Creating a Cost Report Relational Schema for

Skilled Nursing Facilities, Home Health Agencies,
Renal Facilities, Hospice, Health Clinics,
Federal Qualified Health Centers, Community Health Centers,
and Rural Health Centers.

Schema contains primarily financial data from worksheets;

S200001, G000000, G200001, G200002
S300001, S300002, S300003, S300004
S300005, S400000, S700001, A700000
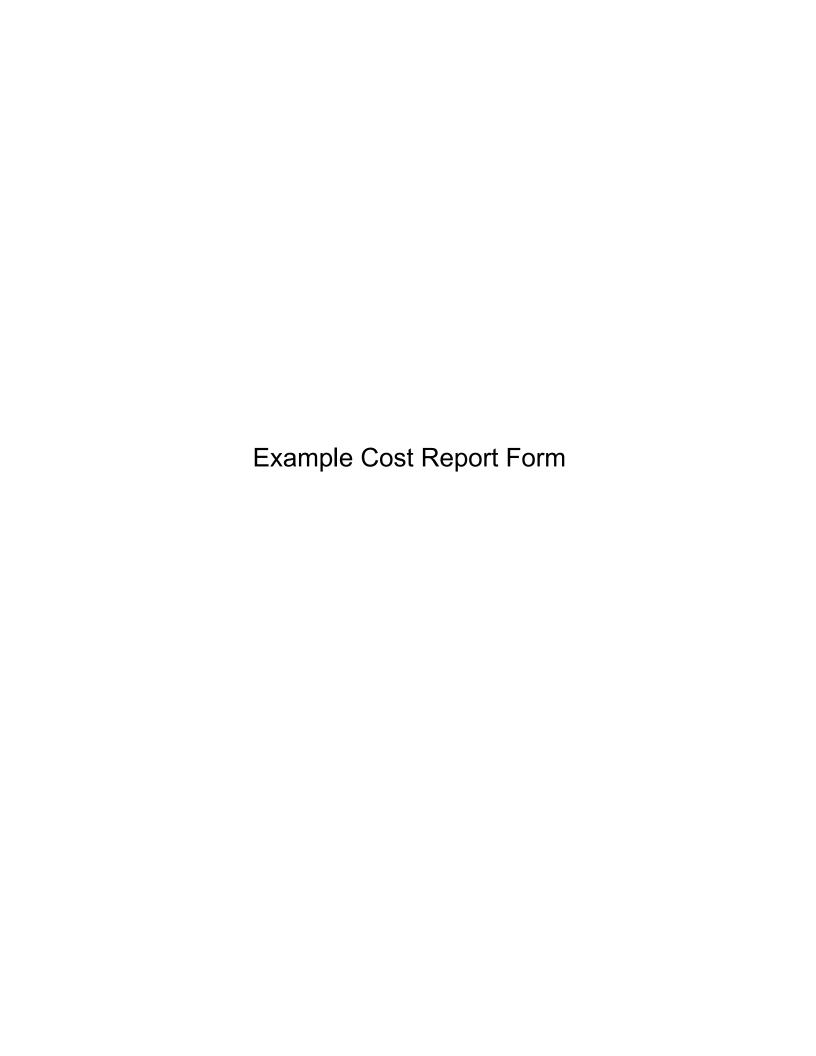A000000, C000000, E00A181 and O010000.

Agenda

1. Example of key data in current CSV cost report Puf
2. Example Cost Report Form for Cash on Hand
3. Example excel mini puf with cash on hand
4. Entity diagrams of full model and excel sub-model
5. Normalized central fact table
6. Simple flexible SAS code to produce any excel PUF
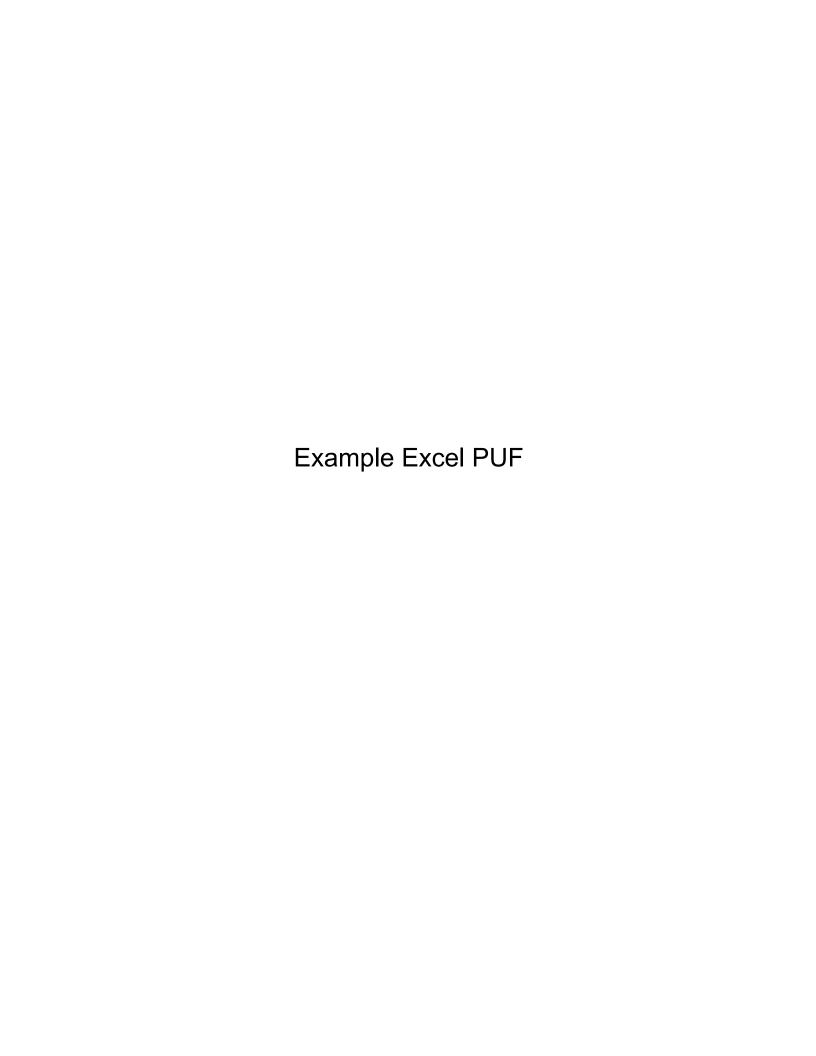7. Example excel PUF revisited
8. QC using Optimizer output

Key Fields in Current CSV PUF

Key Fields in Current CSV PUF

rpt_rec_num	wksht_cd	line_num	clmn_num	itm_txt
1000236	A000000	00700	00100	51333
1000236	A000000	00700	00200	912648
1000236	A000000	00700	00300	963981
1000236	A000000	00700	00500	963981
1000236	A000000	00700	00700	963981
1000236	A000000	00800	00100	297027
1000236	A000000	00800	00200	2043281
1000236	A000000	00800	00300	2340308
1000236	A000000	00800	00500	2340308
1000236	A000000	00800	00600	-1956
1000236	A000000	00800	00700	2338352
1000236	A000000	00900	00100	229048

Example Cost Report Form

BALANCE SHEET (If you are nonproprietary and do not maintain fund-type accounting records, complete the "General Fund" column only)		Provider No.:	Period: From 12/01/2014 To 11/30/2015	Worksheet G Date/Time Prepared: 5/2/2016 3:22 pm	
		General Fund	Specific Purpose Fund	Endowment Fund	Plant Fund	
		1.00	2.00	3.00	4.00	
	Assets					
	CURRENT ASSETS					
1.00	Cash on hand and in banks	44,078	0	0	0	1.00
2.00	Temporary investments	233,000	0	0	0	2.00
3.00	Notes receivable	0	0	0	0	3.00
4.00	Accounts receivable	4,012,843	0	0	0	4.00
5.00	Other receivables	1,173,513	0	0	0	5.00
6.00	Less: allowances for uncollectible notes and accounts receivable	0	0	0	0	6.00
7.00	Inventory	0	0	0	0	7.00
8.00	Prepaid expenses	1,480	0	0	0	8.00
9.00	Other current assets	0	0	0	0	9.00
10.00	Due from other funds	0	0	0	0	10.00
11.00	TOTAL CURRENT ASSETS (Sum of lines 1 - 10)	5,464,914	0	0	0	11.00
	FIXED ASSETS					

Example Excel PUF

cel_reportKey	Provider	Assets Current_Assets Cash On Hand And In Banks General Fund G000000_00100_00100_N	Assets Current_Assets Cash On Hand And In Banks Specific Purpose_Fund G000000_00100_00200_N	Assets Current_Assets Cash On Hand And In Banks Endowment Fund G000000_00100_00300_N	Assets Current_Assets Cash On Hand And In Banks Plant Fund G000000_00100_00400_N	Total Funds Current_Assets Cash On Hand And In Banks G000000_00100_00500_N
1123184	285279	-12767226				-12767226
1124350	15452	22700178				22700178
1129122	145269	44078				44078
1138053	165118	373173	31412	101913	315496	821994
1138243	396101	2000703				2000703
1141378	395180	1510299	852467	21744794		24107560
1141432	335201	2732563				2732563
1142735	146139	337652			672971	1010623
1150365	365014	1039770	2052535			3092305
1153052	335603	1428619			52031	1480650
1179051	185463	1717				1717
9999999	9999999					

Entity Diagrams for full Model
and Excel PUF Sub-Model

COST REPORT SCHEMA

zip_demographics
- ZIP_ZCTA5 VARCHAR(5)
- ZIP_SUMLEV VARCHAR(3)
- ZIP_STATE VARCHAR(2)
- ZIP_ZIPNAME VARCHAR(40)
- ZIP_COUNTY VARCHAR(5)
- ZIP_PCTCNTY DECIMAL(4,1)
- ZIP_FIPCO VARCHAR(5)
- ZIP_FIPCO2 VARCHAR(5)
- ZIP_PCTSTATE DECIMAL(4,1)
- ZIP_ALTZIPS VARCHAR(72)
- ZIP_NALTZIPS DOUBLE
- ZIP_STAB VARCHAR(2)
- ZIP_INTPTLAT DECIMAL(9,6)
- ZIP_INTPTLON DECIMAL(10,6)
- ZIP_LANDSQMI DECIMAL(8,2)
- ZIP_AREASQMI DECIMAL(6,2)
- ZIP_TOTPOPSF1 DOUBLE
- ZIP_ESRIID VARCHAR(22)
- ZIP_VINTAGE VARCHAR(4)
- ZIP_PERIOD VARCHAR(3)
- ZIP_GEOID VARCHAR(40)
- ZIP_AREANAME VARCHAR(100)
- 706 more...
- Indexes ▶

adr_address
- CEL_REPORTKEY DOUBLE
- ZCTA VARCHAR(5)
- COSTREPORT VARCHAR(3)
- YEAR VARCHAR(4)
- PRVDR_NUM VARCHAR(6)
- ZIP5 VARCHAR(5)
- S200001_00400_00100_C VARCHAR(36)
- S200001_01400_00200_C VARCHAR(10)
- S200001_01400_00100_C VARCHAR(10)
- S200001_00300_00300_C VARCHAR(1)
- S200001_00100_00100_C VARCHAR(36)
- S200001_00200_00100_C VARCHAR(29)
- S200001_00300_00100_C VARCHAR(31)
- S200001_00200_00200_C VARCHAR(2)
- S200001_00200_00300_C VARCHAR(11)
- S200001_00300_00200_C VARCHAR(10)
- UTIL_CD VARCHAR(1)
- RPT_REC_NUM VARCHAR(7)
- FY_BGN_DT VARCHAR(10)
- TRNSMTL_NUM VARCHAR(1)
- PRVDR_CTRL_TYPE_CD VARCHAR(2)
- LAST_RPT_SW VARCHAR(1)
- 14 more...
- Indexes ▶

Although Address ZTCAs can span Zipcodes, If you pick a subset of providers you often get a 1:1 match. Zip_demographics is the latest 5yr ACS data.

zip_ZCTA5 = ZCTA

Simple one to one relationsip between provider CCN and cel_reportKey. SAS format is provided.

cel_reportKey = cel_reportKey

rpv_reportprovider
- CEL_REPORTKEY DOUBLE
- PRVDR_NUM VARCHAR(6)
- Indexes ▶

tpl_template
- TPL_CEL_NAME VARCHAR(21)
- Indexes ▶

cel_reportKey = cel_reportKey

Tpl_template contains all possible cell names. This is needed so that a missing column will appear in the output excel workbooks, even though the data is 100 percent missing

Col_describe has detail descriptions for all the cells in key worksheets

col_describe
- COL_CEL_NAME VARCHAR(21)
- COL_DESCRIPTION VARCHAR(203)
- Indexes ▶

tpl_cel_name = cel_name

cel_cellvalue
- CEL_REPORTKEY DOUBLE
- CEL_NAME VARCHAR(21)
- CEL_VALUE VARCHAR(40)
- Indexes ▶

cel_name = col_cel_name

This three colum fact table contains all the data on the numeric and chararacter CSV files. Numeric and character values are in the cel_value column.
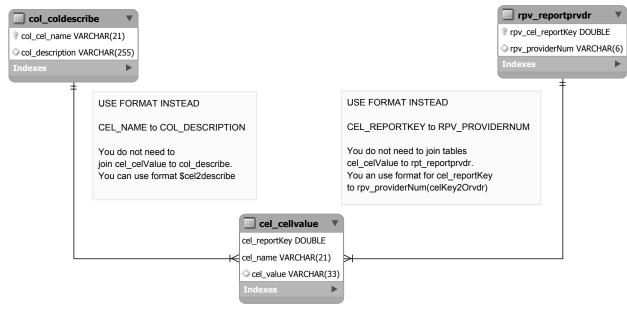
SUB_MODEL to CREATE XLS PUF

There are two keys that allow us to handle all cost reports in one schema, except Hospital Reports

1. cel_reportKey has cost report and year plus report number "SNF158761234" or "HHA159812345"

2, cel_name "S200000_00200_00100_C" or "S200000_0150_0020_N". cel_name has type

cell_name is composed of worksheet, line number and columnn number.

This Schema contains: SNF, HHA, RNF, HOS, HCL, FQH, RHC, and CMF Cost Reports.

col_coldescribe ▼

col_cel_name VARCHAR(21)
col_description VARCHAR(255)
Indexes ▶

rpv_reportprvdr ▼

rpv_cel_reportKey DOUBLE
rpv_providerNum VARCHAR(6)
Indexes ▶

USE FORMAT INSTEAD

CEL_NAME to COL_DESCRIPTION

You do not need to
join cel_celValue to col_describe.
You can use format $cel2describe

USE FORMAT INSTEAD

CEL_REPORTKEY to RPV_PROVIDERNUM

You do not need to join tables
cel_celValue to rpt_reportprvdr.
You an use format for cel_reportKey
to rpv_providerNum(celKey2Orvdr)

cel_cellvalue ▼

cel_reportKey DOUBLE
cel_name VARCHAR(21)
cel_value VARCHAR(33)
Indexes ▶

CREATE EXCEL PUF

Suppose you want provider finacial content

```
* FILTER WITHOUT FILTER YOU GET 700 COLUMNS ;
proc sql;
  create
    table finances as
  select
    cel_reportKey
   ,put(cel_reportKey,cel2Prvdr.) as Provider
   ,put(cel_name,$cel2describe)   as col_description
   ,cel_value
   from
    cel_reportKey eqt "SNF15"  and
    substr(cel_name,1,2) in ("S2","G0")
  order
    by cel_reportKey, Provider, cel_name
;quit;

* PIVOT;
Proc transpose data=finances out=financesXpo ;
  by cel_reportKey Provider;
  var cel_value;
  idlabel col_description;
run;quit;

* WILL AUTOMATICALLY USE THE LONG DESCRIPTION (UPTO 255 CHARACTERS;;
ods excel file="d:/snf/xls/snf_2018_finances.xlsx";
proc report data=financesXpo noed missing style(column)={cellwidth=5in};
run;quit;
ods excel close;
```

For Expediency we will Examine the Fact Table
and the Excel PUF Sub-Model

SNF 2015 Table cel_cellvalue Observations 1,0571,964

```
          cel_
        report                      cel_
Obs      Key           cel_name          value

---    ------------   --------------------   ------
  1   SNF15_1123184   A000000_00100_00300_N   662493
  2   SNF15_1123184   A000000_00100_00400_N
  3   SNF15_1123184   A000000_00100_00500_N   662493
  4   SNF15_1123184   A000000_00100_00600_N   -1346
  5   SNF15_1123184   A000000_00100_00700_N   661147
```

To get Provider Number
put(cel_reportKey,cel_reportKey2Ptvdr.)

To get cell description for excel column header(max 255 chars)
put(cell_name,$cel_name2des.)

Pivot and send to excel
ods excel uses the label for column names

Create a Example Excel PUF
of Cash on Hand

Code to Create Mini PUF

```
proc sql
  create
    table mini as
  select
    cel_reportKey
    ,put(cel_reportKey,cel_reporKey2prvdr.) as Provider
    ,cel_name
    ,cel_value
    ,put(cel_name,$cel_name2des.) as excel_column_header
  from
    snf.cel_cellvalue
  where
    cel_namein('G000000_00100_00100_N','G000000_00100_00200_N',
    'G000000_00100_00300_N','G000000_00100_00400_N','G000000_00100_00500_N')
  order
    by cel_reportKey, provider, cel_name
quit

proc transpose data=mini out=miniXpo(drop=_name_)
 by cel_reportKey provider
 var cel_value
 id cel_name
 idlabel excel_column_header
run


proc report data=miniXpo nowd missing style(column)={just=right cellwidth=5in}
split='&'
run
ods excel close
```

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QC using output
of Cash on Hand

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