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December 17, 2021

Subject: Centennial Care 2.0 Physical Health Program Risk-Adjustment Methodology for the Contract Period January 1, 2022 through June 30, 2022

Dear Nicole Comeaux:

In partnership with the State of New Mexico Human Services Department, Medical Assistance Division (State), Mercer Government Human Services Consulting (Mercer), as part of Mercer Health & Benefits LLC, has developed a risk-adjustment methodology that will be applied to the Centennial Care 2.0 Physical Health (CC-PH) capitation rates effective during the January 1, 2022 through June 30, 2022 (2022a) period. The risk-adjustment results will be applied to separate capitation rates by the following (CC-PH) risk-adjusted rate cells:

- Temporary Assistance to Needy Families/Aid to Families with Dependent Children (TANF/AFDC) 2 months–20 years male and female (M&F) and Children, Youth and Families Department (CYFD) 2 months–21 years M&F
- TANF/AFDC 21+ M&F
- Supplemental Security Income (SSI) and Waiver 1+ M&F
- Other Adult Group (OAG) 19–64 M&F

The cohorts comprising each risk-adjusted rate cell are provided in Appendix E enclosed in this letter. The current cohorts for pregnant women (011) and newborns (001 and 006) will not be risk-adjusted. This letter outlines the specific methodology used in developing the risk-adjusted rate factors for 2022a.

Updates from the Previous 2021b Cycle

Updates have been made for the 2022a risk-adjustment methodology compared to the previous July 2021 through December 2021 (2021b) risk-adjustment process. This section contains a summary of the updates.

- **Study Period:** The data used to perform the risk assessment has been updated from the prior 2021b application period. This data is referred to as the study period, which utilized managed care organization (MCO) encounter claims with dates of service from calendar year January 1, 2020 through December 31, 2020 (CY2020), with data runout through June 2021.
- **Enrollment Snapshot Month:** For the risk-adjustment process applicable for the 2022a results, members were assigned to an MCO and rate cell based on their enrollment as of September 2021, which is referred to as the enrollment snapshot month. The prior risk-adjustment process for 2021b utilized a March 2021 snapshot. Should the Public Health Emergency (PHE) and according Maintenance of Eligibility end during the 2022a period, additional enrollment snapshot updates may be considered to account for potential impacts from continuing traditional member renewal and disenrollment processes.
- **Chronic Illness and Disability Payment System plus Pharmacy (CDPS+Rx) Model Version:** For the 2022a risk-adjustment period, a more recent version of the CDPS+Rx model was available and utilized, model version 6.5. For the 2021b risk-adjustment period, the previous version of the model was utilized, model version 6.4.
- **Updated New Mexico Specific Cost Weights Version 1.1:** Effective for the CY2022 rating period, the Hepatitis C Virus risk corridor will be removed and replaced with a new risk mitigation arrangement for CC-PH, the High Cost Risk Pool. Hepatitis C Virus costs have been incorporated into the CY2022 capitation rates accordingly. To align the cost weights with the capitation rates, the New Mexico-specific cost weights have been updated to include Hepatitis C Virus costs. The cost weights already aligned with the $175,000 attachment point for the risk pool due to the existing member-level truncation; therefore, no additional updates were incorporated. The updated New Mexico-specific cost weights version 1.1 are included in Appendix D.

CDPS+Rx Background

The State and Mercer selected the CDPS or CDPS+Rx model to be used for risk-adjusting (CC-PH) payments. While many risk-adjustment models exist, CDPS+Rx was specifically designed for Medicaid programs. This model is a disease classification system developed by researchers from the University of California San Diego (UCSD) in conjunction with clinical consultants who assisted in the disease classification process. This model uses the diagnostic classification from the CDPS model in conjunction with select pharmacy categories from the Medicaid Rx model (restricted version). The combined diagnostic and pharmacy-based model is referred to as CDPS+Rx.

The CDPS+Rx model is based on national experience from more than 30 Medicaid programs. However, more recent and complete State data was available to develop a State-specific CDPS+Rx model. This State-specific model more closely reflects New Mexico's CC-PH program. Further background on the New Mexico-specific cost weights can be found in Appendix B.

The framework from Version 6.5 of CDPS+Rx was used to develop the risk scores effective January 1, 2022.

The CDPS+Rx model offers two methods for assessing health risk. The first approach is referred to as the *prospective method*, which measures existing conditions and their ability to predict future health care costs. The second approach is referred to as the *concurrent method*, which measures existing conditions

and their ability to measure existing or past risk. Because the prospective application methodology (that uses existing conditions to predict future health care intensity) is consistent with the current prospective capitation rate development process, the prospective method will be used to adjust payments.

Risk-Adjustment Methodology Overview

Using the CDPS+Rx model, the most recent and complete data available was used to evaluate the underlying risk of the managed care program. Below are the steps used to assess the populations' risk for payments, which are covered in more detail in the remainder of this letter.

- Collect MCO-submitted encounter data necessary to perform the risk assessment.
- Calculate recipient risk scores (acuity factors) for those with sufficient historical experience (six months of continuous or non-continuous eligibility in the 12-month study period).
- Assign scored recipients to a MCO and rate cell based on enrollment as of September 2021.
- Calculate the MCO average risk score for the scored recipients by each rate cell.
- Determine the assumed risk score for the unscored recipients, which is the MCO average by rate cell for the CC-PH program.
- Combine the scored and unscored risk scores, producing the MCO unadjusted risk score.
- Perform adjustments necessary to maintain budget neutrality.
- Apply final budget neutral risk scores to the contracted base rates, producing MCO-specific rates.

Individual Acuity Factors Development

Eligibility and managed care encounter claims information were used to develop a risk score for individuals. This risk score is expressed as a numeric value, referred to as an acuity factor. Using the CDPS+Rx model and the corresponding New Mexico-specific cost weights, an acuity factor for each scored recipient was calculated. The cost weights used in this risk-adjustment analysis are provided in Appendix D.

Each individual's acuity factor was based on both accepted and denied managed care encounters incurred over a 12-month study period and the individual's demographic profile. The 2022a risk-adjustment process used CY2020 data as the base study period to assess the acuity of each scored recipient.

In preparing the data for risk assessment, the data was reorganized to allow for the use of all reported diagnosis codes for institutional and professional records within the CDPS+Rx logic. For the diagnosis indicators, the presence of a single diagnosis, regardless of position on the claim (primary, secondary, tertiary, etc.), or a single national drug code is sufficient to support a classification into a CDPS+Rx diagnostic category. The risk-assessment process currently captures diagnosis codes out to the twelfth position for encounter data.

Additionally, certain records were excluded from the risk-adjustment process, detailed below:

- Laboratory/radiology exclusion: Laboratory and diagnostic radiology claims were excluded from the disease classification process as this data may not be appropriate for disease classification. These services are indicative of the condition being tested and often do not indicate the presence of a disease condition. In order to reduce the number of false positives within the results, laboratory and diagnostic radiology claims provided in a non-inpatient setting were removed from disease classification.

- Services with questionable diagnostic information: Consistent with general risk-adjustment practices, services prone to invalid or inadequate diagnostic information were excluded from the risk assessment component. This included claim types associated with Dental, Medical Supply (Durable Medical Equipment), and Transportation services.

- Newborn claims under the mother's ID: A record is excluded from the risk-adjustment process if it contains a newborn diagnosis code and a member age greater than one. This is done to avoid using any records that are for a newborn, but billed under the mother's ID. Specifically, the newborn diagnosis codes used were Z38.00, Z38.2, Z38.01, Z38.1, Z38.30, Z38.5, Z38.31, Z38.4, Z38.61, Z38.63, Z38.65, Z38.68, Z38.8, Z38.62, Z38.64, Z38.66, Z38.69, and Z38.7.

Once the data was reorganized to utilize all diagnosis codes, regardless of position and the exclusions described above were made, each individual was assigned an acuity factor based on the CDPS+Rx model applicable to each individual's rate cell. To assign a member to a demographic category within the model, age was calculated as of the end of the study period.

MCO Risk Score Development

For recipients who received a score (referred to as scored recipients) in the individual acuity factor development process, each recipient's individual acuity factor was assigned to the MCO and rate cell based on each recipient's September 2021 eligibility data. Using this process of assigning scored members to MCOs, the average risk score for scored recipients was calculated for each MCO and rate cell combination by using a straight average.

Recipients who did not receive a score (referred to as unscored recipients) were assigned the average risk score for the scored recipients within the MCO and rate cell, based on enrollment as of September 2021. This assignment is based on the premise that MCOs tend to attract members with similar risk characteristics over time.

The average risk scores for the scored recipients and the assumed risk scores for the unscored recipients were combined into a single value for each MCO and rate cell combination to calculate the MCO unadjusted risk score. To accomplish this, the risk scores for the scored and unscored recipients were weighted together based on the count of recipients in each subpopulation.

Budget Neutrality

To ensure the risk-adjustment application will not result in unintended reductions or increases in total capitation payments, the MCO unadjusted risk scores are adjusted by the rate cell's all MCO average risk score. This produces the MCOs' budget neutral risk scores. The intent of this adjustment is to recalibrate all of the MCO risk scores to yield a population average of 1.0, thereby maintaining the budget neutrality of the managed care program. To calculate the rate cell average used within the

budget neutrality calculation, each MCO's unadjusted risk score was weighted by the total recipients. Budget neutrality calculations were performed separately for each risk-adjusted rate cell. The budget neutral risk scores are then multiplied by the capitation rate subject to risk-adjustment for each risk-adjusted rate cell.

Coronavirus Disease 2019 PHE

These risk-adjustment results have been calculated to align as closely as practicable with the benefit package and utilization patterns expected during a standard contract period. Due to the uncertainty of the current environment, no adjustments were made to account for any unforeseen effects of the Coronavirus Disease 2019 PHE during the contract period.

Caveats

The risk-adjustment processes described above were developed in accordance with the CDPS and CDPS+Rx models. The CDPS and CDPS+Rx models also fulfill the related requirements outlined in the Medicaid Managed Care Final Rule (CMS-2390-F) and follow the guidelines established by Actuarial Standard of Practice No. 45, The Use of Health Status Based Risk Adjustment Methodologies, and other applicable Actuarial Standards of Practice.

In preparing the risk assessment, Mercer has used and relied upon enrollment, eligibility, encounter, and other information supplied by the State (and its vendors). The State (and its vendors) is responsible for the validity and completeness of these supplied data and information. Mercer has reviewed the data and information for internal consistency and reasonableness, but Mercer did not audit it. If the data and information is incomplete or inaccurate, the results accompanying this letter may need to be revised accordingly.

The budget neutral risk scores developed from the methodology described above are projections of estimated relative risk. Actual relative risk may differ from the estimated levels. The State will use the budget neutral risk scores to adjust the base capitation rates in effect for the 2022a period as a means of matching MCO payments to their relative risks. Use of the risk-adjustment results for any purpose beyond that stated may not be appropriate. Mercer and the State are not responsible for the consequences for any unauthorized use. All estimates are based upon the information available at a point in time and are subject to unforeseen and random events. Therefore, any projection must be interpreted as having a likely range of variability from the estimate. Any estimate or projection may not be used or relied upon by any other party or for any purpose other than for which it was issued. Mercer and the State are not responsible for the consequences of any unauthorized use.

The risk-adjustment model produces precise adjustment factors that are applied to the capitation rates. However, acceptable variation exists within the calculated results due to the specific risk-adjustment model chosen, the various assumptions applied and the availability and accuracy of the source data utilized. While health-based risk-adjustment is not a perfect system that predicts all variation in individual and MCO costs, published results have shown that using health status, as a predictor of costs is a significant improvement over age/gender rating alone. The risk-adjustment model has been developed using an objective set of assumptions that are not intended to provide an advantage or disadvantage to any specific MCO. Per Centers for Medicare & Medicaid Services (CMS) guidelines, these final risk-adjustment factors have been normalized to produce budget neutral results. If any material changes

to these final results become necessary, all factors will need to be renormalized and payments should be reallocated across the MCOs in order to maintain budget neutrality.

This letter covers the development of 2022a risk scores to support risk adjustment of prospective capitation rates under the CC-PH program.

This letter is prepared on behalf of the State and is intended to be relied upon by the State, CMS, and the CC-PH MCOs. It should be read in its entirety and has been prepared under the direction of Stewart Campbell, ASA, MAAA and Shea Ingram, ASA, MAAA, who are members of the American Academy of Actuaries and meets its US Qualification Standard for issuing the statements of actuarial opinion herein.

To the best of Mercer's knowledge, there are no conflicts of interest in performing this work.

The suppliers of data are solely responsible for its validity and completeness. Mercer has reviewed the data and information for internal consistency and reasonableness, but we did not audit it. All estimates are based upon the information and data available at a point in time and are subject to unforeseen and random events and actual experience will vary from estimates.

Mercer expressly disclaims responsibility, liability, or both for any reliance on this communication by third parties or the consequences of any unauthorized use.

Please feel free to contact Stewart Campbell at +1 206 487 6252, Shea Ingram at +1 602 522 6460, or Kelsey Rea-Clark at +1 480 255 4014 if you have any questions related to this letter.

Sincerely,

Kelsey Rea-Clark
Principal

Enclosure

Appendix A: Summary of Changes

In January 2017, the State implemented a health-based risk-adjustment system for the CC-PH and OAG programs. The State and Mercer selected to utilize the Medicaid Rx risk-adjustment model for adjusting payments upon implementation. While many risk-adjustment models existed, Medicaid Rx was specifically designed for Medicaid programs. This model is a disease classification system developed by Todd Gilmer and other researchers from UCSD. The model uses pharmacy data to classify individuals into disease conditions. These pharmacy data are used in conjunction with member demographics (age/gender categories) to measure anticipated health risk. The pharmacy data was determined to be the most accurate and complete source of claims-level information for the State's managed care program; however, the State's long-term goal was to move toward a diagnosis-based risk-adjustment model.

In January 2021, the State implemented updates to the prospective risk adjustment process for the CC-PH program. The State transitioned to utilize the most commonly used Medicaid risk-adjustment model, the CDPS+Rx model. The CDPS+Rx model classifies members into demographic (age/gender) categories and disease conditions (based on diagnoses and pharmacy usage) to predict health risk. Each of these categories are assigned a cost weight that estimates the relative cost associated with each of the categories. Along with this change, the State transitioned from annual to semi-annual updates to risk scores, incorporating the most recent available study period data and enrollment snapshot each cycle.

While the CDPS+Rx model developers publish cost weights that can be leveraged by programs to risk adjust payments, the State decided to develop New Mexico-specific cost weights that reflect the unique populations and benefits of the CC-PH program. The State contracted with Mercer, to develop the New Mexico-specific cost weights.

Effective for the CY2022 rating period, the Hepatitis C Virus risk corridor will be removed and replaced with a new risk mitigation arrangement for CC-PH, the High Cost Risk Pool. Hepatitis C Virus costs have been incorporated into the CY2022 capitation rates accordingly. To align the cost weights with the capitation rates, New Mexico-specific cost weights have been updated to include Hepatitis C Virus costs. The cost weights already aligned with the $175,000 attachment point for the risk pool due to the existing member-level truncation; therefore, no additional updates were incorporated. The updated New Mexico-specific cost weights version 1.1 are included in Appendix D.

Appendix B: New Mexico-Specific Cost Weight Development

Cost Weight Development Overview

Within the CDPS+Rx model, members are assigned to one demographic category based on their age/gender and into disease categories. For disease classification, members may be assigned to one, many or no disease categories. In order to attribute member costs across multiple categories, a statistical approach is used to develop the cost weights, which is comprised of the following steps:

Step Reference	Task Performed	Data Used
Step 1: Model Category Assignment (independent variable)	Perform risk assessment, where members are assigned into the model's disease categories and demographics.	CY2017 and CY2018
Step 2: Beneficiary Costs (dependent variable)	Calculate relative per member per month (PMPM) costs from covered benefits where the costs are measured compared to the rate cell average PMPM cost.	CY2018 and CY2019
Step 3: Regression Analysis	Develop cost weights using a linear regression approach and the data from the first two steps, where the results are adjusted as needed to improve model application performance.	Linked analysis using risk assessment data from Step 1 and relative costs from Step 2.

Step 1: CDPS+Rx Category Assignment

In this step, the CY2017 and CY2018 data are run through the CDPS+Rx model. As a result of this process, each member is assigned to their applicable model categories comprised of disease and demographic categories.

Data Preparation

To develop prospective cost weights, three years of State data were used. Historical CY2017 and CY2018 data were used to assign beneficiaries who met the scoring criteria to disease conditions for model classification (Step 1). Historical CY2018 and CY2019 data were used to develop beneficiary costs (Step 2), which is described in the next section.

Eligibility data and MCO encounter data were used within all steps of the cost weight development process. For the disease classification component of the cost weight development, all available

diagnoses (up to 12 positions) were included in the MCO encounter data provided to Mercer.[1] These 12 available diagnosis positions within the CY2017 and CY2018 data were used within cost weight development. The CDPS+Rx model inherently excludes ill-defined conditions with how the diagnoses are grouped and does not require any exclusions specific to ill-defined conditions prior to data processing. Several data exclusions were applied in preparing the data for the risk assessment component to account for data that could result in questionable disease classifications.

Laboratory and Diagnostic Radiology Exclusion

Consistent with general risk-adjustment practices, laboratory, and diagnostic radiology claims were excluded from the disease classification process as this data may not be appropriate for disease classification. These services are indicative of the condition being tested and often do not indicate the presence of a disease condition. In order to reduce the number of false positives within the results, laboratory and diagnostic radiology claims provided in a non-inpatient setting were removed from disease classification.

Newborn Records under the Mother's Medicaid Identification

If the Medicaid ID for a newborn has not yet been assigned, encounters for newborns may be processed with the mother's Medicaid ID. Newborn claims or encounters that have a non-newborn Medicaid ID were removed from the risk-adjustment data as a standard data process.

Exclusion of Services with Questionable Diagnostic Information

Consistent with general risk-adjustment practices, services prone to invalid or inadequate diagnostic information were excluded from the disease flagging component of the analysis. This included claim types associated with Dental, Medical Supply, (Durable Medical Equipment) and Transportation services.

CDPS+Rx Model Application

Following the preparation of the data for risk-assessment processing, the data were run through Version 6.4 of the CDPS+Rx model. This was the latest version of the model available at the start of the cost weight development.

The CDPS+Rx disease classification (including child interaction factors) varies slightly for TANF Adult and OAG Combined, TANF Children, and SSI (all ages combined). Since member rate cell assignment will be determined within Step 2 of cost weight development, each beneficiary was processed through the CDPS+Rx logic for each of the three populations.

Step 2: Beneficiary Costs

In this step, CY2018 and CY2019 data were used to determine the total cost of care (TCOC) for each beneficiary on a PMPM basis. This section describes how the TCOC was developed, including program change adjustments and how this information was converted to a relative basis.

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[1] Admitting diagnoses were not used as they are less reliable than diagnoses captured at discharge.

PMPM Cost Development

The total PMPM was calculated for each beneficiary using CY2018 and CY2019 encounter and corresponding eligibility data. The PMPMs included costs for all managed care covered benefits covered under the prospective capitation rates subject to risk-adjustment. Similar to prospective capitation rates, the PMPMs were adjusted to reflect the removal of claim costs in the retroactive eligibility and identified overpayments related to duplicate claims and claims for members not eligible for managed care on the date of service. In addition, costs not subject to risk-adjustment were excluded from consideration in the cost weight development process and are outlined below.

Non-Risk-Adjusted Program and Cohort Exclusion

Cost weights are developed in alignment with the prospective capitation rates subject to risk adjustment, which includes the CC-PH benefit package. To this end, behavioral health and long-term services and supports claims were excluded from the beneficiary cost development for data years CY2018 and CY2019. Similarly, costs for the non-risk-adjusted cohorts in the CC-PH program for the newborn (001 and 006) and pregnant women (011) cohorts were excluded from the beneficiary cost development.

Community Benefit Services

Community Benefit costs included in the prospective capitation rates for the OAG rate cell were developed on an individual MCO basis. For this reason, Community Benefit service costs have been excluded from the beneficiary cost development data years CY2018 and CY2019.

Truncation of High-Cost Outliers

To improve the statistical significance and reliability of the model, high-cost outlier members' costs were truncated. Truncation was used to reduce the impact of high cost outliers and smooth inconsistent results due to lower sample sizes. Member-level costs were truncated on an annual cost basis at $175,000. This truncation level resulted in costs for less than 0.5% of members to be truncated. Additionally, this truncation level aligns with the attachment point of the High Cost Risk Pool applicable to the CC-PH program.

Relative Costs

Risk-adjustment measures beneficiary health risk relative to the average population. To account for the relativity aspect, the beneficiary's average annual cost is divided by the annual average cost of the individual's population (TANF Adult and OAG Combined, TANF Children, and SSI).

Step 3: Regression Analysis

In this step, the data from the prior two steps are linked together, eligible members are identified, the regression is performed and the model is refined (as needed). This section describes the data preparation process prior to the regression, CDPS+Rx model standard requirements (specifications) and the iterative process used to develop the final cost weights.

Data Preparation

With a prospective model, disease conditions flagged in one year are aligned with the following year's health costs. CY2017 and CY2018 CDPS+Rx disease conditions (developed in Step 1) were paired with

CY2018 and CY2019 relative PMPM costs (developed in Step 2) for each scored individual, respectively. Using these years of data, a regression analysis was performed separately on each of the three population groups (TANF Adult and OAG Combined, TANF Children, and SSI). This aligns with the national version of the CDPS+Rx model approach of developing separate cost weights for each of these three population groups.

Members that met both of the following requirements were included in the cost weight development.

Requirement	Added Context
Met the scoring criteria in CY2017 and CY2018 disease flagging years, respectively; six or more months of Medicaid eligibility (non-continuous) and enrolled in Centennial Care 2.0.	This requirement ensures that the beneficiary had adequate time to utilize services that will provide the diagnostic and drug data used for disease classification.
Eligible at least one month in risk-adjusted rate cell in CY2018 and CY2019 beneficiary cost development years, respectively.	Requiring both components ensures that members had inputs for each regression input step.

A separate set of regression inputs were produced for each population group, where the beneficiaries were assigned based on their Medicaid eligibility in the CY2018 and CY2019 cost years, respectively. For beneficiaries classified into two or more population groups in the year, their experience (costs and member months) was assigned to each group based on their months of eligibility during the year.

Smoothing Adjustments

The CDPS+Rx national model was developed from data comprised of 30+ Medicaid programs. The national model framework served as the starting point for the New Mexico-specific cost weights. As outlined in previous sections more recent, New Mexico-specific data is being used to better represent the populations and benefits expected for the CC-PH program. With the change in the underlying data, smoothing was required in certain instances to improve model performance in New Mexico.

Below is a summary of the aspects reviewed and smoothing adjustments applied to the cost weights.

- **Hierarchy Maintenance:** In most cases, each major category is comprised of several intensity levels to recognize that there is a wide range of conditions and costs. Higher intensity categories are expected to have higher costs (cost weights) than lower subcategories. There were some situations where the hierarchy was not maintained after running initial regression results. In these situations, the impacted subcategories were combined as a single variable and were assigned the same cost weight.

- **Negative Coefficients:** For the disease categories (excludes child interaction factors), negative cost weights are problematic, because MCOs/providers may remove valid diagnostic information in an effort to improve their risk scores. To avoid this situation, CDPS+Rx model categories with negative cost weights are removed from the model by setting the cost weight to zero or supplementing the category with the CDPS+Rx national cost weight. The removed category will still be provided within CDPS+Rx output, including the prevalence reports; however, no associated weight will be assigned to these categories.

- **Low Statistical Significance:** Statistical significance was defined by the t-value from the regression. The t-value is a predictor of how meaningful the variable is to the regression. For cost weight development, a t-value below the absolute value of three was considered to have low statistical significance and was evaluated for potential removal of the variable or blending with another subcategory.
- **Low Observations:** A disease category may not have enough observations to be considered to be fully credible. For the State's cost weight development, credibility adjustments were considered if there were less than 500 observations in a disease category. To evaluate the cost weight for possible modification, national cost weights were used for benchmarking and/or blending.

The results of each of the smoothing adjustments described above were either: applied to combine cost weights in a major diagnostic category, used in removing the cost weight, used in blending with National cost weights, or resulted in making no adjustment. Final smoothing adjustments to the State-specific cost weights are detailed in Appendix C.

Final CDPS+Rx Cost Weights

Appendix D contains the Version 1.1 State-specific cost weights that were developed using the process described in this section. These cost weights were used effective January 2022 to risk adjust the CY2022 CC-PH Prospective capitation rates.

Model Performance

This section contains model effectiveness metrics at the beneficiary level (as measured by R-squared statistics). These metrics are provided separately by model and population group.

Individual R-Squared Statistics

Individual R-squared is the most commonly used metric to measure model performance within the risk adjustment market. Individual R-squared values are highly influenced by outlier observations and are therefore a statistic that should be observed with great care. Individual R-squared values range from zero to one. Values closer to one indicate better performance. The individual R-squared statistics derived from the Version 1.1 cost weights are provided within the following table.

Population Group	CDPS+Rx Individual R-Squared Statistics
TANF Children	0.107
TANF Adult and OAG Combined	0.171
SSI	0.245

The above results are comparable to other Medicaid programs that utilize prospective cost weights and are an improvement over traditional age/gender rating performance. These results also represent and improvement over the previous Medicaid Rx model and national cost weight performance provided in the following table, based on published values from the model developer.

Population Group	National Medicaid Rx Individual R-Squared Statistics
TANF Children	0.069
TANF Adult	0.088
SSI	0.161

Appendix C: CDPS+Rx Smoothing Adjustments

TANF Adult and OAG Combined Modifications and Explanation

Categories	Action	Rationale
Age >= 65	Blend with national cost weight	Small number of observations and low statistical significance
Cardiovascular, very high	Blend with national cost weight	Small number of observations
Skeletal, low and Skeletal, very low	Blend	Hierarchy issue
Central Nervous System, high	Blend with national cost weight	Small number of observations
Renal, extra high	Blend with national cost weight	Small number of observations
Renal, medium and Renal, low	Blend	Hierarchy issue
Substance abuse, low and Substance abuse, very low	Blend	Hierarchy issue
Metabolic, high and Metabolic, medium	Blend	Hierarchy issue
Infectious, medium and Infectious, low	Blend	Hierarchy issue
Hematological, extra high	Blend with national cost weight	Small number of observations
Hematological, very high and Hematological, medium	Blend	Hierarchy issue
Developmentally Disabled, low	Remove	Small number of observations and low statistical significance

TANF Children Modifications and Explanation

Categories	Action	Rationale
Cardiovascular, very high	Blend with national cost weight	Small number of observations
Psychiatric, high	Blend with national cost weight	Small number of observations
Central Nervous System, high	Blend with national cost weight	Small number of observations
Skin, high and Skin, low	Blend then supplement with national cost weight	Hierarchy issue, low statistical significance, and small number of observations
Renal, extra high and Renal, very high	Replace with national cost weight	Hierarchy issue and small number of observations
Renal, medium	Blend with national cost weight	Small number of observations
Substance Abuse, low and Substance Abuse, very low	Blend	Hierarchy issue
Cancer, very high and Cancer, high	Replace with national cost weight	Hierarchy issue and small number of observations
Cancer, medium and Cancer, low	Blend	Hierarchy issue, small number of observations
Metabolic, high and Metabolic, medium	Blend	Hierarchy issue
Cerebrovascular, low	Blend with national cost weight	Small number of observations
AIDS, high and Infectious, high	Blend then supplement with national cost weight	Hierarchy issue, small number of observations
HIV, medium	Blend with national cost weight	Small number of observations
Hematological, extra high	Blend with national cost weight	Small number of observations
Hematological, very high Hematological, medium and Hematological, low	Blend	Hierarchy issue
Developmentally Disabled, medium	Blend with national cost weight	Small number of observations

SSI Modifications and Explanation

Categories	Action	Rationale
Age < 1	Blend with national cost weight	Small number of observations
Age >= 65	Blend with national cost weight	Small number of observations
Cardiovascular, very high	Blend with national cost weight	Small number of observations
Psychiatric, high Psychiatric, medium Psychiatric, medium low and Psychiatric, high, low	Blend	Hierarchy issue, low statistical significance, and negative weight
Pulmonary, high	Blend with national cost weight	Small number of observations
Skin, high	Blend with national cost weight	Small number of observations
Renal, extra high	Blend with national cost weight	Small number of observations
Renal, medium	Blend with national cost weight	Small number of observations
Cancer, very high	Blend with national cost weight	Small number of observations
Cancer, medium and Cancer, low	Blend	Low statistical significance
Metabolic, high and Metabolic, medium	Blend	Hierarchy issue
Pregnancy, incomplete and Pregnancy, complete	Remove	Hierarchy issue, small number of observations, low statistical significance, and negative weight
Eye, low and Eye, very low	Blend	Hierarchy issue and low statistical significance
AIDS, high	Blend with national cost weight	Small number of observations
Infectious, high	Blend with national cost weight	Small number of observations

Categories	Action	Rationale
Infectious, medium and Infectious, low	Blend	Hierarchy issue and low statistical significance
Hematological, extra high	Blend with national cost weight	Small number of observations
Hematological, very high	Blend with national cost weight	Small number of observations
Children's Cardiovascular, very high	Blend with national cost weight	Small number of observations
Children's Cardiovascular, medium	Blend with national cost weight	Small number of observations
Children's Pulmonary, high	Blend with national cost weight	Small number of observations and low statistical significance
Children's Metabolic, high	Remove	Hierarchy issue, small number of observations, low statistical significance, and negative weight
Children's HIV, medium	Blend with national cost weight	Small number of observations and low statistical significance
Children's Infectious, medium	Blend with national cost weight and adjusted	Small number of observations and hierarchy issue when combined with Infectious, medium
Children's Hematological, extra high	Blend with national cost weight	Small number of observations and low statistical significance

Appendix D: State-Specific Prospective Cost Weights

CDPS+Rx Category	Description	TANF Children	TANF Adult and OAG Combined	SSI
Intercept	Intercept	0.6646	0.2165	0.1434
Demographic	Age under 1	0.1701	n/a	-0.0605
	Age 1 to 4	0.0279	n/a	0.0131
	Male age 5 to 14	-0.0856	n/a	0.0592
	Female age 5 to 14	0.0023	n/a	0.1631
	Male age 15 to 24	n/a	-0.1077	-0.0204
	Female age 15 to 24	0.3501	0.0657	0.1134
	Male age 25 to 44	n/a	n/a	n/a
	Female age 25 to 44	n/a	0.0968	0.0584
	Male age 45 to 64	n/a	0.2724	0.1812
	Female age 45 to 64	n/a	0.2330	0.1635
	Age 65 and over	n/a	0.5056	0.0721
Cardiovascular	Cardiovascular, very high	19.5324	2.4859	2.7413
	Cardiovascular, medium	2.2480	1.2167	0.7012
	Cardiovascular, low	0.6804	0.4119	0.2146
	Cardiovascular, extra low	0.3209	0.1728	0.0615
Psychiatric	Psychiatric, high	0.9103	0.4446	0.0085
	Psychiatric, medium	0.6029	0.2178	0.0085
	Psychiatric, medium low	0.3515	0.1781	0.0085
	Psychiatric, low	0.2608	0.1670	0.0085
Skeletal and Connective	Skeletal, medium	1.1398	0.8417	0.5257
	Skeletal, low	0.5798	0.4056	0.2040
	Skeletal, very low	0.2895	0.4056	0.1547
Central Nervous System (CNS)	CNS, high	9.8553	3.6754	1.6412
	CNS, medium	2.8379	1.3798	0.5368
	CNS, low	0.7540	0.4967	0.1448
Pulmonary	Pulmonary, very high	n/a	n/a	1.4017
	Pulmonary, high	5.6971	2.3991	1.2265
	Pulmonary, medium	1.3571	0.8266	0.7352
	Pulmonary, low	0.4993	0.3047	0.1826

CDPS+Rx Category	Description	TANF Children	TANF Adult and OAG Combined	SSI
Gastrointestinal	Gastrointestinal, high	7.2790	1.4366	0.5848
	Gastrointestinal, medium	0.8210	0.9196	0.5814
	Gastrointestinal, low	0.4820	0.2720	0.1116
Diabetes	Diabetes, type 1 high	n/a	2.1856	1.4500
	Diabetes, type 1 medium	n/a	2.1856	1.4500
	Diabetes, type 2 medium	2.5907	0.5743	0.3857
	Diabetes, type 2 low	2.5907	0.5743	0.3857
Skin	Skin, high	0.6743	2.9573	1.3968
	Skin, low	0.6743	1.8754	0.8612
	Skin, very low	0.2230	0.3044	0.1922
Renal	Renal, extra high	13.5946	5.2768	4.4252
	Renal, very high	8.9451	1.2731	0.6465
	Renal, medium	1.8220	0.4099	0.5973
	Renal, low	0.4686	0.4099	0.2088
Substance Abuse	Substance abuse, low	0.2808	0.3987	0.3116
	Substance abuse, very low	0.2808	0.3987	0.2376
Cancer	Cancer, very high	24.1192	11.7666	4.9434
	Cancer, high	9.5657	3.0474	1.2353
	Cancer, medium	6.1679	1.6784	0.5549
	Cancer, low	6.1679	0.4402	0.5549
Developmental Disabilities (DD)	DD, medium	6.7228	n/a	0.2614
	DD, low	1.9513	n/a	0.0107
Genital	Genital, extra low	0.6690	0.1174	0.1237
Metabolic	Metabolic, high	2.0632	0.8306	0.5994
	Metabolic, medium	2.0632	0.8306	0.5994
	Metabolic, very low	0.6261	0.3884	0.1942
Eye	Eye, low	n/a	0.7842	0.0877
	Eye, very low	0.5956	0.3724	0.0877
Pregnancy	Pregnancy, complete	0.7641	0.0545	n/a
	Pregnancy, incomplete	1.8350	0.7852	n/a
Cerebrovascular	Cerebrovascular, low	1.5392	1.7123	0.1449
Infectious	AIDS, high	9.4257	5.7396	2.7466

CDPS+Rx Category	Description	TANF Children	TANF Adult and OAG Combined	SSI
Disease	Infectious, high	9.4257	1.4614	2.4576
	HIV, medium	1.4238	1.0872	0.4455
	Infectious, medium	1.2851	0.6770	0.3558
	Infectious, low	0.3057	0.6770	0.3558
Hematological	Hematological, extra high	47.2796	10.4885	13.1514
	Hematological, very high	1.3365	1.7261	1.6844
	Hematological, medium	1.3365	1.7261	1.2885
	Hematological, low	1.3365	0.8608	0.6997
Restricted Medicaid Rx Categories	Anti-coagulants	2.2480	1.2167	0.7012
	Cardiac	0.3209	0.1728	0.0615
	Depression/Psychosis/Bipolar	0.2608	0.1670	0.0085
	Diabetes	2.5907	0.5743	0.3857
	ESRD/Renal	8.9451	1.2731	0.6465
	Hemophilia/von Willebrands	47.2796	10.4885	13.1514
	Hepatitis	1.4238	1.0872	0.4455
	HIV	1.4238	1.0872	0.4455
	Infections, high	9.4257	1.4614	2.4576
	Inflammatory/Autoimmune	0.2895	0.4056	0.1547
	Malignancies	6.1679	1.6784	0.5549
	Multiple Sclerosis/Paralysis	2.8379	1.3798	0.5368
	Parkinson’s/Tremor	0.7540	0.4967	0.1448
	Seizure Disorders	0.7540	0.4967	0.1448
	Tuberculosis	0.4993	0.3047	0.1826
Child Interaction Factors	Cardiovascular, very high	n/a	n/a	0.7119
	Cardiovascular, medium	n/a	n/a	-0.0055
	CNS, high	n/a	n/a	n/a
	Pulmonary, very high	n/a	n/a	1.6919
	Pulmonary, high	n/a	n/a	0.5995
	Gastrointestinal, high	n/a	n/a	1.6777
	Metabolic, high	n/a	n/a	n/a
	HIV, medium	n/a	n/a	0.7438
	Infectious, medium	n/a	n/a	0.8336

CDPS+Rx Category	Description	TANF Children	TANF Adult and OAG Combined	SSI
	Hematological, extra high	n/a	n/a	8.1695

Appendix E: Category of Eligibility Crosswalk

The table below lists the risk-adjusted cohorts within each of the four risk-adjusted rate cells. Any cohort not listed below is not risk-adjusted.

Cohort	Cohort Description	Risk-Adjusted Rate Cell
002	TANF/AFDC 2 months–20 years M&F	TANF/AFDC 2 months–20 years M&F and CYFD 2 months–21 years M&F
012	CYFD 2 months–21 years M&F	
003	TANF/AFDC 21–49 F	TANF/AFDC 21+ M&F
004	TANF/AFDC 21–49 M	
005	TANF/AFDC 50+ M&F	
007	SSI & Waiver 1–20 years M&F	SSI & Waiver 1+ M&F
008	SSI & Waiver 21–39 F	
009	SSI & Waiver 21–39 M	
010	SSI & Waiver 40+, Aged 65+ M&F	
110	OAG, ages 19–20 Male	OAG 19–64 M&F
111	OAG, ages 19–20 Female	
112	OAG, ages 21–29 Male	
114	OAG, ages 21–29 Female	
115	OAG, ages 30–39 Male	
116	OAG, ages 30–39 Female	
117	OAG, ages 40–49 Male	
118	OAG, ages 40–49 Female	
119	OAG, ages 50–59 Male	
120	OAG, ages 50–59 Female	