

## SAS CODE FOR RUG3 VERSION 5.12 (44 GROUP MODEL)

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### GENERAL DOCUMENTATION

The file ***RUG5\_12.SAS*** gives standard SAS code for 44-group classification using RUG-III version 5.12. As provided, the SAS code is geared toward research uses. The code is set to perform hierarchical classification.

**Note:** The standard SAS code can be adapted to perform Index Maximizing classification and Special Medicare classifications (used in the SNF PPS system). Instructions for adapting the SAS code to Index Maximizing or Special Medicare classification are given below.

The standard RUG-III classification "Grouper" program performs range checks on all 108 MDS variables involved in classification. If any variable is out of range, then a default ("BC1") classification results. The SAS code provided only range checks 104 of these MDS variables. The SAS code disables range checking for 4 MDS variables (AA8b, T1b, T1c, and T1d) which are only required for Special Medicare classification (they are not used in hierarchical classification). The standard SAS code provided will give 44 group, hierarchical results identical to the standard Grouper except when the Medicare items (AA8b, T1b, T1c, and T1d) have out of range values. When any of these variables are out of range, the standard Grouper will force a default (BC1) classification, but the SAS version will not.

**Note:** When the standard SAS code is adapted to perform Special Medicare classification, range checking of the 4 Medicare items (AA8b, T1b, T1c, and T1d) should be activated (see last section of this document).

**Input Data Required.** The standard SAS code provided requires that the MDS variables used in RUG-III classification be input (excluding the 4 Medicare items AA8b, T1b, T1c, and T1d). The code assumes that all variables have character values. For example, the item E1a should have a value of '0', '1', '2', '-', or ' ' (blank), according to standard MDS coding specifications.

**Note:** When the standard SAS code is adapted to perform Special Medicare classification, the 4 Medicare items (AA8b, T1b, T1c, and T1d) must also be input.

**RUG-III Results Output.** The standard SAS code provides hierarchical RUG-III classifications in two different result variables:

***c\_rug\_hr*** = the hierarchical 3-character RUG-III group label (e.g., 'RUC', 'RUB', etc.).

***n\_rug\_hr*** = the hierarchical numeric RUG-III group code (e.g., 1 for 'RUC', 2 for 'RUB', etc.).

**Note:** When the SAS code is adapted to perform Index Maximizing or Special Medicare classification, the Index Maximizing or Special Medicare classification will be provided in the result variable ***c\_rug\_mx***, a numeric RUG-III group code (e.g., 1 for 'RUC', 2 for 'RUB', etc.).

## ADAPTING THE SAS CODE FOR INDEX MAXIMIZING OR SPECIAL MEDICARE CLASSIFICATION

### Index Maximizing Classification

To adapt the standard SAS code for Index Maximizing classification, the user must load desired Case Mix Index (CMI) values into an array named *n\_cmi* as follows:

- Locate the following lines of code:

```
*Setup CMI array and set all elements to 0 for hierarchical classification ;  
ARRAY n_cmi(45);  
DO i = 1 to 45;  
    n_cmi(i) = 0;  
END;
```

- Replace the last three lines of this code with statements to load the 45 CMI values:

```
n_cmi(1) = 1.430;  
n_cmi(2) = 1.050;  
n_cmi(3) = 0.850;  
.  
.  
.  
n_cmi(44) = 0.510;  
n_cmi(45) = 0.510;
```

Where the value for the first array element corresponds to RUC; the second, to RUB, the third, to RUA, ..., the 44<sup>th</sup>, to PA1, and the 45<sup>th</sup>, to BC1. The user may provide values for any set of CMIs desired.

When the code is executed with these revisions, the Index Maximizing classification will be provided in *c\_rug\_mx*, a numeric RUG-III group code (e.g., 1 for 'RUC', 2 for 'RUB', etc.).

### Special Medicare Classification

To adapt the standard SAS code for Special Medicare classification, the user must make three sets of changes:

- Step 1.** Appropriate Case Mix Index (CMI) values for Special Medicare classification must be loaded into the array named *n\_cmi* as follows:

- Locate the following lines of code:

```
*Setup CMI array and set all elements to 0 for hierarchical classification ;  
ARRAY n_cmi(45);  
DO i = 1 to 45;  
    n_cmi(i) = 0;  
END;
```

- Replace the last three lines of this code with statements to load the 45 CMI values:

```
n_cmi(1) = 44;
n_cmi(2) = 43;
n_cmi(3) = 42;
.
.
.
n_cmi(44) = 1;
n_cmi(45) = 1;
```

Where the value for the first array element corresponds to RUC; the second, to RUB, the third, to RUA, ..., the 44<sup>th</sup>, to PA1, and the 45<sup>th</sup>, to BC1. The user should provide values for a set of Medicare CMIs.

**Step 2.** The following code change must also be made:

- Locate the following lines of code:

```
*Initialize c_type. 'SMcare' for special medicare, anything else for standard;
c_type='Hier';
```

- Change the second line to:

```
c_type='SMcare';
```

**Step 3.** Valid values must be included in the input data for the 4 Medicare MDS items (AA8b, T1b, T1c, and T1d). In addition, the following code change must also be made:

- Locate the following lines of code:

```
*NOTE: This SAS version only implements Hierarchical classification and does ;
* NOT use the following Medicare fields: aa8b, t1b, t1c, and t1d. ;
* These fields are hardcoded to blank-filled here: ;
aa8b = ' ';
t1b = ' ';
t1c = ' ';
t1d = ' ';
```

- Delete the last four lines that set the 4 Medicare items to blank values.

When the code is executed with these three revisions, the Special Medicare classification will be provided in *c\_rug\_mx*, a numeric RUG-III group code (e.g., 1 for 'RUC', 2 for 'RUB', etc.).