**National Quality Forum—Measure Testing (subcriteria 2a2, 2b2-2b7)**

**Measure Number** (*if previously endorsed*)**:** 2082

**Measure Title**: HIV viral suppression

**Date of Submission**: Click here to enter a date

**Type of Measure:**

|  |  |
| --- | --- |
| Outcome (*including PRO-PM*) | Composite – ***STOP – use composite testing form*** |
| Intermediate Clinical Outcome | Cost/resource |
| Process | Efficiency |
| Structure |  |

**1. DATA/SAMPLE USED FOR ALL TESTING OF THIS MEASURE**

*Often the same data are used for all aspects of measure testing. In an effort to eliminate duplication, the first five questions apply to all measure testing. If there are differences by aspect of testing,(e.g., reliability vs. validity) be sure to indicate the specific differences in question 1.7.*

**1.1. What type of data was used for testing**? (*Check all the sources of data identified in the measure specifications and data used for testing the measure*. *Testing must be provided for all the sources of data specified and intended for measure implementation.* ***If different data sources are used for the numerator and denominator, indicate N [numerator] or D [denominator] after the checkbox.***)

|  |  |
| --- | --- |
| **Measure Specified to Use Data From:**  **(*must be consistent with data sources entered in S.23*)** | **Measure Tested with Data From:** |
| abstracted from paper record | abstracted from paper record |
| administrative claims | administrative claims |
| clinical database/registry | clinical database/registry |
| abstracted from electronic health record | abstracted from electronic health record |
| eMeasure (HQMF) implemented in EHRs | eMeasure (HQMF) implemented in EHRs |
| other: Click here to describe | other: Click here to describe |

**1.2. If an existing dataset was used, identify the specific dataset** (*the dataset used for testing must be consistent with the measure specifications for target population and healthcare entities being measured; e.g., Medicare Part A claims, Medicaid claims, other commercial insurance, nursing home MDS, home health OASIS, clinical registry*).

On an annual basis, Ryan White HIV/AIDS Program (RWHAP) grant recipient and subrecipients submit the Ryan White HIV/AIDS Services Report (RSR). The RSR dataset is the Health Resources and Services Administration HIV/AIDS Bureau’s primary source of annual, client-level data collected from its nearly 2,000 funded grant recipients and subrecipients. Since 2010, client-level RSR data have been used to assess the numbers and types of clients receiving services and their HIV outcomes. Project Officers at the HIV/AIDS Bureau share the data with grant recipients and subrecipients to monitor and support their progress at improving care and treatment for people living with HIV. It is through the hard work of these providers and the RWHAP community that clients are helped every day.

RSR includes all clients served by the RWHAP during calendar years 2010 through 2014. RSR data do not include information about AIDS Drug Assistance Programs (ADAP); all ADAP-related information is collected through another data system. Although data presented in this report are “nonADAP,” this does not imply the clients did not receive ADAP services. ADAP data will be published separately, at later time.

**1.3. What are the dates of the data used in testing**? 2010-2014

**1.4. What levels of analysis** **were tested**? (*testing must be provided for all the levels specified and intended for measure implementation, e.g., individual clinician, hospital, health plan*)

|  |  |
| --- | --- |
| **Measure Specified to Measure Performance of:**  **(*must be consistent with levels entered in item S.26*)** | **Measure Tested at Level of:** |
| individual clinician | individual clinician |
| group/practice | group/practice |
| hospital/facility/agency | hospital/facility/agency |
| health plan | health plan |
| other: Click here to describe | other: Click here to describe |

**1.5. How many and which measured entities were included in the testing and analysis (by level of analysis and data source)**? (*identify the number and descriptive characteristics of measured entities included in the analysis (e.g., size, location, type); if a sample was used, describe how entities were selected for inclusion in the sample*)

The data for measure testing were collected via the Ryan White HIV/AIDS Program Services Report (RSR), which is HRSA HIV/AIDS Bureau's primary source of annual, client-level data collected from more than 2,000 funded grant recipients and subrecipients. The RSR is inclusive of the overall RWHAP client population and key priority populations served by RWHAP. Over 800 (varies by year) Ryan White HIV/AIDS Program outpatient ambulatory medical care providers representing various types, locations, and sizes were included in the testing.

Descriptive characteristics of RWHAP providers

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **2010** | | **2011** | | **2012** | | **2013** | | **2014** | |
|  | N | % | N | % | N | % | N | % | N | % |
| **Overall** | 846 |  | 811 |  | 816 |  | 823 | -- | 813 | -- |
|  |  |  |  |  |  |  |  |  |  |  |
| **Provider type** |  |  |  |  |  |  |  |  |  |  |
| Hospital or university-  based clinic | 355 | 17.5 | 358 | 18.6 | 349 | 19.1 | 351 | 19.6 | 338 | 19.4 |
| Community based  organization | 1,114 | 54.9 | 1,053 | 54.8 | 993 | 54.3 | 958 | 53.6 | 921 | 53.0 |
| Health department | 284 | 14.0 | 274 | 14.3 | 243 | 13.3 | 233 | 13.0 | 243 | 14.0 |
| Other | 275 | 13.6 | 237 | 12.3 | 243 | 13.3 | 247 | 13.8 | 237 | 13.6 |
|  |  |  |  |  |  |  |  |  |  |  |
| **HHS Region** |  |  |  |  |  |  |  |  |  |  |
| Region 1 | 149 | 8.0 | 153 | 8.6 | 142 | 8.4 | 139 | 8.4 | 135 | 8.3 |
| Region 2 | 368 | 19.7 | 339 | 19.0 | 323 | 19.1 | 303 | 18.3 | 293 | 18.1 |
| Region 3 | 180 | 9.6 | 177 | 9.9 | 174 | 10.3 | 174 | 10.5 | 160 | 9.9 |
| Region 4 | 337 | 18.0 | 335 | 18.8 | 312 | 18.5 | 301 | 18.1 | 313 | 19.3 |
| Region 5 | 197 | 10.5 | 189 | 10.6 | 177 | 10.5 | 188 | 11.3 | 180 | 11.1 |
| Region 6 | 150 | 8.0 | 142 | 8.0 | 133 | 7.9 | 131 | 7.9 | 132 | 8.2 |
| Region 7 | 65 | 3.5 | 60 | 3.4 | 57 | 3.4 | 56 | 3.4 | 54 | 3.3 |
| Region 8 | 48 | 2.6 | 43 | 2.4 | 34 | 2.0 | 35 | 2.1 | 46 | 2.8 |
| Region 9 | 300 | 16.0 | 281 | 15.7 | 277 | 16.4 | 276 | 16.6 | 253 | 15.6 |
| Region 10 | 78 | 4.2 | 68 | 3.8 | 60 | 3.6 | 56 | 3.4 | 52 | 3.2 |

**1.6. How many and which patients were included in the testing and analysis (by level of analysis and data source)**? (*identify the number and descriptive characteristics of patients included in the analysis (e.g., age, sex, race, diagnosis); if a sample was used, describe how patients were selected for inclusion in the sample*)

The data for measure testing were collected via the Ryan White HIV/AIDS Program Services Report (RSR), which is HRSA HIV/AIDS Bureau's primary source of annual, client-level data collected from more than 2,000 funded grant recipients and subrecipients. The RSR is inclusive of the overall RWHAP client population and key priority populations served by RWHAP. The average number of patients per provider each year ranged from 384 to 411, shown in the table below. Descriptive characteristics (e.g., age, race/ethnicity, gender) for the patient population are shown in the subsequent table by year.

Distribution of patients per provider by year, 2010-2014

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **N patients, mean** | **N patients, median** | **Min patients** | **Max patients** |
| 2010 | 384 | 177 | 1 | 13,159 |
| 2011 | 404 | 182 | 1 | 13,380 |
| 2012 | 411 | 179 | 1 | 13,849 |
| 2013 | 398 | 181 | 1 | 14,755 |
| 2014 | 388 | 177 | 1 | 13,850 |

Descriptive characteristics of RWHAP patients by year, 2010-2014

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **2010** | | **2011** | | **2012** | | **2013** | | **2014** | |
|  | No. | % | No. | % | No. | % | No. | % | No. | % |
| **OVERALL** | 324,455 | ─ | 327,744 | ─ | 335,408 | ─ | 327,618 | ─ | 316,087 | ─ |
|  |  |  |  |  |  |  |  |  |  |  |
| **AGE GROUP** |  |  |  |  |  |  |  |  |  |  |
| <13 | 3,709 | 1.2 | 3,647 | 1.1 | 3,150 | 1.0 | 2,667 | 0.9 | 2,720 | 0.9 |
| 13–14 | 627 | 0.2 | 605 | 0.2 | 469 | 0.1 | 360 | 0.1 | 343 | 0.1 |
| 15–19 | 3,698 | 1.2 | 3,541 | 1.1 | 3,066 | 0.9 | 2,609 | 0.8 | 2,506 | 0.8 |
| 20–24 | 14,040 | 4.5 | 14,831 | 4.6 | 15,741 | 4.8 | 15,538 | 5.0 | 14,578 | 4.8 |
| 25–29 | 22,120 | 7.0 | 23,278 | 7.3 | 24,904 | 7.7 | 25,586 | 8.2 | 26,043 | 8.5 |
| 30–34 | 28,644 | 9.1 | 29,330 | 9.2 | 30,084 | 9.3 | 29,495 | 9.4 | 28,484 | 9.3 |
| 35–39 | 35,161 | 11.2 | 33,597 | 10.5 | 33,005 | 10.2 | 31,560 | 10.1 | 30,691 | 10.0 |
| 40–44 | 50,769 | 16.1 | 47,941 | 15.0 | 45,343 | 14.0 | 40,728 | 13.0 | 37,000 | 12.1 |
| 45–49 | 60,344 | 19.2 | 59,453 | 18.6 | 58,145 | 17.9 | 52,863 | 16.8 | 47,932 | 15.6 |
| 50–54 | 46,433 | 14.7 | 48,647 | 15.2 | 50,876 | 15.7 | 50,491 | 16.1 | 50,492 | 16.4 |
| 55–59 | 28,015 | 8.9 | 30,646 | 9.6 | 33,215 | 10.2 | 33,493 | 10.7 | 34,667 | 11.3 |
| 60–64 | 13,441 | 4.3 | 15,237 | 4.8 | 16,991 | 5.2 | 17,780 | 5.7 | 19,399 | 6.3 |
| ≥65 | 8,187 | 2.6 | 8,946 | 2.8 | 10,147 | 3.1 | 10,780 | 3.4 | 12,231 | 4.0 |
|  |  |  |  |  |  |  |  |  |  |  |
| **RACE/ETHNICITY** |  |  |  |  |  |  |  |  |  |  |
| American Indian/  Alaska Native | 1,473 | 0.5 | 1,366 | 0.4 | 1,371 | 0.4 | 1,414 | 0.5 | 1,272 | 0.4 |
| Asian | 3,382 | 1.1 | 3,598 | 1.2 | 3,980 | 1.2 | 3,835 | 1.2 | 3,791 | 1.2 |
| Black/  African American | 146,460 | 47.3 | 149,834 | 47.8 | 150,974 | 47.2 | 146,056 | 47.0 | 142,746 | 46.9 |
| Hispanic/Latinoa | 71,002 | 22.9 | 71,240 | 22.7 | 75,201 | 23.5 | 74,967 | 24.1 | 74,714 | 24.5 |
| Native Hawaiian/  Pacific Islander | 627 | 0.2 | 710 | 0.2 | 575 | 0.2 | 510 | 0.2 | 442 | 0.2 |
| White | 83,854 | 27.1 | 83,061 | 26.5 | 83,820 | 26.2 | 78,953 | 25.4 | 75,931 | 24.9 |
| Multiple races | 3,177 | 1.0 | 3,716 | 1.2 | 4,238 | 1.3 | 4,899 | 1.6 | 5,651 | 1.9 |
|  |  |  |  |  |  |  |  |  |  |  |
| **GENDER** |  |  |  |  |  |  |  |  |  |  |
| Male | 219,625 | 69.7 | 223,379 | 69.9 | 230,075 | 70.8 | 221,930 | 70.7 | 216,965 | 70.7 |
| Female | 93,266 | 29.6 | 93,687 | 29.3 | 92,186 | 28.4 | 89,212 | 28.4 | 87,071 | 28.4 |
| Transgender | 2,313 | 0.7 | 2,585 | 0.8 | 2,848 | 0.9 | 2,779 | 0.9 | 2,974 | 1.0 |
|  |  |  |  |  |  |  |  |  |  |  |
| **TRANSMISSION RISK** |  |  |  |  |  |  |  |  |  |  |
| **Male client** |  |  |  |  |  |  |  |  |  |  |
| Male-to-male  sexual contact | 117,267 | 59.9 | 120,622 | 60.2 | 128,744 | 61.8 | 127,571 | 62.2 | 127,624 | 62.7 |
| Injection drug use | 17,479 | 8.9 | 16,787 | 8.4 | 15,586 | 7.5 | 15,509 | 7.6 | 13,753 | 6.8 |
| Male-to-male  sexual contact and  injection drug use | 6,971 | 3.6 | 6,837 | 3.4 | 6,974 | 3.3 | 6,136 | 3.0 | 6,396 | 3.1 |
| Heterosexual  contact | 48,903 | 25.0 | 50,814 | 25.4 | 52,266 | 25.1 | 51,174 | 24.9 | 51,155 | 25.1 |
| Perinatal infection | 3,830 | 2.0 | 3,919 | 2.0 | 3,604 | 1.7 | 3,419 | 1.7 | 3,456 | 1.7 |
| Other | 1,248 | 0.6 | 1,231 | 0.6 | 1,309 | 0.6 | 1,402 | 0.7 | 1,189 | 0.6 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Female client** |  |  |  |  |  |  |  |  |  |  |
| Injection drug use | 9,264 | 11.2 | 9,022 | 10.7 | 8,182 | 9.8 | 8,310 | 10.0 | 7,396 | 9.1 |
| Heterosexual  contact | 68,009 | 82.4 | 69,767 | 82.8 | 70,362 | 84.1 | 69,356 | 83.9 | 69,090 | 84.8 |
| Perinatal infection | 4,338 | 5.3 | 4,587 | 5.4 | 4,182 | 5.0 | 4,003 | 4.8 | 4,093 | 5.0 |
| Other | 900 | 1.1 | 877 | 1.0 | 936 | 1.1 | 1,044 | 1.3 | 940 | 1.2 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Transgender**  **client** |  |  |  |  |  |  |  |  |  |  |
| Sexual contact | 1,874 | 90.7 | 2,058 | 91.2 | 2,281 | 91.8 | 2,314 | 92.9 | 2,499 | 93.2 |
| Injection drug use | 38 | 1.8 | 32 | 1.4 | 35 | 1.4 | 32 | 1.3 | 31 | 1.2 |
| Sexual contact and  injection drug use | 144 | 7.0 | 156 | 6.9 | 158 | 6.4 | 130 | 5.2 | 135 | 5.0 |
| Perinatal infection | 5 | 0.2 | 5 | 0.2 | 2 | 0.1 | 4 | 0.2 | 9 | 0.3 |
| Other | 6 | 0.3 | 5 | 0.2 | 8 | 0.3 | 10 | 0.4 | 8 | 0.3 |
|  |  |  |  |  |  |  |  |  |  |  |
| **HEALTH CARE COVERAGE** |  |  |  |  |  |  |  |  |  |  |
| Private only | 35,392 | 12.4 | 37,532 | 12.3 | 39,972 | 12.7 | 37,204 | 12.1 | ─ | ─ |
| Medicare only | 23,245 | 8.1 | 24,279 | 8.0 | 23,538 | 7.5 | 22,840 | 7.5 | ─ | ─ |
| Medicaid only | 73,292 | 25.6 | 75,690 | 24.8 | 71,990 | 22.8 | 69,211 | 22.6 | ─ | ─ |
| Other public | 22,398 | 7.8 | 20,977 | 6.9 | 28,039 | 8.9 | 27,347 | 8.9 | ─ | ─ |
| Other private | 11,512 | 4.0 | 9,884 | 3.2 | 6,049 | 1.9 | 3,682 | 1.2 | ─ | ─ |
| No coverage | 86,220 | 30.1 | 100,001 | 32.8 | 103,150 | 32.7 | 101,524 | 33.1 | ─ | ─ |
| Multiple coverages | 34,276 | 12.0 | 36,330 | 11.9 | 42,969 | 13.6 | 44,578 | 14.6 | ─ | ─ |
|  |  |  |  |  |  |  |  |  |  |  |
| Private employer | ─ | ─ | ─ | ─ | ─ | ─ | ─ | ─ | 18,805 | 6.3 |
| Private individual | ─ | ─ | ─ | ─ | ─ | ─ | ─ | ─ | 16,154 | 5.4 |
| Medicare | ─ | ─ | ─ | ─ | ─ | ─ | ─ | ─ | 26,145 | 8.7 |
| Medicaid | ─ | ─ | ─ | ─ | ─ | ─ | ─ | ─ | 94,993 | 31.6 |
| Medicare and  Medicaid | ─ | ─ | ─ | ─ | ─ | ─ | ─ | ─ | 19,207 | 6.4 |
| Veterans  Administration | ─ | ─ | ─ | ─ | ─ | ─ | ─ | ─ | 454 | 0.2 |
| Indian Health  Service | ─ | ─ | ─ | ─ | ─ | ─ | ─ | ─ | 71 | 0.0 |
| Other plan | ─ | ─ | ─ | ─ | ─ | ─ | ─ | ─ | 11,899 | 4.0 |
| No coverage | ─ | ─ | ─ | ─ | ─ | ─ | ─ | ─ | 90,828 | 30.2 |
| Multiple coverages | ─ | ─ | ─ | ─ | ─ | ─ | ─ | ─ | 22,428 | 7.5 |

**1.7. If there are differences in the data or sample used for different aspects of testing (e.g., reliability, validity, exclusions, risk adjustment), identify how the data or sample are different for each aspect of testing reported below**.

Ryan White HIV/AIDS Program Services Report (RSR) was the sole source of data for the testing.

**1.8 What were the patient-level sociodemographic (SDS) variables that were available and analyzed in the data or sample used? For example, patient-reported data (e.g., income, education, language), proxy variables when SDS data are not collected from each patient (e.g. census tract), or patient community characteristics (e.g. percent vacant housing, crime rate).**

The patient-level sociodemographic variables included in the analysis include the following: Age, race/ethnicity; gender; transmission risk; and health care coverage.

**2a2. RELIABILITY TESTING**

***Note****: If accuracy/correctness (validity) of data elements was empirically tested*, *separate reliability testing of data elements is not required – in 2a2.1 check critical data elements; in 2a2.2 enter “see section 2b2 for validity testing of data elements”; and skip 2a2.3 and 2a2.4.*

**2a2.1. What level of reliability testing was conducted**? (*may be one or both levels*)  
 **Critical data elements used in the measure** (*e.g., inter-abstractor reliability; data element reliability must address ALL critical data elements*)  
 **Performance measure score** (e.g., *signal-to-noise analysis*)  
  
**2a2.2. For each level checked above, describe the method of reliability testing and what it tests** (*describe the steps―do not just name a method; what type of error does it test; what statistical analysis was used*)

Reliability was calculated according to the methods outlined in a technical report prepared by J.L. Adams for the National Committee for Quality Assurance titled “The Reliability of Provider Profiling: A Tutorial” (RAND Corporation, TR-653-NCQA, 2009). In this context, reliability represents the ability of a measure to confidently distinguish the performance of one physician from another. As discussed in the report: “Conceptually, it is the ratio of signal to noise. The signal in this case is the proportion of variability in measured performance that can be explained by real differences in performance. There are 3 main drivers of reliability; sample size, differences between physicians, and measurement error.”

According to this approach, reliability is estimated with a beta-binomial model. The beta-binomial model is appropriate for measuring the reliability of pass/fail measures such as those proposed here. Reliability scores vary from 0.0 to 1.0, with a score of zero indicating that all variation is attributable to measurement error (noise, or individual accountable entity variance) whereas a reliability of 1.0 implies that all variation is caused by real difference in performance across accountable entities.

**2a2.3. For each level of testing checked above, what were the statistical results from reliability testing**? (e*.g., percent agreement and kappa for the critical data elements; distribution of reliability statistics from a signal-to-noise analysis*)

Provider-level reliability results for the “viral load suppression” measure in 2014 are detailed below. Results for years 2010-2013 are available upon request, but were not included due to space constraints.

Provider-level reliability testing (signal to noise) results, 2014.

|  |  |  |  |
| --- | --- | --- | --- |
| **Site/provider ID** | **% Suppressed** | **Variance Within** | **Reliability** |
| 55 | 67.6% | 0.001 | 0.960 |
| 63 | 41.7% | 0.010 | 0.556 |
| 82 | 89.2% | 0.001 | 0.925 |
| 88 | 84.2% | 0.000 | 0.990 |
| 96 | 68.7% | 0.000 | 0.973 |
| 101 | 85.0% | 0.001 | 0.933 |
| 105 | 82.8% | 0.001 | 0.928 |
| 112 | 92.3% | 0.000 | 0.972 |
| 113 | 95.6% | 0.000 | 0.987 |
| 117 | 88.6% | 0.000 | 0.993 |
| 118 | 94.3% | 0.000 | 0.987 |
| 120 | 84.3% | 0.001 | 0.936 |
| 123 | 86.5% | 0.000 | 0.980 |
| 124 | 73.6% | 0.001 | 0.932 |
| 127 | 69.4% | 0.001 | 0.945 |
| 128 | 84.9% | 0.000 | 0.980 |
| 133 | 74.8% | 0.000 | 0.994 |
| 135 | 93.6% | 0.000 | 0.967 |
| 138 | 70.5% | 0.005 | 0.728 |
| 140 | 100.0% | 0.000 | 1.000 |
| 141 | 67.6% | 0.001 | 0.926 |
| 143 | 91.1% | 0.001 | 0.951 |
| 144 | 85.5% | 0.000 | 0.972 |
| 147 | 71.9% | 0.001 | 0.897 |
| 148 | 65.3% | 0.005 | 0.732 |
| 149 | 89.6% | 0.001 | 0.940 |
| 154 | 93.0% | 0.000 | 0.991 |
| 155 | 87.0% | 0.005 | 0.720 |
| 156 | 52.2% | 0.005 | 0.700 |
| 158 | 91.0% | 0.001 | 0.954 |
| 159 | 89.5% | 0.000 | 0.967 |
| 160 | 75.6% | 0.002 | 0.861 |
| 164 | 77.5% | 0.002 | 0.837 |
| 168 | 90.1% | 0.000 | 0.991 |
| 169 | 87.5% | 0.001 | 0.943 |
| 170 | 90.7% | 0.000 | 0.975 |
| 171 | 82.5% | 0.001 | 0.961 |
| 172 | 96.9% | 0.000 | 0.992 |
| 173 | 81.2% | 0.001 | 0.927 |
| 174 | 92.8% | 0.000 | 0.985 |
| 175 | 86.0% | 0.001 | 0.943 |
| 176 | 87.6% | 0.000 | 0.996 |
| 177 | 84.1% | 0.002 | 0.857 |
| 178 | 86.4% | 0.000 | 0.994 |
| 179 | 90.1% | 0.001 | 0.920 |
| 181 | 85.7% | 0.000 | 0.982 |
| 182 | 50.4% | 0.000 | 0.979 |
| 183 | 88.5% | 0.000 | 0.983 |
| 184 | 93.5% | 0.000 | 0.987 |
| 186 | 95.1% | 0.000 | 0.965 |
| 187 | 90.6% | 0.000 | 0.984 |
| 188 | 76.2% | 0.000 | 0.971 |
| 191 | 90.7% | 0.000 | 0.982 |
| 192 | 76.8% | 0.000 | 0.975 |
| 194 | 82.0% | 0.001 | 0.951 |
| 196 | 87.8% | 0.000 | 0.993 |
| 197 | 83.8% | 0.000 | 0.991 |
| 199 | 77.4% | 0.000 | 0.974 |
| 201 | 85.3% | 0.000 | 0.997 |
| 203 | 85.9% | 0.000 | 0.988 |
| 205 | 66.7% | 0.019 | 0.406 |
| 207 | 89.7% | 0.000 | 0.978 |
| 209 | 76.0% | 0.001 | 0.930 |
| 210 | 76.7% | 0.001 | 0.895 |
| 211 | 81.0% | 0.000 | 0.974 |
| 212 | 82.1% | 0.001 | 0.953 |
| 213 | 76.9% | 0.000 | 0.989 |
| 214 | 90.2% | 0.000 | 0.990 |
| 215 | 81.8% | 0.000 | 0.967 |
| 216 | 85.3% | 0.000 | 0.980 |
| 217 | 86.2% | 0.000 | 0.963 |
| 220 | 90.3% | 0.000 | 0.977 |
| 221 | 83.9% | 0.001 | 0.946 |
| 222 | 86.3% | 0.000 | 0.974 |
| 223 | 78.7% | 0.000 | 0.992 |
| 224 | 90.1% | 0.000 | 0.987 |
| 225 | 83.6% | 0.000 | 0.994 |
| 227 | 81.0% | 0.000 | 0.988 |
| 228 | 87.2% | 0.001 | 0.955 |
| 230 | 85.2% | 0.000 | 0.996 |
| 231 | 70.7% | 0.000 | 0.976 |
| 232 | 71.7% | 0.001 | 0.935 |
| 233 | 77.3% | 0.000 | 0.987 |
| 235 | 93.1% | 0.000 | 0.966 |
| 236 | 90.1% | 0.000 | 0.980 |
| 238 | 85.9% | 0.000 | 0.992 |
| 239 | 74.0% | 0.000 | 0.979 |
| 240 | 74.3% | 0.000 | 0.966 |
| 241 | 74.4% | 0.000 | 0.995 |
| 242 | 87.0% | 0.001 | 0.952 |
| 244 | 76.1% | 0.000 | 0.968 |
| 245 | 89.1% | 0.000 | 0.989 |
| 246 | 84.0% | 0.000 | 0.992 |
| 248 | 85.3% | 0.000 | 0.995 |
| 252 | 87.0% | 0.000 | 0.972 |
| 253 | 92.1% | 0.000 | 0.993 |
| 255 | 60.2% | 0.002 | 0.838 |
| 256 | 74.6% | 0.001 | 0.954 |
| 257 | 93.7% | 0.000 | 0.991 |
| 259 | 82.0% | 0.001 | 0.905 |
| 263 | 76.2% | 0.000 | 0.977 |
| 265 | 85.0% | 0.000 | 0.996 |
| 266 | 89.7% | 0.000 | 0.993 |
| 267 | 89.5% | 0.000 | 0.993 |
| 268 | 69.2% | 0.001 | 0.950 |
| 269 | 87.8% | 0.000 | 0.982 |
| 271 | 93.1% | 0.001 | 0.934 |
| 273 | 82.4% | 0.000 | 0.992 |
| 275 | 87.4% | 0.000 | 0.992 |
| 276 | 91.8% | 0.000 | 0.978 |
| 277 | 84.7% | 0.000 | 0.988 |
| 278 | 80.7% | 0.000 | 0.983 |
| 279 | 88.5% | 0.000 | 0.993 |
| 280 | 87.5% | 0.003 | 0.787 |
| 283 | 89.8% | 0.000 | 0.994 |
| 284 | 87.7% | 0.000 | 0.971 |
| 285 | 72.2% | 0.001 | 0.937 |
| 286 | 84.4% | 0.000 | 0.975 |
| 288 | 83.3% | 0.001 | 0.929 |
| 289 | 78.8% | 0.001 | 0.959 |
| 290 | 85.7% | 0.002 | 0.888 |
| 291 | 83.8% | 0.000 | 0.983 |
| 292 | 86.8% | 0.001 | 0.961 |
| 294 | 74.2% | 0.000 | 0.989 |
| 295 | 77.5% | 0.001 | 0.958 |
| 298 | 93.5% | 0.000 | 0.997 |
| 299 | 92.0% | 0.000 | 0.992 |
| 302 | 90.2% | 0.000 | 0.991 |
| 303 | 87.2% | 0.000 | 0.971 |
| 304 | 82.3% | 0.000 | 0.985 |
| 305 | 86.2% | 0.000 | 0.991 |
| 307 | 86.2% | 0.000 | 0.990 |
| 308 | 92.6% | 0.001 | 0.952 |
| 310 | 81.8% | 0.000 | 0.996 |
| 311 | 60.6% | 0.001 | 0.917 |
| 312 | 90.3% | 0.001 | 0.931 |
| 313 | 80.8% | 0.001 | 0.925 |
| 314 | 88.3% | 0.000 | 0.993 |
| 315 | 87.7% | 0.000 | 0.992 |
| 316 | 88.8% | 0.000 | 0.968 |
| 317 | 88.5% | 0.000 | 0.963 |
| 318 | 95.3% | 0.000 | 0.992 |
| 319 | 90.0% | 0.001 | 0.948 |
| 320 | 95.0% | 0.000 | 0.977 |
| 321 | 80.4% | 0.001 | 0.917 |
| 322 | 80.4% | 0.001 | 0.929 |
| 323 | 89.9% | 0.000 | 0.980 |
| 324 | 94.7% | 0.000 | 0.983 |
| 325 | 76.5% | 0.000 | 0.992 |
| 326 | 93.6% | 0.000 | 0.994 |
| 328 | 79.1% | 0.000 | 0.977 |
| 329 | 86.2% | 0.000 | 0.998 |
| 332 | 88.9% | 0.000 | 0.983 |
| 333 | 80.6% | 0.002 | 0.888 |
| 334 | 89.4% | 0.000 | 0.977 |
| 335 | 87.5% | 0.000 | 0.984 |
| 336 | 90.1% | 0.000 | 0.984 |
| 340 | 81.2% | 0.001 | 0.961 |
| 342 | 86.6% | 0.000 | 0.976 |
| 343 | 83.7% | 0.001 | 0.955 |
| 344 | 76.5% | 0.000 | 0.978 |
| 345 | 80.0% | 0.001 | 0.905 |
| 347 | 86.3% | 0.000 | 0.991 |
| 348 | 88.7% | 0.000 | 0.976 |
| 349 | 80.2% | 0.001 | 0.962 |
| 351 | 91.7% | 0.000 | 0.990 |
| 353 | 86.5% | 0.000 | 0.986 |
| 357 | 82.5% | 0.000 | 0.990 |
| 358 | 85.2% | 0.001 | 0.935 |
| 360 | 84.6% | 0.000 | 0.987 |
| 361 | 83.4% | 0.000 | 0.982 |
| 362 | 85.5% | 0.002 | 0.876 |
| 363 | 81.4% | 0.001 | 0.908 |
| 365 | 95.2% | 0.001 | 0.921 |
| 366 | 89.3% | 0.001 | 0.959 |
| 368 | 86.0% | 0.000 | 0.973 |
| 369 | 91.5% | 0.000 | 0.974 |
| 370 | 82.0% | 0.002 | 0.884 |
| 371 | 76.9% | 0.002 | 0.881 |
| 372 | 82.9% | 0.000 | 0.990 |
| 375 | 85.1% | 0.000 | 0.994 |
| 378 | 90.8% | 0.001 | 0.908 |
| 379 | 88.1% | 0.000 | 0.993 |
| 380 | 60.5% | 0.000 | 0.963 |
| 382 | 89.5% | 0.000 | 0.989 |
| 384 | 82.7% | 0.001 | 0.961 |
| 385 | 87.6% | 0.001 | 0.960 |
| 386 | 91.0% | 0.000 | 0.965 |
| 388 | 89.0% | 0.000 | 0.994 |
| 389 | 85.4% | 0.001 | 0.954 |
| 390 | 90.3% | 0.000 | 0.981 |
| 391 | 79.5% | 0.001 | 0.945 |
| 393 | 91.4% | 0.000 | 0.992 |
| 394 | 96.9% | 0.000 | 0.964 |
| 395 | 87.0% | 0.000 | 0.988 |
| 400 | 82.6% | 0.001 | 0.954 |
| 404 | 90.9% | 0.001 | 0.959 |
| 407 | 35.0% | 0.001 | 0.954 |
| 408 | 86.4% | 0.000 | 0.985 |
| 409 | 85.7% | 0.001 | 0.929 |
| 410 | 63.8% | 0.003 | 0.814 |
| 412 | 79.1% | 0.000 | 0.973 |
| 414 | 85.4% | 0.001 | 0.930 |
| 417 | 76.8% | 0.002 | 0.888 |
| 421 | 92.1% | 0.000 | 0.991 |
| 422 | 86.1% | 0.000 | 0.977 |
| 423 | 83.9% | 0.000 | 0.973 |
| 425 | 74.5% | 0.001 | 0.940 |
| 427 | 89.8% | 0.000 | 0.996 |
| 438 | 76.6% | 0.000 | 0.975 |
| 441 | 68.4% | 0.003 | 0.817 |
| 457 | 92.6% | 0.000 | 0.995 |
| 463 | 70.6% | 0.001 | 0.954 |
| 469 | 73.4% | 0.001 | 0.961 |
| 473 | 0.0% | 0.000 | 1.000 |
| 480 | 84.8% | 0.000 | 0.973 |
| 481 | 76.4% | 0.001 | 0.953 |
| 483 | 69.3% | 0.000 | 0.981 |
| 489 | 69.3% | 0.000 | 0.978 |
| 491 | 3.4% | 0.000 | 0.972 |
| 498 | 92.0% | 0.000 | 0.990 |
| 504 | 86.5% | 0.000 | 0.994 |
| 506 | 89.1% | 0.000 | 0.976 |
| 509 | 85.1% | 0.000 | 0.987 |
| 510 | 80.6% | 0.001 | 0.910 |
| 517 | 72.2% | 0.001 | 0.952 |
| 534 | 93.3% | 0.000 | 0.990 |
| 553 | 17.4% | 0.006 | 0.670 |
| 593 | 90.2% | 0.001 | 0.946 |
| 598 | 79.1% | 0.001 | 0.949 |
| 612 | 78.9% | 0.002 | 0.872 |
| 664 | 73.5% | 0.001 | 0.954 |
| 704 | 92.9% | 0.000 | 0.976 |
| 710 | 68.6% | 0.004 | 0.750 |
| 726 | 49.2% | 0.001 | 0.938 |
| 738 | 72.2% | 0.011 | 0.532 |
| 744 | 78.2% | 0.000 | 0.968 |
| 753 | 79.8% | 0.001 | 0.960 |
| 757 | 87.2% | 0.001 | 0.938 |
| 762 | 74.4% | 0.000 | 0.977 |
| 765 | 81.3% | 0.001 | 0.954 |
| 775 | 86.8% | 0.001 | 0.921 |
| 783 | 60.0% | 0.005 | 0.704 |
| 787 | 88.9% | 0.001 | 0.951 |
| 791 | 93.4% | 0.000 | 0.985 |
| 793 | 85.7% | 0.006 | 0.685 |
| 794 | 68.2% | 0.003 | 0.794 |
| 798 | 84.9% | 0.000 | 0.987 |
| 799 | 90.7% | 0.002 | 0.891 |
| 800 | 82.4% | 0.001 | 0.943 |
| 801 | 93.3% | 0.002 | 0.859 |
| 803 | 79.7% | 0.000 | 0.966 |
| 807 | 83.8% | 0.001 | 0.956 |
| 818 | 85.9% | 0.000 | 0.993 |
| 820 | 84.0% | 0.001 | 0.899 |
| 821 | 91.5% | 0.001 | 0.930 |
| 824 | 81.8% | 0.003 | 0.789 |
| 841 | 82.8% | 0.002 | 0.892 |
| 852 | 79.9% | 0.001 | 0.916 |
| 861 | 82.2% | 0.001 | 0.952 |
| 867 | 51.2% | 0.000 | 0.979 |
| 871 | 89.0% | 0.000 | 0.994 |
| 873 | 79.9% | 0.001 | 0.956 |
| 894 | 81.9% | 0.000 | 0.994 |
| 905 | 74.1% | 0.000 | 0.983 |
| 907 | 80.0% | 0.000 | 0.996 |
| 913 | 79.7% | 0.000 | 0.990 |
| 920 | 66.7% | 0.015 | 0.461 |
| 926 | 81.1% | 0.004 | 0.753 |
| 927 | 88.5% | 0.001 | 0.934 |
| 929 | 90.7% | 0.001 | 0.955 |
| 933 | 79.4% | 0.001 | 0.940 |
| 945 | 88.4% | 0.001 | 0.937 |
| 980 | 87.3% | 0.001 | 0.942 |
| 986 | 85.1% | 0.001 | 0.934 |
| 992 | 86.9% | 0.000 | 0.993 |
| 996 | 89.0% | 0.000 | 0.991 |
| 1009 | 55.6% | 0.002 | 0.887 |
| 1017 | 83.0% | 0.002 | 0.894 |
| 1022 | 86.0% | 0.001 | 0.962 |
| 1023 | 87.7% | 0.001 | 0.958 |
| 1026 | 79.0% | 0.002 | 0.889 |
| 1029 | 62.9% | 0.001 | 0.896 |
| 1031 | 89.0% | 0.000 | 0.986 |
| 1036 | 87.2% | 0.000 | 0.977 |
| 1037 | 87.5% | 0.001 | 0.923 |
| 1038 | 78.2% | 0.001 | 0.959 |
| 1049 | 71.4% | 0.000 | 0.964 |
| 1050 | 77.8% | 0.000 | 0.984 |
| 1052 | 85.2% | 0.005 | 0.730 |
| 1055 | 83.3% | 0.000 | 0.969 |
| 1056 | 87.7% | 0.000 | 0.989 |
| 1066 | 90.8% | 0.000 | 0.989 |
| 1067 | 85.2% | 0.000 | 0.985 |
| 1068 | 67.5% | 0.000 | 0.988 |
| 1093 | 73.9% | 0.003 | 0.819 |
| 1094 | 86.5% | 0.000 | 0.988 |
| 1100 | 83.5% | 0.000 | 0.981 |
| 1109 | 89.1% | 0.000 | 0.993 |
| 1110 | 81.7% | 0.001 | 0.910 |
| 1112 | 84.9% | 0.000 | 0.994 |
| 1120 | 88.9% | 0.000 | 0.990 |
| 1121 | 87.1% | 0.000 | 0.995 |
| 1122 | 82.5% | 0.000 | 0.973 |
| 1131 | 83.8% | 0.000 | 0.990 |
| 1132 | 62.9% | 0.001 | 0.910 |
| 1146 | 73.3% | 0.013 | 0.493 |
| 1155 | 98.6% | 0.000 | 0.998 |
| 1160 | 66.1% | 0.000 | 0.987 |
| 1162 | 75.9% | 0.003 | 0.789 |
| 1163 | 77.2% | 0.001 | 0.956 |
| 1167 | 84.7% | 0.000 | 0.996 |
| 1214 | 96.6% | 0.000 | 0.983 |
| 1216 | 6.5% | 0.001 | 0.958 |
| 1229 | 88.0% | 0.000 | 0.971 |
| 1230 | 90.4% | 0.001 | 0.955 |
| 1263 | 100.0% | 0.000 | 1.000 |
| 1276 | 83.9% | 0.000 | 0.968 |
| 1278 | 83.5% | 0.001 | 0.904 |
| 1284 | 86.7% | 0.001 | 0.915 |
| 1287 | 87.3% | 0.000 | 0.990 |
| 1289 | 81.6% | 0.004 | 0.762 |
| 1300 | 37.1% | 0.004 | 0.771 |
| 1302 | 1.8% | 0.000 | 0.996 |
| 1309 | 61.1% | 0.003 | 0.793 |
| 1310 | 94.6% | 0.001 | 0.933 |
| 1314 | 36.2% | 0.000 | 0.967 |
| 1318 | 79.5% | 0.002 | 0.850 |
| 1319 | 82.1% | 0.002 | 0.891 |
| 1333 | 84.7% | 0.000 | 0.965 |
| 1349 | 61.4% | 0.004 | 0.753 |
| 1358 | 58.3% | 0.001 | 0.901 |
| 1359 | 68.8% | 0.000 | 0.992 |
| 1364 | 78.1% | 0.002 | 0.844 |
| 1378 | 84.4% | 0.001 | 0.931 |
| 1380 | 79.5% | 0.002 | 0.858 |
| 1382 | 53.3% | 0.002 | 0.875 |
| 1401 | 83.4% | 0.000 | 0.982 |
| 1430 | 62.3% | 0.004 | 0.741 |
| 1444 | 83.8% | 0.004 | 0.775 |
| 1445 | 82.1% | 0.000 | 0.993 |
| 1448 | 85.7% | 0.006 | 0.685 |
| 1451 | 80.9% | 0.002 | 0.885 |
| 1456 | 84.1% | 0.000 | 0.994 |
| 1461 | 93.7% | 0.000 | 0.965 |
| 1464 | 52.4% | 0.001 | 0.933 |
| 1479 | 83.3% | 0.012 | 0.522 |
| 1490 | 35.0% | 0.006 | 0.690 |
| 1511 | 85.5% | 0.000 | 0.985 |
| 1512 | 61.9% | 0.001 | 0.907 |
| 1514 | 79.1% | 0.004 | 0.767 |
| 1527 | 65.0% | 0.011 | 0.527 |
| 1552 | 90.8% | 0.000 | 0.996 |
| 1567 | 85.6% | 0.001 | 0.902 |
| 1570 | 74.5% | 0.001 | 0.911 |
| 1572 | 70.6% | 0.004 | 0.757 |
| 1574 | 80.2% | 0.002 | 0.884 |
| 1582 | 90.1% | 0.001 | 0.958 |
| 1583 | 75.0% | 0.047 | 0.213 |
| 1587 | 91.7% | 0.006 | 0.665 |
| 1594 | 83.1% | 0.002 | 0.841 |
| 1597 | 81.5% | 0.006 | 0.694 |
| 1607 | 85.8% | 0.001 | 0.960 |
| 1610 | 87.5% | 0.001 | 0.962 |
| 1628 | 96.9% | 0.001 | 0.930 |
| 1634 | 79.8% | 0.002 | 0.891 |
| 1635 | 83.6% | 0.001 | 0.911 |
| 1637 | 79.9% | 0.001 | 0.961 |
| 1650 | 93.7% | 0.000 | 0.964 |
| 1654 | 73.1% | 0.004 | 0.770 |
| 1656 | 90.2% | 0.001 | 0.950 |
| 1668 | 80.5% | 0.000 | 0.988 |
| 1672 | 96.3% | 0.001 | 0.906 |
| 1684 | 79.7% | 0.000 | 0.993 |
| 1719 | 80.2% | 0.000 | 0.990 |
| 1762 | 79.3% | 0.000 | 0.986 |
| 1784 | 85.3% | 0.001 | 0.940 |
| 1786 | 87.9% | 0.002 | 0.887 |
| 1792 | 78.1% | 0.000 | 0.984 |
| 1806 | 55.6% | 0.027 | 0.316 |
| 1809 | 84.8% | 0.000 | 0.986 |
| 1812 | 81.0% | 0.000 | 0.984 |
| 1831 | 93.3% | 0.001 | 0.939 |
| 1834 | 71.4% | 0.005 | 0.723 |
| 1847 | 79.6% | 0.002 | 0.884 |
| 1849 | 79.9% | 0.001 | 0.919 |
| 1879 | 80.1% | 0.001 | 0.938 |
| 1900 | 0.0% | 0.000 | 1.000 |
| 1904 | 78.6% | 0.006 | 0.678 |
| 1912 | 88.0% | 0.000 | 0.987 |
| 1930 | 81.8% | 0.001 | 0.903 |
| 1955 | 86.2% | 0.001 | 0.925 |
| 1967 | 69.7% | 0.006 | 0.664 |
| 1968 | 90.6% | 0.003 | 0.827 |
| 1970 | 100.0% | 0.000 | 1.000 |
| 1972 | 0.0% | 0.000 | 1.000 |
| 1977 | 92.6% | 0.003 | 0.833 |
| 1980 | 79.6% | 0.003 | 0.793 |
| 1989 | 85.2% | 0.001 | 0.916 |
| 2003 | 50.0% | 0.063 | 0.168 |
| 2008 | 100.0% | 0.000 | 1.000 |
| 2010 | 100.0% | 0.000 | 1.000 |
| 2011 | 81.0% | 0.007 | 0.633 |
| 2017 | 87.9% | 0.003 | 0.797 |
| 2020 | 90.0% | 0.009 | 0.585 |
| 2025 | 86.2% | 0.000 | 0.966 |
| 2028 | 85.1% | 0.001 | 0.951 |
| 2029 | 87.5% | 0.001 | 0.911 |
| 2034 | 92.5% | 0.001 | 0.906 |
| 2041 | 75.0% | 0.023 | 0.351 |
| 2049 | 75.6% | 0.005 | 0.738 |
| 2058 | 88.0% | 0.000 | 0.972 |
| 2072 | 87.9% | 0.003 | 0.797 |
| 2073 | 91.1% | 0.000 | 0.991 |
| 2076 | 100.0% | 0.000 | 1.000 |
| 2078 | 84.4% | 0.004 | 0.754 |
| 2080 | 100.0% | 0.000 | 1.000 |
| 2081 | 100.0% | 0.000 | 1.000 |
| 2116 | 80.7% | 0.001 | 0.899 |
| 2117 | 69.6% | 0.009 | 0.579 |
| 2118 | 82.8% | 0.002 | 0.892 |
| 2126 | 87.4% | 0.001 | 0.940 |
| 2127 | 84.4% | 0.001 | 0.897 |
| 2129 | 82.1% | 0.001 | 0.924 |
| 2133 | 86.2% | 0.000 | 0.974 |
| 2134 | 74.2% | 0.006 | 0.672 |
| 2137 | 88.5% | 0.004 | 0.763 |
| 2139 | 6.1% | 0.000 | 0.973 |
| 2141 | 81.0% | 0.000 | 0.966 |
| 2143 | 89.2% | 0.000 | 0.992 |
| 2148 | 88.7% | 0.001 | 0.940 |
| 2150 | 87.4% | 0.000 | 0.994 |
| 2153 | 84.2% | 0.001 | 0.938 |
| 2163 | 87.8% | 0.001 | 0.960 |
| 2170 | 78.6% | 0.001 | 0.960 |
| 2174 | 79.4% | 0.000 | 0.998 |
| 2175 | 88.0% | 0.001 | 0.958 |
| 2178 | 78.1% | 0.000 | 0.968 |
| 2180 | 84.7% | 0.000 | 0.990 |
| 2183 | 93.1% | 0.000 | 0.972 |
| 2187 | 95.8% | 0.002 | 0.884 |
| 2188 | 94.7% | 0.003 | 0.828 |
| 2189 | 90.5% | 0.004 | 0.755 |
| 2191 | 91.9% | 0.001 | 0.914 |
| 2198 | 87.8% | 0.002 | 0.852 |
| 2200 | 84.8% | 0.004 | 0.765 |
| 2203 | 82.6% | 0.001 | 0.906 |
| 2205 | 88.7% | 0.002 | 0.870 |
| 2207 | 78.9% | 0.000 | 0.994 |
| 2224 | 87.3% | 0.000 | 0.988 |
| 2228 | 36.8% | 0.012 | 0.508 |
| 2230 | 90.3% | 0.001 | 0.942 |
| 2232 | 60.0% | 0.048 | 0.209 |
| 2246 | 74.2% | 0.001 | 0.939 |
| 2252 | 18.8% | 0.002 | 0.842 |
| 2263 | 92.0% | 0.003 | 0.811 |
| 2264 | 50.0% | 0.125 | 0.092 |
| 2296 | 88.4% | 0.000 | 0.974 |
| 2299 | 79.6% | 0.000 | 0.977 |
| 2320 | 89.2% | 0.000 | 0.992 |
| 2366 | 90.0% | 0.001 | 0.908 |
| 2368 | 97.1% | 0.000 | 0.968 |
| 2374 | 100.0% | 0.000 | 1.000 |
| 2378 | 89.5% | 0.005 | 0.719 |
| 2379 | 91.3% | 0.003 | 0.786 |
| 2381 | 94.8% | 0.000 | 0.976 |
| 2388 | 66.7% | 0.037 | 0.255 |
| 2389 | 0.0% | 0.000 | 1.000 |
| 2415 | 96.1% | 0.000 | 0.978 |
| 2420 | 87.9% | 0.001 | 0.937 |
| 2436 | 92.3% | 0.000 | 0.970 |
| 2438 | 93.2% | 0.001 | 0.922 |
| 2444 | 50.0% | 0.125 | 0.092 |
| 2457 | 94.2% | 0.000 | 0.981 |
| 2474 | 68.1% | 0.001 | 0.939 |
| 2495 | 92.5% | 0.001 | 0.925 |
| 2514 | 39.7% | 0.000 | 0.999 |
| 2525 | 91.0% | 0.000 | 0.992 |
| 2572 | 76.5% | 0.000 | 0.978 |
| 2654 | 94.7% | 0.001 | 0.906 |
| 2694 | 100.0% | 0.000 | 1.000 |
| 2699 | 94.7% | 0.003 | 0.828 |
| 2700 | 87.8% | 0.000 | 0.981 |
| 2702 | 86.9% | 0.000 | 0.979 |
| 2703 | 89.9% | 0.000 | 0.986 |
| 2704 | 87.1% | 0.000 | 0.974 |
| 2707 | 100.0% | 0.000 | 1.000 |
| 2709 | 85.6% | 0.000 | 0.991 |
| 2714 | 76.4% | 0.001 | 0.947 |
| 2717 | 85.6% | 0.001 | 0.928 |
| 2718 | 88.1% | 0.000 | 0.996 |
| 2720 | 77.0% | 0.001 | 0.900 |
| 2721 | 70.3% | 0.000 | 0.985 |
| 2723 | 83.6% | 0.000 | 0.970 |
| 2728 | 93.9% | 0.000 | 0.983 |
| 2732 | 88.2% | 0.000 | 0.981 |
| 2737 | 72.1% | 0.005 | 0.730 |
| 2745 | 93.3% | 0.001 | 0.961 |
| 2746 | 83.3% | 0.001 | 0.920 |
| 2757 | 85.8% | 0.001 | 0.959 |
| 2764 | 71.1% | 0.001 | 0.920 |
| 2766 | 76.3% | 0.001 | 0.916 |
| 2767 | 73.8% | 0.005 | 0.733 |
| 2768 | 82.8% | 0.000 | 0.993 |
| 2769 | 60.3% | 0.004 | 0.769 |
| 2771 | 77.6% | 0.001 | 0.961 |
| 2775 | 88.0% | 0.000 | 0.989 |
| 2779 | 85.8% | 0.001 | 0.959 |
| 2782 | 72.0% | 0.001 | 0.922 |
| 2788 | 78.3% | 0.001 | 0.939 |
| 2790 | 71.1% | 0.000 | 0.968 |
| 2794 | 90.4% | 0.002 | 0.883 |
| 2795 | 80.6% | 0.001 | 0.916 |
| 2849 | 89.0% | 0.000 | 0.980 |
| 2855 | 82.4% | 0.001 | 0.920 |
| 2856 | 76.4% | 0.003 | 0.794 |
| 2857 | 100.0% | 0.000 | 1.000 |
| 2865 | 87.4% | 0.000 | 0.985 |
| 2872 | 97.6% | 0.001 | 0.956 |
| 2873 | 57.1% | 0.035 | 0.266 |
| 2892 | 75.1% | 0.001 | 0.949 |
| 2893 | 88.7% | 0.000 | 0.971 |
| 2928 | 93.1% | 0.000 | 0.990 |
| 2929 | 85.9% | 0.001 | 0.899 |
| 2933 | 90.4% | 0.000 | 0.963 |
| 2945 | 66.7% | 0.001 | 0.923 |
| 2947 | 82.9% | 0.000 | 0.986 |
| 2948 | 81.7% | 0.000 | 0.976 |
| 2949 | 67.9% | 0.001 | 0.904 |
| 2951 | 82.9% | 0.001 | 0.948 |
| 2958 | 91.7% | 0.002 | 0.856 |
| 2959 | 57.7% | 0.005 | 0.730 |
| 2966 | 75.8% | 0.002 | 0.892 |
| 2969 | 72.9% | 0.003 | 0.818 |
| 2970 | 94.0% | 0.001 | 0.957 |
| 2988 | 57.0% | 0.003 | 0.828 |
| 2989 | 77.8% | 0.019 | 0.397 |
| 2997 | 81.9% | 0.000 | 0.987 |
| 3010 | 77.2% | 0.001 | 0.962 |
| 3012 | 83.1% | 0.001 | 0.943 |
| 3020 | 100.0% | 0.000 | 1.000 |
| 3048 | 73.7% | 0.010 | 0.554 |
| 3052 | 75.6% | 0.001 | 0.902 |
| 3077 | 70.9% | 0.003 | 0.829 |
| 3079 | 91.8% | 0.001 | 0.957 |
| 3111 | 90.1% | 0.001 | 0.910 |
| 3131 | 79.7% | 0.001 | 0.943 |
| 3133 | 74.2% | 0.002 | 0.855 |
| 3164 | 88.0% | 0.002 | 0.857 |
| 3177 | 89.7% | 0.001 | 0.958 |
| 3187 | 69.9% | 0.003 | 0.814 |
| 3210 | 75.2% | 0.001 | 0.955 |
| 3255 | 54.7% | 0.003 | 0.793 |
| 3261 | 86.1% | 0.001 | 0.941 |
| 3262 | 70.5% | 0.005 | 0.728 |
| 3264 | 75.9% | 0.006 | 0.667 |
| 3265 | 78.0% | 0.001 | 0.929 |
| 3310 | 72.6% | 0.001 | 0.926 |
| 3359 | 65.6% | 0.002 | 0.875 |
| 3389 | 66.7% | 0.007 | 0.653 |
| 3397 | 39.1% | 0.001 | 0.926 |
| 3401 | 35.7% | 0.002 | 0.861 |
| 3428 | 92.4% | 0.000 | 0.988 |
| 3433 | 79.0% | 0.001 | 0.940 |
| 3440 | 88.0% | 0.000 | 0.970 |
| 3444 | 85.4% | 0.001 | 0.956 |
| 3445 | 85.7% | 0.002 | 0.853 |
| 3449 | 70.5% | 0.005 | 0.728 |
| 3456 | 61.2% | 0.001 | 0.949 |
| 3469 | 87.1% | 0.000 | 0.967 |
| 3482 | 89.8% | 0.001 | 0.937 |
| 3484 | 88.3% | 0.000 | 0.976 |
| 3498 | 85.0% | 0.006 | 0.665 |
| 3507 | 90.9% | 0.002 | 0.894 |
| 3519 | 72.4% | 0.001 | 0.957 |
| 3521 | 90.0% | 0.001 | 0.918 |
| 3523 | 83.1% | 0.001 | 0.918 |
| 3527 | 85.9% | 0.000 | 0.964 |
| 3530 | 59.4% | 0.001 | 0.912 |
| 3533 | 11.1% | 0.011 | 0.536 |
| 3538 | 87.3% | 0.001 | 0.926 |
| 3551 | 79.2% | 0.001 | 0.960 |
| 3552 | 8.7% | 0.003 | 0.786 |
| 3553 | 50.9% | 0.005 | 0.729 |
| 3554 | 51.9% | 0.009 | 0.578 |
| 3573 | 80.8% | 0.001 | 0.923 |
| 3579 | 74.8% | 0.001 | 0.906 |
| 3583 | 83.6% | 0.000 | 0.990 |
| 3587 | 91.3% | 0.001 | 0.927 |
| 3591 | 84.2% | 0.004 | 0.783 |
| 3593 | 85.5% | 0.001 | 0.961 |
| 3594 | 84.3% | 0.001 | 0.924 |
| 3595 | 89.6% | 0.000 | 0.991 |
| 3596 | 92.7% | 0.001 | 0.954 |
| 3597 | 89.5% | 0.000 | 0.972 |
| 3598 | 94.4% | 0.001 | 0.944 |
| 3600 | 70.0% | 0.005 | 0.707 |
| 3601 | 91.0% | 0.000 | 0.991 |
| 3602 | 86.8% | 0.001 | 0.910 |
| 3603 | 87.2% | 0.001 | 0.934 |
| 3604 | 91.7% | 0.006 | 0.665 |
| 3605 | 88.4% | 0.001 | 0.947 |
| 3606 | 72.2% | 0.001 | 0.924 |
| 3607 | 90.2% | 0.000 | 0.988 |
| 3608 | 67.8% | 0.001 | 0.932 |
| 3609 | 84.0% | 0.003 | 0.825 |
| 3625 | 73.5% | 0.003 | 0.816 |
| 3626 | 91.4% | 0.001 | 0.903 |
| 3633 | 75.6% | 0.002 | 0.849 |
| 3639 | 83.5% | 0.000 | 0.989 |
| 3658 | 80.0% | 0.016 | 0.442 |
| 3659 | 84.9% | 0.001 | 0.902 |
| 3687 | 64.8% | 0.002 | 0.890 |
| 3702 | 85.1% | 0.000 | 0.988 |
| 3728 | 100.0% | 0.000 | 1.000 |
| 3769 | 88.6% | 0.000 | 0.989 |
| 3794 | 77.6% | 0.001 | 0.955 |
| 3826 | 42.0% | 0.002 | 0.891 |
| 3847 | 77.8% | 0.000 | 0.985 |
| 3862 | 63.6% | 0.021 | 0.376 |
| 3879 | 77.5% | 0.001 | 0.945 |
| 3904 | 89.9% | 0.000 | 0.993 |
| 3932 | 69.0% | 0.002 | 0.837 |
| 3942 | 93.9% | 0.000 | 0.967 |
| 3959 | 78.9% | 0.002 | 0.844 |
| 3969 | 100.0% | 0.000 | 1.000 |
| 3972 | 92.4% | 0.000 | 0.970 |
| 3973 | 82.3% | 0.001 | 0.957 |
| 3975 | 94.3% | 0.002 | 0.892 |
| 3976 | 86.7% | 0.000 | 0.977 |
| 3977 | 71.4% | 0.000 | 0.982 |
| 3978 | 78.3% | 0.000 | 0.975 |
| 3979 | 80.2% | 0.000 | 0.977 |
| 3980 | 82.8% | 0.001 | 0.960 |
| 3981 | 84.5% | 0.000 | 0.995 |
| 3982 | 90.9% | 0.000 | 0.985 |
| 3983 | 88.4% | 0.000 | 0.973 |
| 3984 | 70.4% | 0.004 | 0.766 |
| 3985 | 95.7% | 0.001 | 0.936 |
| 3998 | 79.8% | 0.002 | 0.891 |
| 4014 | 95.5% | 0.000 | 0.975 |
| 4018 | 82.2% | 0.001 | 0.903 |
| 4035 | 90.6% | 0.001 | 0.953 |
| 4039 | 75.5% | 0.002 | 0.879 |
| 4068 | 65.0% | 0.011 | 0.527 |
| 4088 | 83.3% | 0.001 | 0.953 |
| 4122 | 85.2% | 0.002 | 0.890 |
| 4126 | 90.0% | 0.001 | 0.908 |
| 4220 | 93.9% | 0.000 | 0.967 |
| 4221 | 71.4% | 0.003 | 0.827 |
| 4235 | 61.0% | 0.002 | 0.842 |
| 7685 | 89.4% | 0.001 | 0.953 |
| 7718 | 65.0% | 0.003 | 0.817 |
| 7722 | 75.0% | 0.002 | 0.837 |
| 7728 | 69.8% | 0.004 | 0.761 |
| 7734 | 93.3% | 0.000 | 0.981 |
| 7738 | 88.1% | 0.000 | 0.991 |
| 7758 | 89.3% | 0.003 | 0.787 |
| 7765 | 80.2% | 0.000 | 0.970 |
| 7766 | 87.9% | 0.000 | 0.984 |
| 7772 | 78.4% | 0.000 | 0.970 |
| 7780 | 50.0% | 0.042 | 0.233 |
| 7782 | 100.0% | 0.000 | 1.000 |
| 7785 | 84.5% | 0.000 | 0.965 |
| 7802 | 83.3% | 0.000 | 0.980 |
| 7807 | 65.1% | 0.002 | 0.893 |
| 7821 | 74.6% | 0.003 | 0.826 |
| 7833 | 71.1% | 0.002 | 0.893 |
| 7834 | 81.3% | 0.001 | 0.926 |
| 7845 | 75.8% | 0.001 | 0.938 |
| 7857 | 0.0% | 0.000 | 1.000 |
| 7878 | 60.9% | 0.005 | 0.710 |
| 7885 | 86.1% | 0.000 | 0.979 |
| 7886 | 81.4% | 0.001 | 0.904 |
| 7888 | 90.1% | 0.000 | 0.983 |
| 7892 | 77.5% | 0.001 | 0.916 |
| 7910 | 100.0% | 0.000 | 1.000 |
| 7911 | 85.7% | 0.004 | 0.743 |
| 7913 | 78.9% | 0.002 | 0.844 |
| 7919 | 79.3% | 0.006 | 0.691 |
| 7920 | 80.8% | 0.002 | 0.856 |
| 7929 | 92.6% | 0.000 | 0.990 |
| 7931 | 89.0% | 0.000 | 0.982 |
| 7942 | 97.7% | 0.000 | 0.998 |
| 7955 | 87.8% | 0.001 | 0.939 |
| 7964 | 55.8% | 0.006 | 0.688 |
| 7985 | 75.8% | 0.003 | 0.811 |
| 7997 | 88.0% | 0.000 | 0.966 |
| 7998 | 76.5% | 0.005 | 0.705 |
| 8000 | 84.6% | 0.000 | 0.988 |
| 8005 | 88.4% | 0.000 | 0.971 |
| 8018 | 99.0% | 0.000 | 0.996 |
| 8027 | 76.6% | 0.003 | 0.819 |
| 8029 | 81.6% | 0.000 | 0.966 |
| 8030 | 71.1% | 0.005 | 0.735 |
| 8063 | 79.6% | 0.003 | 0.793 |
| 8067 | 82.7% | 0.000 | 0.967 |
| 8079 | 79.2% | 0.001 | 0.943 |
| 8102 | 91.5% | 0.001 | 0.921 |
| 8111 | 68.8% | 0.002 | 0.881 |
| 8119 | 30.6% | 0.001 | 0.954 |
| 8129 | 71.5% | 0.001 | 0.934 |
| 8130 | 83.5% | 0.001 | 0.940 |
| 8131 | 88.5% | 0.000 | 0.989 |
| 8132 | 88.2% | 0.000 | 0.987 |
| 8133 | 87.3% | 0.000 | 0.990 |
| 8134 | 88.2% | 0.000 | 0.984 |
| 8135 | 92.2% | 0.000 | 0.987 |
| 8136 | 87.3% | 0.000 | 0.964 |
| 8142 | 79.1% | 0.002 | 0.868 |
| 8143 | 91.7% | 0.001 | 0.947 |
| 8149 | 0.0% | 0.000 | 1.000 |
| 8160 | 84.6% | 0.000 | 0.985 |
| 8163 | 80.4% | 0.003 | 0.818 |
| 8166 | 61.6% | 0.002 | 0.841 |
| 8167 | 26.7% | 0.007 | 0.660 |
| 8180 | 86.8% | 0.001 | 0.910 |
| 8181 | 89.0% | 0.001 | 0.922 |
| 8199 | 81.6% | 0.000 | 0.992 |
| 8228 | 90.6% | 0.000 | 0.981 |
| 8229 | 95.2% | 0.001 | 0.958 |
| 8242 | 83.0% | 0.000 | 0.998 |
| 8260 | 66.7% | 0.004 | 0.774 |
| 8261 | 88.4% | 0.000 | 0.964 |
| 8262 | 79.7% | 0.002 | 0.844 |
| 8263 | 89.5% | 0.000 | 0.986 |
| 8265 | 91.3% | 0.000 | 0.993 |
| 8277 | 89.4% | 0.000 | 0.965 |
| 8282 | 55.0% | 0.012 | 0.506 |
| 8284 | 84.0% | 0.005 | 0.702 |
| 8288 | 100.0% | 0.000 | 1.000 |
| 8294 | 75.7% | 0.002 | 0.888 |
| 8295 | 89.2% | 0.001 | 0.916 |
| 8300 | 50.0% | 0.125 | 0.092 |
| 8301 | 33.3% | 0.037 | 0.255 |
| 8302 | 71.4% | 0.029 | 0.303 |
| 8305 | 100.0% | 0.000 | 1.000 |
| 8308 | 100.0% | 0.000 | 1.000 |
| 8313 | 90.8% | 0.000 | 0.981 |
| 8320 | 90.5% | 0.004 | 0.755 |
| 8323 | 57.6% | 0.001 | 0.908 |
| 8330 | 100.0% | 0.000 | 1.000 |
| 8332 | 87.5% | 0.014 | 0.481 |
| 8334 | 50.0% | 0.125 | 0.092 |
| 8355 | 85.5% | 0.001 | 0.957 |
| 8369 | 86.4% | 0.000 | 0.963 |
| 8373 | 80.0% | 0.001 | 0.943 |
| 8387 | 82.0% | 0.000 | 0.965 |
| 8396 | 80.9% | 0.000 | 0.984 |
| 8397 | 80.0% | 0.000 | 0.965 |
| 8399 | 95.5% | 0.001 | 0.928 |
| 8401 | 85.1% | 0.001 | 0.919 |
| 8403 | 80.7% | 0.000 | 0.972 |
| 8405 | 87.1% | 0.002 | 0.888 |
| 8407 | 69.2% | 0.001 | 0.895 |
| 8411 | 88.4% | 0.000 | 0.991 |
| 8412 | 100.0% | 0.000 | 1.000 |
| 8414 | 91.7% | 0.002 | 0.856 |
| 8415 | 100.0% | 0.000 | 1.000 |
| 8419 | 85.5% | 0.000 | 0.963 |
| 8421 | 78.9% | 0.001 | 0.924 |
| 8425 | 81.4% | 0.004 | 0.782 |
| 8426 | 77.6% | 0.001 | 0.919 |
| 8427 | 57.1% | 0.005 | 0.717 |
| 8430 | 72.2% | 0.011 | 0.532 |
| 8432 | 100.0% | 0.000 | 1.000 |
| 8438 | 16.7% | 0.006 | 0.686 |
| 8441 | 53.6% | 0.009 | 0.588 |
| 8504 | 54.5% | 0.023 | 0.360 |
| 8506 | 86.4% | 0.000 | 0.997 |
| 8507 | 85.8% | 0.000 | 0.972 |
| 8508 | 91.3% | 0.001 | 0.960 |
| 8510 | 88.4% | 0.000 | 0.994 |
| 8511 | 79.2% | 0.000 | 0.983 |
| 8512 | 83.7% | 0.000 | 0.982 |
| 8513 | 72.3% | 0.002 | 0.840 |
| 8537 | 61.5% | 0.002 | 0.854 |
| 8538 | 81.3% | 0.000 | 0.967 |
| 8542 | 80.7% | 0.000 | 0.981 |
| 8546 | 89.4% | 0.001 | 0.938 |
| 8550 | 81.6% | 0.001 | 0.941 |
| 8551 | 92.3% | 0.000 | 0.972 |
| 8553 | 96.7% | 0.001 | 0.922 |
| 8559 | 93.0% | 0.001 | 0.932 |
| 8561 | 86.5% | 0.000 | 0.976 |
| 8563 | 90.1% | 0.001 | 0.910 |
| 8566 | 78.9% | 0.009 | 0.591 |
| 8568 | 79.5% | 0.004 | 0.752 |
| 8570 | 88.9% | 0.011 | 0.536 |
| 8571 | 82.4% | 0.001 | 0.922 |
| 8573 | 69.4% | 0.003 | 0.787 |
| 8575 | 92.6% | 0.001 | 0.945 |
| 8577 | 63.6% | 0.007 | 0.644 |
| 8579 | 66.7% | 0.037 | 0.255 |
| 8580 | 73.4% | 0.001 | 0.941 |
| 8598 | 74.3% | 0.000 | 0.991 |
| 8608 | 43.5% | 0.005 | 0.703 |
| 8611 | 67.6% | 0.003 | 0.797 |
| 8618 | 88.0% | 0.001 | 0.952 |
| 8624 | 83.7% | 0.000 | 0.985 |
| 8626 | 84.6% | 0.010 | 0.558 |
| 8632 | 58.2% | 0.001 | 0.939 |
| 8635 | 70.6% | 0.012 | 0.509 |
| 8636 | 100.0% | 0.000 | 1.000 |
| 8638 | 100.0% | 0.000 | 1.000 |
| 8639 | 93.9% | 0.002 | 0.880 |
| 8640 | 100.0% | 0.000 | 1.000 |
| 8641 | 100.0% | 0.000 | 1.000 |
| 8644 | 100.0% | 0.000 | 1.000 |
| 8645 | 75.0% | 0.047 | 0.213 |
| 8650 | 92.1% | 0.000 | 0.964 |
| 8651 | 79.1% | 0.001 | 0.936 |
| 8653 | 50.0% | 0.125 | 0.092 |

Overall reliability scores (i.e., median of provider-level reliability [R\_median], minimum [R\_min], maximum [R\_max]) by year, and the overall variance between sites, are summarized below.

Overall reliability scores by year, 2010-2014

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Year** | **% suppressed** | **Var\_between** | **R\_median** | **R\_min** | **R\_max** |
| 2010 | 61.8 | 0.051 | 0.983 | 0.290 | 1.000 |
| 2011 | 65.5 | 0.046 | 0.982 | 0.267 | 1.000 |
| 2012 | 69.9 | 0.038 | 0.979 | 0.338 | 1.000 |
| 2013 | 76.1 | 0.020 | 0.967 | 0.211 | 1.000 |
| 2014 | 80.3 | 0.013 | 0.954 | 0.092 | 1.000 |

Reliability scores varied across providers by year. The proportion of providers with reliability greater than or equal to 0.9, 0.8, and 0.7 are shown below.

Distribution of provider-level reliability scores by year, 2010-2014

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **N** | **≥0.9**  **n (%)** | **≥0.8**  **n (%)** | **≥0.7**  **n (%)** |
| 2010 | 846 | 764 (90.3) | 809 (95.6) | 826 (97.6) |
| 2011 | 811 | 721 (88.9) | 766 (94.5) | 786 (96.9) |
| 2012 | 816 | 713 (87.4) | 775 (95.0) | 794 (97.3) |
| 2013 | 823 | 657 (79.8) | 738 (89.7) | 772 (93.8) |
| 2014 | 813 | 595 (73.2) | 690 (84.9) | 751 (92.4) |

**2a2.4 What is your interpretation of the results in terms of demonstrating reliability**? (i*.e., what do the results mean and what are the norms for the test conducted?*)

There is no established cut-off for minimum reliability level. Values above 0.7 are considered sufficient to see differences between providers and the mean, and values above 0.9 are considered sufficient to see differences between pairs of providers (RAND Corporation, TR-653-NCQA, 2009).

Each year, the majority of provider-level reliability scores were greater than 0.9, and more than 90% of providers had reliability scores of 0.7 or greater. Therefore, the reliability of viral suppression can be considered to be sufficient to identify real differences in performance across providers. As previously mentioned, sample size is another driver of reliability and likely contributed to the lowest reliability scores (e.g., in 2014 site 8645 had a reliability of 0.21, and reported 3 of 4 patients with a medical visit were virally suppressed). However, median reliability was consistently over 0.95 during 2010-2014 and can help to support the conclusion that the reliability of this measure can be considered very good.

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**2b2. VALIDITY TESTING**

**2b2.1. What level of validity testing was conducted**? (*may be one or both levels*)  
 **Critical data elements** (*data element validity must address ALL critical data elements*)

**Performance measure score**

**Empirical validity testing** **Systematic assessment of face validity of performance measure score as an indicator** of quality or resource use (*i.e., is an accurate reflection of performance on quality or resource use and can distinguish good from poor performance*)

**2b2.2. For each level of testing checked above, describe the method of validity testing and what it tests** (*describe the steps―do not just name a method; what was tested, e.g., accuracy of data elements compared to authoritative source, relationship to another measure as expected; what statistical analysis was used)*

1. Face validity for the measure was established through a technical work group empaneled for the development of the measure. The technical work group consisted of leading researchers and providers in HIV care and treatment as well as governmental and nongovernmental public health officials from across the country. The technical work group used a modified Delphi process whereby experts presented the most current research to the work group members. The work group members discussed each of the presentations and identified data elements for each measure. The work group members voted on the domains for the proposed measures. The vote was based on importance, ability to assess quality care, feasibility to implement measure, and use in quality improvement activities (e.g. ability to improve measure score). The votes were tallied and draft components of the measures (including data elements) were returned to the work group for additional voting via survey. Consensus was reach when a simple majority agreed on the final set of measures.

Technical work group members:

Bruce Agins, NYS DOH AIDS Institute, New York, NY

Judy Bradford, Fenway Community Health, Boston, MA

John Brooks, CDC, Atlanta, GA

Karen Brudney, Columbia University, New York, NY

Laura Cheever, HEALTH RESOURCES AND SERVICES ADMINISTRATION HAB, Rockville, MD

Nikki Cockern, Wayne State University, Detroit, MI

Chinazo Cunningham, Montefiore Medical Center, New York, NY

William Cunningham, UCLA, Los Angeles, CA

Julie Dombrowski, University of Washington, Seattle, WA

Edward Gardner, Denver Health, Denver, CO

Elvin Geng, UCSF, San Francisco, CA

Thomas Giordano, Baylor College of Medicine, Houston, TX

Barb Gripshover, Cleveland ACT UP, Cleveland, OH

Deborah Konkle Parker, University of Mississippi, Jackson, MS

Tim Long, Alliance Chicago, Chicago, IL

Cheryl Lynn-Besch, Louisiana State University, New Orleans, LA

Julio Marrero, COSSMA, San Juan, PR

Brian Montague, Brown University, Providence, RI

Michael Mugavero, University of Alabama, Birmingham, AL

Sylvia Naar King, Wayne State University, Detroit, MI

Josiah Rich, Brown University, Providence, RI

Allan Rodriguez, Miami University, Miami, FL

Amy Sitapati, UCSD, San Diego, CA

Avnish Tripathi, University of South Carolina, Charleston, SC

Gregory Winstead, Christian Community Health Center, Chicago, IL

1. Face validity of the performance score was gained through a structured presentations (two identical presentations) to a national audience of Ryan White HIV/AIDS Program grant recipients, subrecipients, and stakeholders. Health Resources and Services Administration presented detailed information (e.g. work group process, numerator, denominator, exclusions, and data elements). The national audience includes organization that would use the measure on a routine basis for assessing quality of care and quality improvement purposes; providers of HIV health care; measurement experts and researchers; and people living with HIV. Four hundred and forty-five individuals participated in the webinars. Ryan White HIV/AIDS Program grant recipients, subrecipients, and stakeholders were invited to provide feedback about the implement the measure within their clinical quality management program including ability of the measure to assess quality care and feasibility of implementing the measure. Written feedback was submitted and reviewed.

**2b2.3. What were the statistical results from validity testing**? (*e.g., correlation; t-test*)

1. The technical work group developed a measure that could be implemented to assess and improvement quality of care by Ryan White HIV/AIDS Program grant recipients and subrecipients.
2. Sixty-nine individuals/organizations submitted 239 pieces of comments. Twenty comments were received regarding this measure. The comments included continuing efforts to align this measure across federal programs; availability of benchmarking data; clarification on measure details; and use in special populations (e.g. youth and young adults). Heath Resources and Services Administration did not receive any comments encouraging the discontinuation of the measure, inability of measure to assess quality of care; or inability to implement the measure.

**2b2.4. What is your interpretation of the results in terms of demonstrating validity**? (i*.e., what do the results mean and what are the norms for the test conducted?*

1. The technical work group was represented of the Ryan White HIV/AIDS Program grant recipients, subrecipients, and stakeholders and included clinical providers, researchers, and clinical quality management staff. The technical work group agreed upon a measure that could assess and improvement the quality of HIV care.
2. Health Resources and Services Administration provided detailed information about this measure to a large portion of the Ryan White HIV/AIDS Program grant recipients, subrecipients, and national partners (445 participants). Many comments (239) were received as a result of the presentations, which indicated a high degree of engagement with Health Resource and Services Administration regarding performance measures. Nearly 10% of the comments (20) were directly in response to this measure. None of the comments indicated that the measure should be discontinued, could not assess quality of care, or could not be implemented. No changes to the measure were made based on the feedback receive. Frequently asked questions were developed based on the feedback (available at [http://hab.Health Resources and Services Administration .gov/clinical-quality-management/performance-measure-portfolio](http://hab.hrsa.gov/clinical-quality-management/performance-measure-portfolio)).

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**2b3. EXCLUSIONS ANALYSIS (FOR MEASURS WITH EXCLUSIONS --- gap in visits and medical visit frequency)**

**NA**  **no exclusions — *skip to section*** [***2b4***](#section2b4)

**2b3.1. Describe the method of testing exclusions and what it tests** (*describe the steps―do not just name a method; what was tested, e.g., whether exclusions affect overall performance scores; what statistical analysis was used*)

**2b3.2. What were the statistical results from testing exclusions**? (*include overall number and percentage of individuals excluded, frequency distribution of exclusions across measured entities, and impact on performance measure scores*)

**2b3.3. What is your interpretation of the results in terms of demonstrating that exclusions are needed to prevent unfair distortion of performance results?** (*i.e., the value outweighs the burden of increased data collection and analysis.*  *Note:* ***If patient preference is an exclusion****, the measure must be specified so that the effect on the performance score is transparent, e.g., scores with and without exclusion*)  
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2b4. RISK ADJUSTMENT/STRATIFICATION FOR OUTCOME OR RESOURCE USE MEASURES**  
***If not an intermediate or health outcome, or PRO-PM, or resource use measure, skip to section*** [***2b5***](#section2b5)***.***

**2b4.1. What method of controlling for differences in case mix is used?**

**No risk adjustment or stratification**

**Statistical risk model with** Click here to enter number of factors **risk factors**

**Stratification by** Click here to enter number of categories **risk categories**

**Other,** Click here to enter description

**2b4.1.1 If using a statistical risk model, provide detailed risk model specifications, including the risk model method, risk factors, coefficients, equations, codes with descriptors, and definitions.** N/A

**2b4.2. If an outcome or resource use component measure is not risk adjusted or stratified, provide rationale and analyses to demonstrate that controlling for differences in patient characteristics (case mix) is not needed to achieve fair comparisons across measured entities**.

The Ryan White HIV/AIDS Program provides a comprehensive system of care that includes primary medical care and essential support services for people living with HIV who are uninsured or underinsured. The Program works with cities, states, and local community-based organizations to provide HIV care and treatment services to more than half a million people each year. The Program reaches approximately 52% of all people diagnosed with HIV in the United States.

As indicated in data presented earlier, the Ryan White HIV/AIDS Program is a public health, safety net program providing care to a high proportion of racial/ethnic minority, transgender, unstable housing, and low income people living with HIV. Many of people served by the Ryan White HIV/AIDS Program represent sociodemographics factors incorporate in risk adjusting models by many measures stewards. As a result, the Ryan White HIV/AIDS Program does not adjust for risk in its performance measures. Rather, it is a fundamental aspect of the Ryan White HIV/AIDS Program to identify disparities and work to improve quality of care for subpopulations. Additionally, this measure is not used for pay-for-performance, bonuses, or penalties.

**2b4.3. Describe the conceptual/clinical and statistical methods and criteria used to select patient factors (clinical factors or sociodemographic factors) used in the statistical risk model or for stratification by risk** (*e.g., potential factors identified in the literature and/or expert panel; regression analysis; statistical significance of p<0.10; correlation of x or higher; patient factors should be present at the start of care*) N/A

**2b4.4a. What were the statistical results of the analyses used to select risk factors?** N/A

**2b4.4b. Describe the analyses and interpretation resulting in the decision to select SDS factors (e.g. prevalence of the factor across measured entities, empirical association with the outcome, contribution of unique variation in the outcome, assessment of between-unit effects and within-unit effects)** N/A

**2b4.5. Describe the method of testing/analysis used to develop and validate the adequacy of the statistical model or stratification approach** (*describe the steps―do not just name a method; what statistical analysis was used*) N/A  
*Provide the statistical results from testing the approach to controlling for differences in patient characteristics (case mix) below*.  
***If stratified, skip to*** [***2b4.9***](#question2b49)

**2b4.6. Statistical Risk Model Discrimination Statistics** (*e.g., c-statistic, R-squared*)**:** N/A

**2b4.7. Statistical Risk Model Calibration Statistics** (*e.g., Hosmer-Lemeshow statistic*): N/A

**2b4.8. Statistical Risk Model Calibration – Risk decile plots or calibration curves**: N/A

**2b4.9. Results of Risk Stratification Analysis**: N/A

**2b4.10. What is your interpretation of the results in terms of demonstrating adequacy of controlling for differences in patient characteristics (case mix)?** (i*.e., what do the results mean and what are the norms for the test conducted*) N/A

**2b4.11.** **Optional Additional Testing for Risk Adjustment** (*not required, but would provide additional support of adequacy of risk model, e.g., testing of risk model in another data set; sensitivity analysis for missing data; other methods that were assessed*) N/A

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**2b5. IDENTIFICATION OF STATISTICALLY SIGNIFICANT & MEANINGFUL DIFFERENCES IN PERFORMANCE**

**2b5.1. Describe the method for determining if statistically significant and clinically/practically meaningful differences in performance measure scores among the measured entities can be identified** (*describe the steps―do not just name a method; what statistical analysis was used? Do not just repeat the information provided related to performance gap in 1b)*

To examine meaningful differences in performance, we examined the distribution of the proportion of patients with viral suppression across providers, by year. Performance scores were broken into the bottom 10% and top 90% providers to better characterize the gaps that remain across providers. Moreover, performance scores were examined with respect to NHAS 2020 Indicator 6: increase the percentage of persons with diagnosed HIV infection who are virally suppressed to at least 80 percent.

**2b5.2. What were the statistical results from testing the ability to identify statistically significant and/or clinically/practically meaningful differences in performance measure scores across measured entities?** (e.g., *number and percentage of entities with scores that were statistically significantly different from mean or some benchmark, different from expected; how was meaningful difference defined*)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | % Patients with viral suppression across providers | | | | |  | Providers achieving ≥80% suppression | | |
| Year | Mean | SD | Median | 10th %ile | 90th %ile |  | N | n | % |
| 2010 | 60.6 | 23.8 | 67.8 | 19.5 | 82.8 |  | 846 | 145 | 17.1 |
| 2011 | 64.7 | 22.1 | 71.4 | 31.9 | 84.9 |  | 811 | 207 | 24.5 |
| 2012 | 69.9 | 20.3 | 75.6 | 40.2 | 88.0 |  | 816 | 277 | 32.7 |
| 2013 | 76.1 | 17 | 80.7 | 57.1 | 90.2 |  | 823 | 435 | 51.4 |
| 2014 | 80.3 | 15.5 | 84.2 | 65.0 | 93.1 |  | 813 | 530 | 65.2 |

**2b5.3. What is your interpretation of the results in terms of demonstrating the ability to identify statistically significant and/or clinically/practically meaningful differences in performance across measured entities?** (i*.e., what do the results mean in terms of statistical and meaningful differences?*)

The table above demonstrates meaningful variability across providers, allowing for the identification of meaningful differences across sites. Specifically, the measure is able to detect providers with better or worse than median performance scores. In 2014, the bottom 10% of providers had viral suppression rates of 65.0% or lower; the top 90% of providers had viral suppression rates of 93.1% or higher. While this gap appears to be narrowing over time, a meaningful difference of 28.1 percentage points remains, demonstrating the value of the measure in identifying sites based on poor performance relative to the top performers.

Provider-level performance differences observed in the table above also underscore improvements in the proportion of patients with viral suppression in achieving 80% viral suppression. In 2014, of 813 providers, 530 (65.2%) had at least 80% of patients reach viral suppression. Additionally, the overall percentage of patients with viral suppression was 80.3%; however, given the large population that the RWHAP serves, even the poorest performing sites (e.g., bottom 10%) represent a substantial number of patients.

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**2b6. COMPARABILITY OF PERFORMANCE SCORES WHEN MORE THAN ONE SET OF SPECIFICATIONS**

***If only one set of specifications, this section can be skipped.***

**2b6.1. Describe the method of testing conducted to compare performance scores for the same entities across the different data sources/specifications** (*describe the steps―do not just name a method; what statistical analysis was used*) N/A

**2b6.2. What were the statistical results from testing comparability of performance scores for the same entities when using different data sources/specifications?** (*e.g., correlation, rank order*) N/A

**2b6.3. What is your interpretation of the results in terms of the differences in performance measure scores for the same entities across the different data sources/specifications?** (i*.e., what do the results mean and what are the norms for the test conducted*) N/A  
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**2b7. MISSING DATA ANALYSIS AND MINIMIZING BIAS**

**2b7.1. Describe the method of testing conducted to identify the extent and distribution of missing data (or nonresponse) and demonstrate that performance results are not biased** due to systematic missing data (or differences between responders and nonresponders) and how the specified handling of missing data minimizes bias (*describe the steps―do not just name a method; what statistical analysis was used*)

Based on the method used to calculate the viral suppression performance score, conducting missing data analysis is not applicable for this measure. Specifically, the logic used to determine the number of patients with viral suppression (a) relied on available viral load data (i.e., count data in the form of copies/ml). If the results of a viral load test were present for a given patient, the patient was considered to have had a viral load test. If no viral load count data were present for a given patient, the patient was considered to have had no viral load test during the measurement year (b1). Additionally, because viral suppression was conditional on patients having available viral load count data, among patients with a viral load test, the viral suppression status could only be calculated for those with count data, so there were no missing data on viral suppression (<200 copies/mL).

**2b7.2. What is the overall frequency of missing data, the distribution of missing data across providers, and the results from testing related to missing data?** (*e.g.,**results of sensitivity analysis of the effect of various rules for missing data/nonresponse; if no empirical sensitivity analysis, identify the approaches for handling missing data that were considered and pros and cons of each*)

N/A (see 2b7.1)

**2b7.3. What is your interpretation of the results in terms of demonstrating that performance results are not biased** due to systematic missing data (or differences between responders and nonresponders) and how the specified handling of missing data minimizes bias**?** (i*.e., what do the results mean in terms of supporting the selected approach for missing data and what are the norms for the test conducted; if no empirical analysis, provide rationale for the selected approach for missing data*)

N/A (see 2b7.1)