each study staff member.

**Table F.** Test Acceptance by Study Staff Member, Supplemental Table to Figure 2

| Treatment assignment | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Opt-in | 53/132 | 69/165 | 81/205 | 146/367 | 59/102 | 31/111 | 86/284 | 55/122 | 31/119 |
| Active choice | 78/169 | 94/178 | 114/226 | 137/295 | 67/103 | 86/172 | 123/256 | 76/126 | 60/103 |
| Opt-out | 72/125 | 100/185 | 138/226 | 139/242 | 81/120 | 71/104 | 234/317 | 116/145 | 80/101 |
| **Staff member** | a | b | c | d | e | f | g | h | i |

Each cell presents the number of patients accepting divided by the number offered HIV testing.