

Paper 052-2011

Tick-Tock, Watch the Clock: How Long Will This Take to Run?

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ABSTRACT

Eager to use the new tools we'd been given, we quickly realized that carefully preparing our data for use in SAS® Information Maps® and Web Report Studio® was the key to maximizing efficiency and minimizing frustration.

In an attempt to satisfy both our SAS administrators and our customers, our goal was to provide the most flexibility that Information Maps and Web Report Studio had to offer with the caveat that the project also return results rapidly.

Compiling our source data to create effective Information Maps that take full advantage of the filters available, and subsequently, using the prompt capabilities in Web Report Studio while reducing run-time required forethought. In this paper, we will look at an example of one particular set of client reports. Our objective will be to outline the performance concerns, and follow up with the approach taken to tackle the issues.

Our paper will address several topics including analyzing and aggregating source data, dealing with date/time variables, setting up prompts and utilizing pre-filters and filters.

INTRODUCTION

For several years, our department has been charged with generating a set of annual claims and enrollment reports for a specific, large client. This type of specialized reporting is not common for our area, but the importance of this client mandated it to be critical in order to maintain our relationship with the account. The process was inherited from a Customer Consulting department, and at first blush, did not appear to be a daunting task. What we found after detailed investigation was a huge series of programs that varied ever so slightly in their code details.

Our challenge was to provide our underwriting analysts with an acceptable and efficient SAS BI solution. These users were not SAS-savvy which precipitated the need to deliver reports that look very similar to what they had been previously provided. To do this, we were compelled to provide a solution that was able to seamlessly move from the large data extract to report creation without asking our users to do the heavy lifting.

The data pull extracts 41 fields of class variables, dates and metrics from the monthly source files. Approximately 4.5 million records are contained in this past year's annualized dataset. The client requested its data to be delivered in series of seven reports (5 claims and 2 enrollment reports) for each of fourteen separate segments. Each segment dataset was created by filtering and aggregating twelve to fourteen monthly client-specific datasets. These summary datasets had very long processing times, followed by running the seven interim SAS report creation programs and culminating in an extensive manual process to format these reports in Excel. In all, the project required one FTE a full four months to complete the entire reporting effort.

PROJECT DEVELOPMENT

A year ago, the decision was made to streamline our process using the new BI tools. A couple of initial approaches proved cumbersome. For example, attempts to process data inside the IM slowed processing dramatically, and trying to surface the data to WRS via a Stored Process was primarily dismissed on the fact that processing times using this method fell outside guidelines set by our SAS Divisional Administrator. Compiling our source data to create effective Information Maps that take full advantage of the filters available, and subsequently, using the prompt capabilities in Web Report Studio while reducing run-time required forethought. We needed to determine whether to use a single map or create multiples. That decision would lead to the number of additional prompt criteria that would be required within Web Report Studio.

Although we have only a small number of measures – covered charges, billed charges and a mixture of member, visit and service counts – the alignment of the categories proved to be the components that required the most thought.

We massaged the data in a variety of ways with data transformation being completed on Claim Type, Age, Date and Zip Code fields in the initial steps. We also created indexes on the Date and Segment fields. Next we cleansed the data, and excluded all data falling outside the requested date range. Additionally, we selected only the fields that were needed on the final reports to be included in the Information Map. All of these measures were taken to increase the processing speed of report generation.

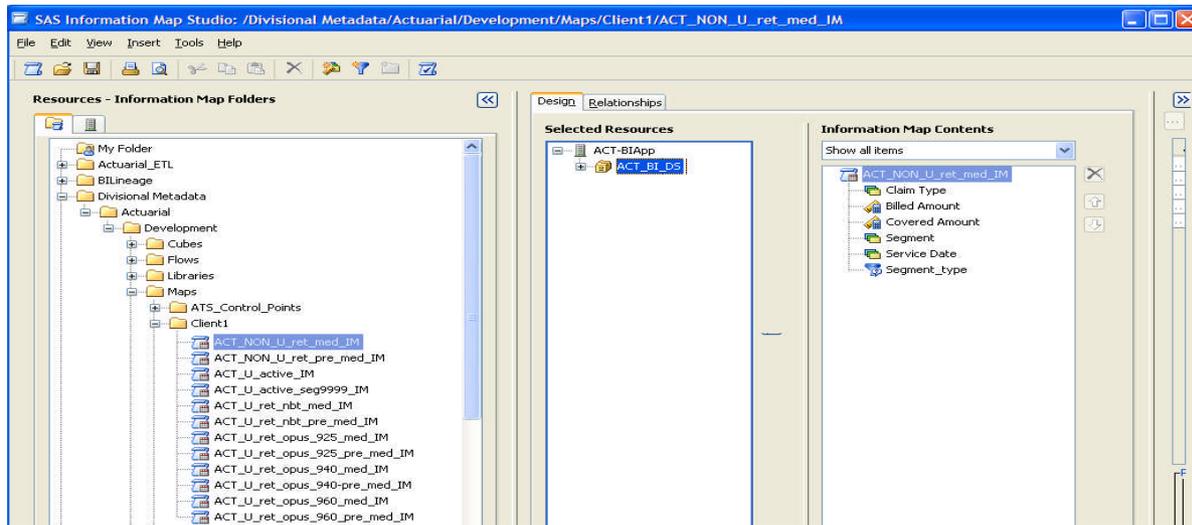
Our research led us to the concept of using the SAS Scheduler built into the functionality of Web Report Studio. Unfortunately, our environment remains in a developmental stage, so certain components – including the Scheduler – are not yet available to us. With the anticipation of such capability in the very near future, we have included it in the examples shown below.

These examples show the multiple approaches we took toward report provision. Following these illustrations we have included a matrix showing the time/efficiency evaluations, which were used to determine the methodology to be used in production.

EXAMPLE #1 – Multiple Information Maps with Multiple WRS Reports

Because the resulting reports show the measures cut across a variety of ways, we first thought our category classifications necessitated the creation of multiple Information Maps. We thought this to be a good choice since it would reduce the demand for extensive filtering within WRS and require minimal user interaction with the application. However, our processing times for each individual report fell outside the acceptable processing limits, and running twelve separate WRS reports was more cumbersome than anticipated. Additionally, if and when report requirements need to be expanded or altered, twelve separate Information Maps and their corresponding WRS reports would require modification.

Directory of individual segment information maps:



Sample WRS for a single segment IM:

SAS Web Report Studio - ACT_CLIENT1

Log Off Fazal Davood | Preferences | Help

File View Data Edit View

Non Union Ret Medicare

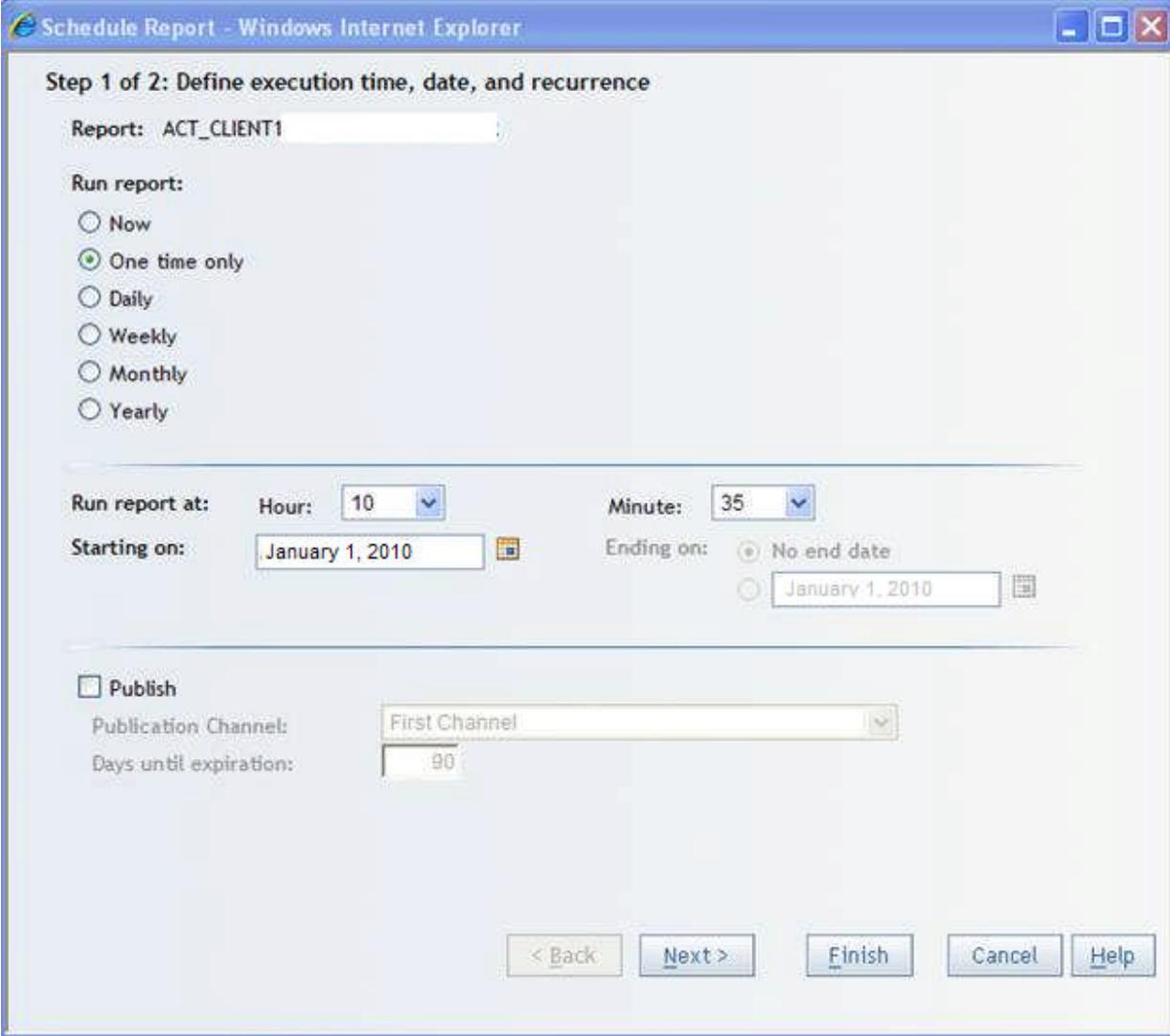
Date	Billed Amount												Total	
	JAN2009	FEB2009	MAR2009	APR2009	MAY2009	JUN2009	JUL2009	AUG2009	SEP2009	OCT2009	NOV2009	DEC2009		
Claim Type														
Cost Rate														
Adjustment	\$4,355.63	\$5,672.69	\$10,639.63	\$5,542.90	\$3,234.47	\$3,246.30								\$32,691.51
Drug Rebate	\$-3,498.47			\$-5,219.93			\$-2,380.01				\$-1,658.79			\$-12,757.20
Inpatient Facility	\$2,774,535.55	\$2,846,054.78	\$3,511,780.21	\$3,252,163.68	\$2,285,365.54	\$2,120,753.16	\$3,176,273.60	\$2,820,674.89	\$2,217,950.09	\$2,426,706.77	\$2,804,282.26	\$2,866,946.44		\$33,105,466.94
Outpatient Facility	\$3,468,424.31	\$3,648,427.26	\$4,048,766.29	\$3,843,528.45	\$3,434,132.68	\$3,716,205.19	\$3,815,380.47	\$3,586,155.02	\$3,537,352.72	\$3,449,088.90	\$3,261,579.16	\$3,530,348.71		\$43,339,389.15
Professional	\$4,024,133.24	\$4,126,303.34	\$4,646,709.61	\$4,400,240.84	\$3,796,928.01	\$3,906,631.78	\$4,059,754.92	\$3,930,458.18	\$3,626,057.69	\$4,031,624.39	\$3,876,008.05	\$3,913,557.25		\$48,540,407.29
Total	\$10,267,950.17	\$10,626,458.06	\$12,217,875.74	\$11,496,255.93	\$9,519,660.69	\$9,746,836.42	\$11,051,028.98	\$10,337,268.08	\$9,583,360.50	\$9,905,761.27	\$9,941,869.46	\$10,310,852.39		\$125,005,197.70

Date	Covered Amount												Total	
	JAN2009	FEB2009	MAR2009	APR2009	MAY2009	JUN2009	JUL2009	AUG2009	SEP2009	OCT2009	NOV2009	DEC2009		
Claim Type														
Cost Rate														
Adjustment	\$560,950.58	\$790,294.13	\$1,153,399.38	\$851,303.52	\$441,698.32	\$372,939.84								\$4,170,585.77
Drug Rebate	\$3,330.00			\$2,997.00			\$3,330.00				\$1,332.00			\$10,989.00
Inpatient Facility	\$2,384,367.26	\$2,427,784.62	\$2,980,043.22	\$2,774,142.41	\$1,951,433.40	\$1,779,224.09	\$2,641,260.64	\$2,293,633.56	\$1,868,508.57	\$2,051,722.18	\$2,337,275.74	\$2,417,888.85		\$27,907,362.56
Outpatient Facility	\$12,752,145.95	\$11,710,611.96	\$12,789,786.93	\$11,892,429.34	\$10,338,994.27	\$9,976,615.42	\$10,473,285.57	\$9,715,368.63	\$9,634,835.13	\$9,598,022.64	\$8,769,387.79	\$9,205,011.67		\$128,856,475.30
Professional	\$20,056,387.26	\$20,146,360.54	\$22,087,342.37	\$21,079,004.17	\$18,718,505.23	\$19,237,891.39	\$19,451,100.62	\$19,055,512.04	\$19,586,236.56	\$20,253,497.82	\$18,349,202.61	\$18,133,286.91		\$236,154,327.73
Total	\$35,757,181.07	\$35,075,051.26	\$39,010,571.91	\$36,599,876.44	\$31,450,631.22	\$31,366,670.73	\$32,568,956.83	\$31,064,514.23	\$31,089,580.25	\$31,904,574.64	\$29,455,866.33	\$29,756,285.44		\$395,099,760.36

NOTE:

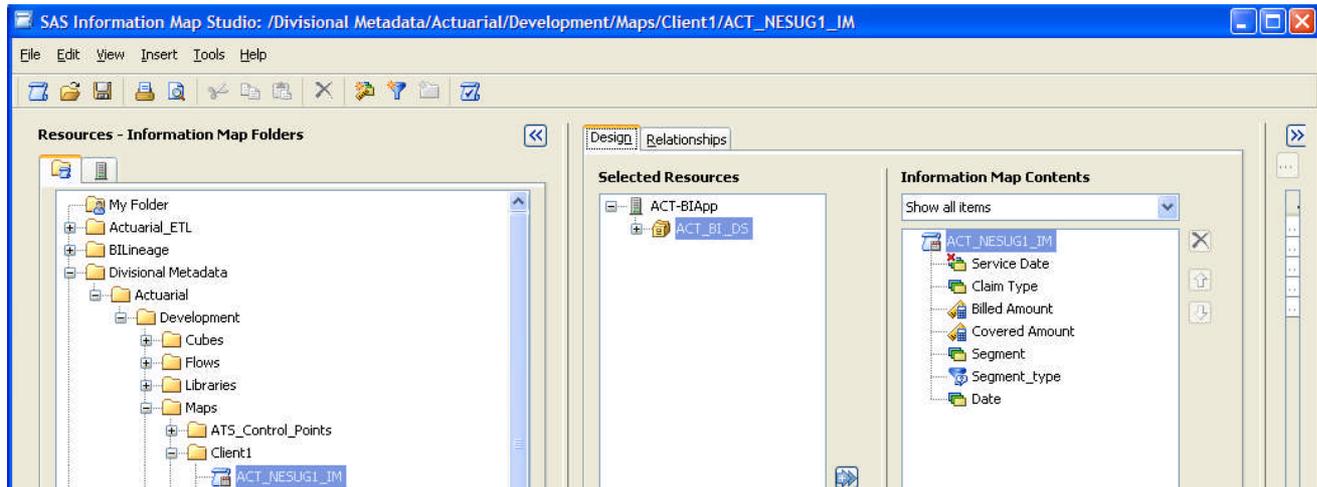
As previously mentioned herein, our environment does not yet support the scheduling functions within WRS. However, had we been given access to this tool – and with approval from our SAS Divisional Administrator – the initial approach taken (Example #1) may have proven to be our final choice.

Using the functionality shown below, it would be possible to schedule and distribute the entire set of reports during off-peak processing times.

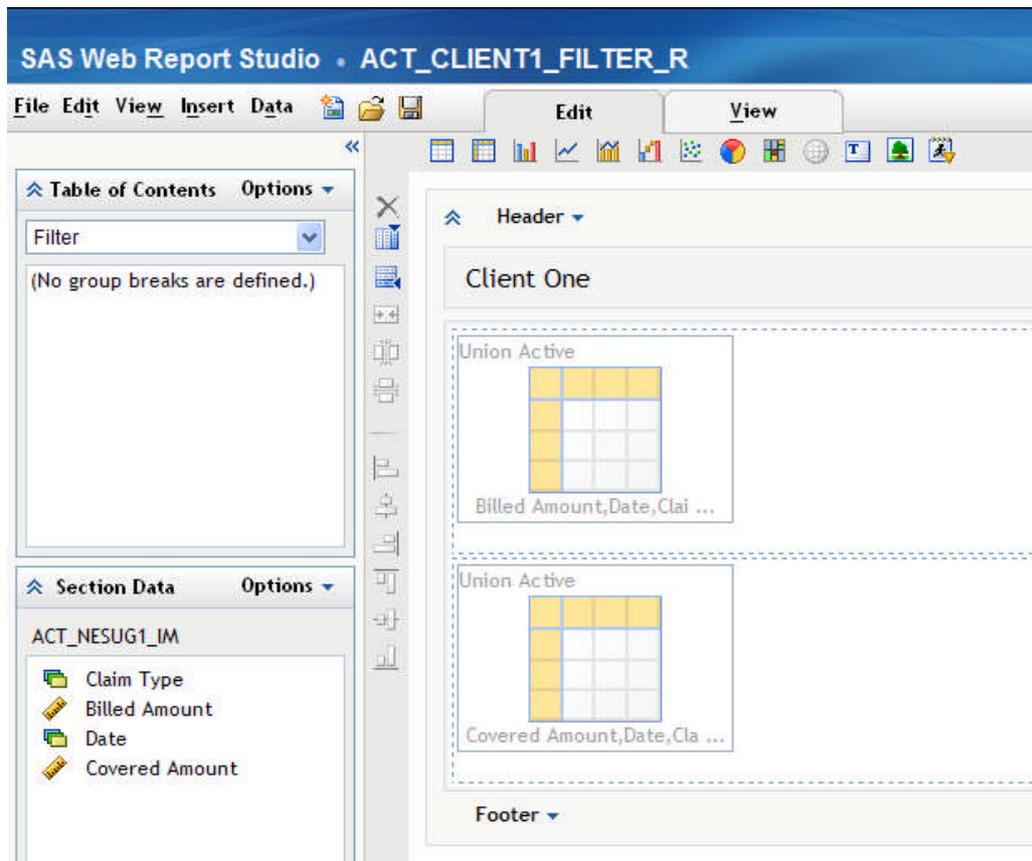


For the next three examples, the Information Map structure is identical.

The Information Map is set up like this:

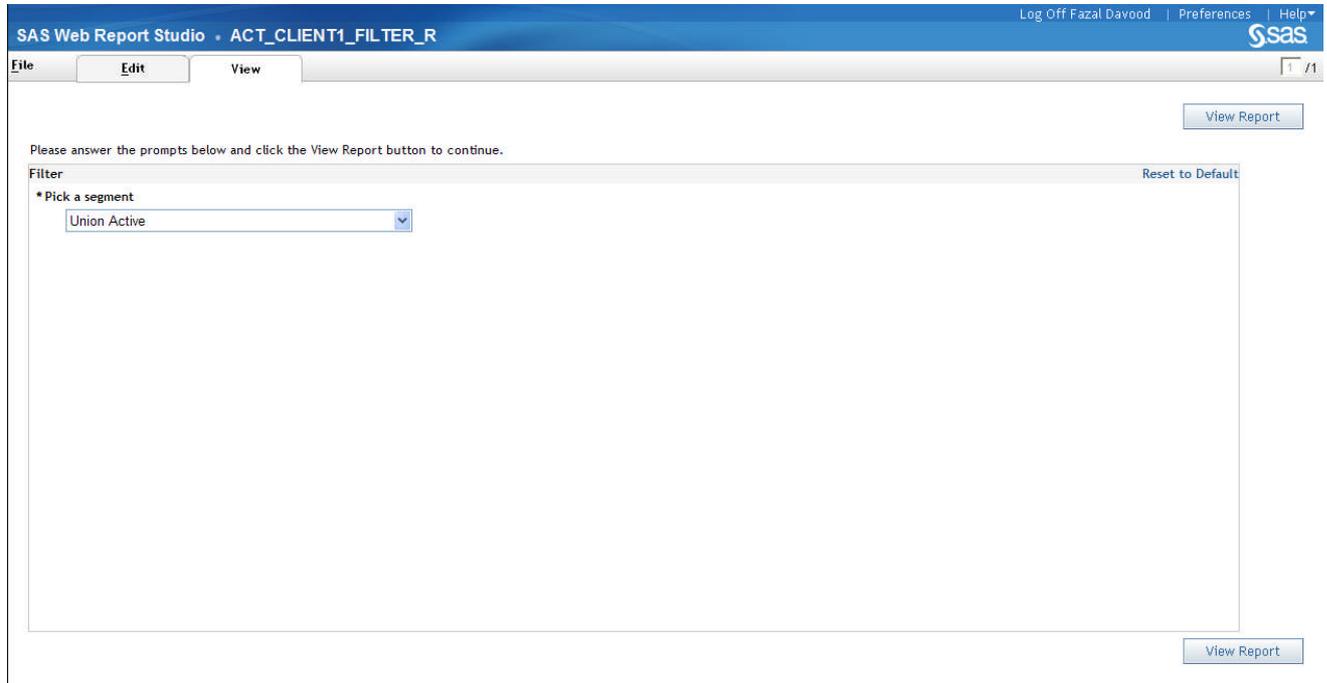


EXAMPLE #2 – Single Information Map with 12 Segment Filters



(EXAMPLE #2 – CONTINUED)

The filter created in the IM for this requires the user to select one of the twelve segments, run it and then repeat that process for each of the other segments.



Sample WRS report for a single user-chosen segment:

SAS Web Report Studio - ACT_CLIENT1_FILTER_R

Client One

Union Active

Date	Billed Amount												Total
	JAN2009	FEB2009	MAR2009	APR2009	MAY2009	JUN2009	JUL2009	AUG2009	SEP2009	OCT2009	NOV2009	DEC2009	
Claim Type													
Cost Rate													
Adjustment	\$4,355.53	\$5,672.69	\$10,639.63	\$5,542.90	\$3,234.47	\$3,246.30							\$32,691.51
Drug Rebate	\$-3,498.47			\$-5,219.93			\$-2,380.01			\$-1,658.79			\$-12,767.20
Inpatient Facility	\$2,774,535.55	\$2,846,054.78	\$3,511,760.21	\$3,252,163.68	\$2,285,365.54	\$2,120,753.16	\$3,178,273.60	\$2,820,674.89	\$2,217,950.09	\$2,426,706.77	\$2,804,282.26	\$2,866,946.44	\$33,105,466.94
Outpatient Facility	\$3,468,424.31	\$3,648,427.26	\$4,048,766.29	\$3,643,528.45	\$3,434,132.68	\$3,716,205.19	\$3,815,380.47	\$3,586,155.02	\$3,537,352.72	\$3,449,088.90	\$3,261,579.16	\$3,530,348.71	\$43,339,389.15
Professional	\$4,024,133.24	\$4,126,303.34	\$4,646,709.61	\$4,400,240.84	\$3,796,928.01	\$3,906,631.78	\$4,059,754.92	\$3,930,458.18	\$3,828,057.69	\$4,031,624.39	\$3,876,008.05	\$3,913,557.25	\$48,540,407.29
Total	\$10,267,950.17	\$10,626,458.06	\$12,217,875.74	\$11,496,258.93	\$9,519,660.69	\$9,746,836.42	\$11,051,028.98	\$10,337,288.08	\$9,583,360.50	\$9,905,761.27	\$9,941,869.46	\$10,310,852.39	\$125,005,197.70

Union Active

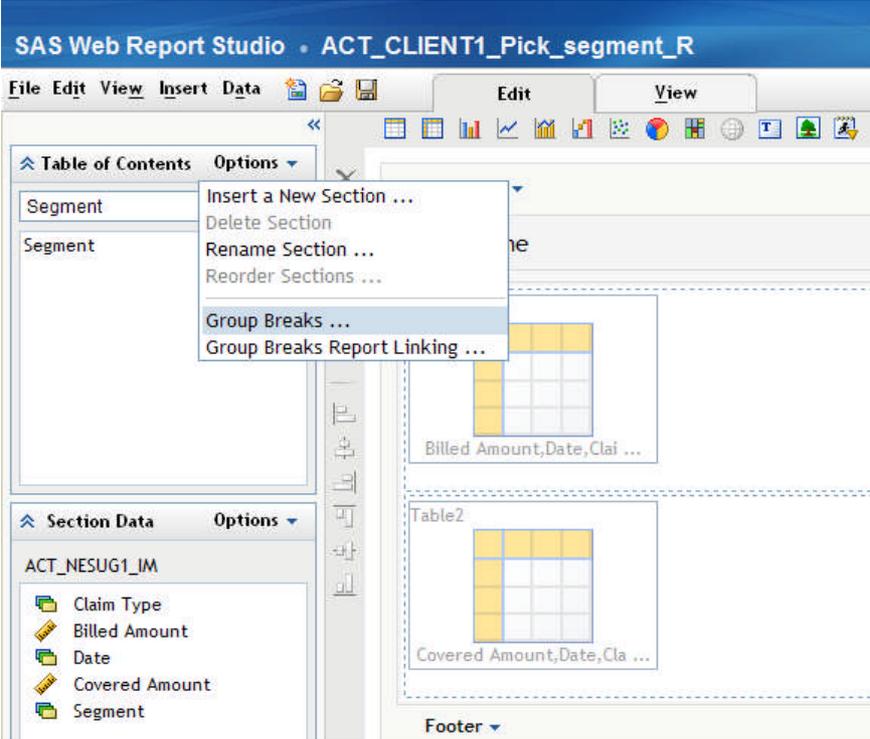
Date	Covered Amount												Total
	JAN2009	FEB2009	MAR2009	APR2009	MAY2009	JUN2009	JUL2009	AUG2009	SEP2009	OCT2009	NOV2009	DEC2009	
Claim Type													
Cost Rate													
Adjustment	\$560,950.58	\$790,294.13	\$1,153,399.38	\$851,303.52	\$441,698.32	\$372,939.84							\$4,170,585.77
Drug Rebate	\$3,330.00			\$2,997.00			\$3,330.00			\$1,332.00			\$10,989.00
Inpatient Facility	\$2,384,367.28	\$2,427,784.62	\$2,980,043.22	\$2,774,142.41	\$1,951,433.40	\$1,779,224.09	\$2,841,260.64	\$2,293,633.56	\$1,868,508.57	\$2,051,722.18	\$2,337,275.74	\$2,417,986.85	\$27,907,362.56
Outpatient Facility	\$12,752,145.95	\$11,710,611.96	\$12,789,786.93	\$11,892,426.34	\$10,338,994.27	\$9,976,615.42	\$10,473,265.57	\$9,715,368.63	\$9,634,835.13	\$9,598,022.64	\$8,769,387.79	\$9,205,011.67	\$126,856,475.30
Professional	\$20,056,387.26	\$20,146,360.54	\$22,087,342.37	\$21,079,004.17	\$18,718,505.23	\$19,237,891.39	\$19,451,100.62	\$19,055,512.04	\$19,586,236.56	\$20,253,497.82	\$18,349,202.81	\$18,133,286.91	\$236,154,327.73
Total	\$35,757,181.07	\$35,075,051.26	\$39,010,571.91	\$36,599,876.44	\$31,450,631.22	\$31,366,670.73	\$32,568,956.83	\$31,064,514.23	\$31,089,580.25	\$31,904,574.64	\$29,455,866.33	\$29,756,285.44	\$395,099,780.36

NOTE:

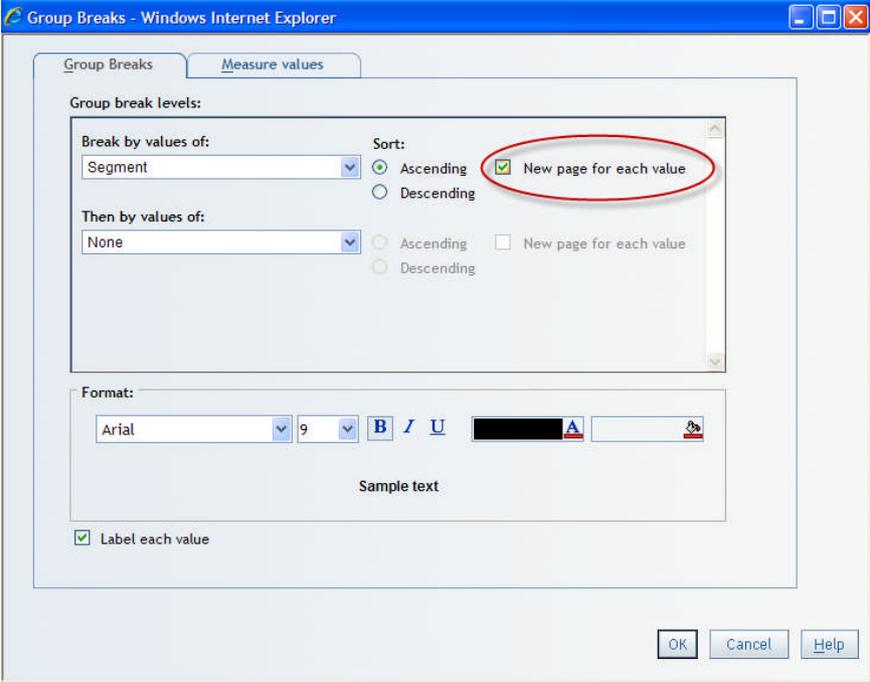
The noticeable differences here were that processing time decreased by a minute per segment, and that only one Information Map and one Web Report Studio report would need to be modified if requirements change.

EXAMPLE #3 – Single Information Map with Group Break by Segment

This WRS report is designed using the Group Breaks option:



Next select the "New page for each value" checkbox:



(EXAMPLE #3 – CONTINUED)

User chooses the segment from the list on the right and a report is generated:

Client One
Segment: Non Union Retiree Medicare

		Billed Amount											
Date		JAN2009	FEB2009	MAR2009	APR2009	MAY2009	JUN2009	JUL2009	AUG2009	SEP2009	OCT2009	NOV2009	DEC2009
Claim Type													
Cost Rate													
Adjustment		\$1,628.37	\$140.61	\$138.77	\$139.38	\$131.65	\$97.18						
Inpatient Facility		\$251,563.80	\$268,960.61	\$153,743.91	\$377,709.97	\$239,630.59	\$211,035.50	\$238,302.60	\$226,602.01	\$163,034.98	\$239,935.60	\$223,797.53	\$179,556.63
Outpatient Facility		\$86,269.24	\$122,338.09	\$143,478.28	\$169,925.78	\$152,895.90	\$165,258.45	\$193,069.66	\$174,892.60	\$176,658.04	\$205,359.50	\$192,998.83	\$188,017.51
Professional		\$186,440.71	\$224,800.08	\$306,492.89	\$348,474.94	\$348,882.25	\$394,783.40	\$435,441.24	\$407,220.49	\$443,582.31	\$451,671.19	\$427,752.87	\$448,582.06
Total		\$525,902.12	\$616,239.39	\$603,853.86	\$896,250.07	\$741,540.40	\$771,174.52	\$866,813.50	\$808,715.10	\$783,275.34	\$896,966.29	\$844,549.24	\$816,156.21

		Covered Amount										
Date		JAN2009	FEB2009	MAR2009	APR2009	MAY2009	JUN2009	JUL2009	AUG2009	SEP2009	OCT2009	
Claim Type												
Cost Rate												
Adjustment		\$123,367.44	\$99,023.67	\$73,661.14	\$75,510.80	\$67,274.68	\$60,769.63	\$279,387.41	\$299,973.17	\$285,320.37	\$241,447.25	\$304,434.67
Inpatient Facility		\$336,527.37	\$337,957.92	\$235,148.67	\$428,539.57	\$301,335.44	\$279,387.41	\$299,973.17	\$285,320.37	\$241,447.25	\$304,434.67	\$4,039,626.89
Outpatient Facility		\$4,039,626.89	\$4,267,509.69	\$4,613,026.53	\$4,736,772.47	\$4,214,213.31	\$4,118,030.59	\$4,603,044.33	\$4,603,044.33	\$4,603,044.33	\$4,226,413.97	\$4,505,637.81
Professional		\$10,075,083.84	\$9,446,398.07	\$10,796,291.91	\$10,621,193.61	\$9,626,325.40	\$10,407,019.18	\$10,214,178.64	\$9,567,490.58	\$10,363,756.55	\$10,489,313.56	\$10,489,313.56
Total		\$14,574,605.54	\$14,150,889.35	\$15,718,128.26	\$15,862,016.45	\$14,409,148.84	\$14,865,206.80	\$15,117,196.14	\$14,455,811.66	\$14,831,617.77	\$15,299,386.04	

At this point the user may choose to email or export the report:

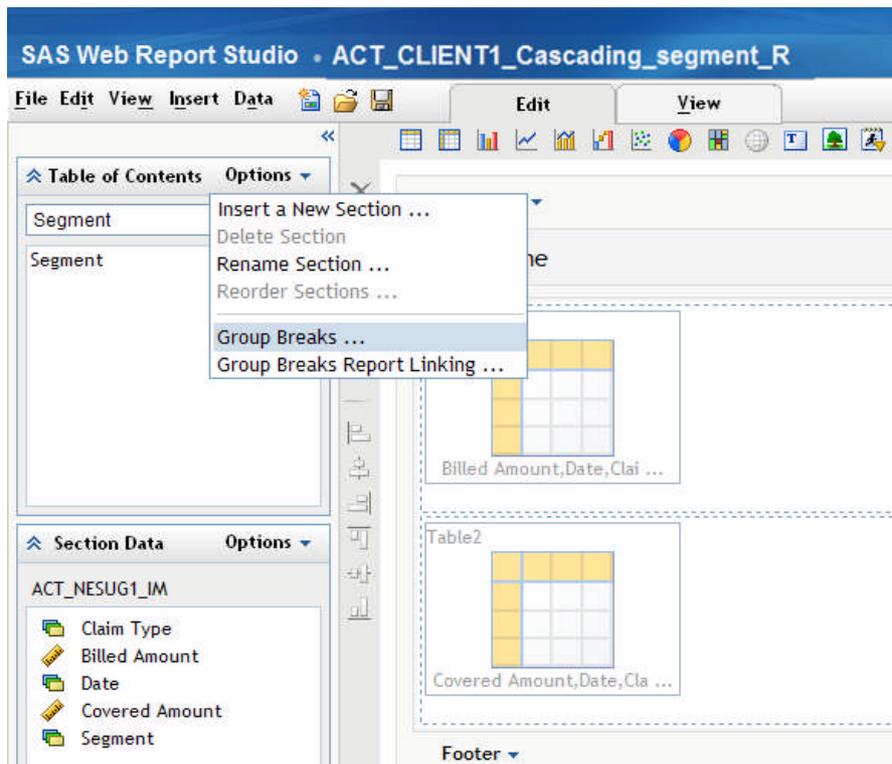
Client One
Segment: Non Union Retiree Medicare

Date	JAN2009	FEE
Claim Type		
Cost Rate		
Adjustment	\$1,628.37	\$
Inpatient Facility	\$251,563.80	\$268
Outpatient Facility	\$86,269.24	\$122
Professional	\$186,440.71	\$224
Total	\$525,902.12	\$616,

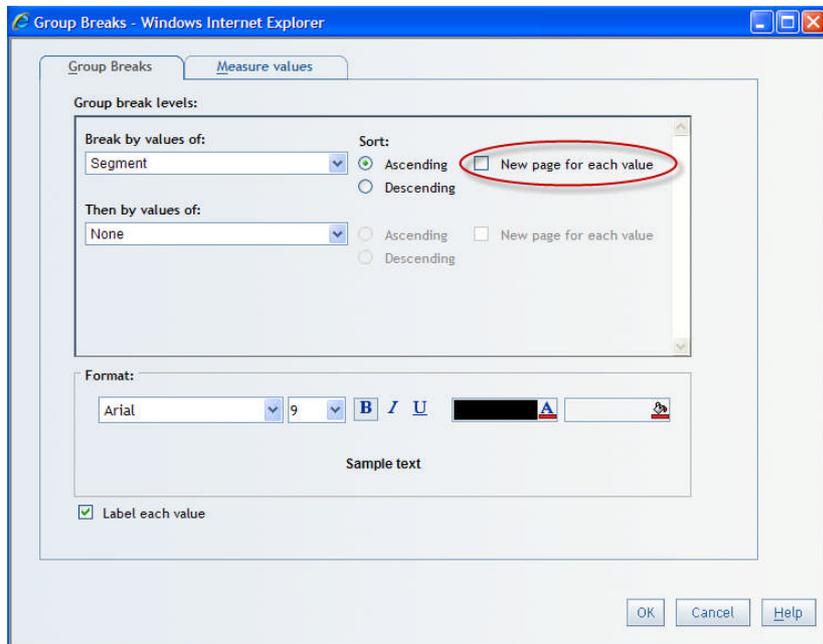
Date	JAN2009	F
Claim Type		
Cost Rate		
Adjustment	\$123,367.44	
Inpatient Facility	\$336,527.37	\$
Outpatient Facility	\$4,039,626.89	\$4,
Professional	\$10,075,083.84	\$9,
Total	\$14,574,605.54	\$14,

EXAMPLE #4 – Single Information Map with NO Group Breaks by Segment

This WRS report is also designed using the Group Breaks option:



However, the “New page for each value” checkbox is left unchecked:



(EXAMPLE #4 – CONTINUED)

User is not prompted to choose a segment because the entire report group is generated:

SAS Web Report Studio - ACT_CLIENT1_Cascading_segment_R

Client One

Segment: Non Union Retiree Medicare

Date	JAN2009	FEB2009	MAR2009	APR2009	MAY2009	JUN2009	JUL2009	AUG2009	SEP2009	OCT2009	NOV2009	DEC2009	Total
Claims Type													
Cost Rate													
Adjustment	\$1,820.37	\$140.61	\$138.77	\$139.38	\$131.65	\$97.18							\$2,276.95
Inpatient Facility	\$251,963.88	\$260,960.61	\$153,743.91	\$377,709.97	\$239,630.59	\$211,030.58	\$236,302.68	\$226,692.01	\$163,034.80	\$239,935.60	\$223,797.53	\$179,556.63	\$2,773,873.74
Outpatient Facility	\$98,289.24	\$122,338.08	\$143,478.28	\$169,825.70	\$152,995.90	\$185,258.45	\$190,069.68	\$174,882.60	\$176,058.04	\$205,359.50	\$192,960.23	\$188,017.51	\$1,971,161.89
Professional	\$186,440.71	\$224,830.08	\$306,492.89	\$348,474.94	\$345,802.25	\$394,763.40	\$435,441.24	\$407,220.49	\$443,582.31	\$451,671.19	\$427,752.67	\$440,582.06	\$4,424,124.45
Total	\$625,902.12	\$616,239.39	\$603,853.86	\$896,250.07	\$741,540.40	\$771,174.52	\$866,813.50	\$808,715.10	\$783,275.34	\$896,966.29	\$844,549.24	\$816,156.27	\$9,171,435.64

Segment: Non Union Retiree Medicare (Continued)

Date	JAN2009	FEB2009	MAR2009	APR2009	MAY2009	JUN2009	JUL2009	AUG2009	SEP2009	OCT2009	NOV2009	DEC2009	Total
Claims Type													
Cost Rate													
Adjustment	\$123,367.44	\$89,823.67	\$73,661.14	\$75,510.60	\$67,274.68	\$65,769.63							\$499,607.38
Inpatient Facility	\$336,527.37	\$337,957.92	\$235,145.67	\$428,539.57	\$301,335.44	\$279,387.41	\$299,973.17	\$285,320.37	\$241,447.25	\$304,434.67	\$288,843.07	\$243,900.39	\$3,592,815.29
Outpatient Facility	\$4,038,626.89	\$4,287,509.68	\$4,513,026.53	\$4,736,772.47	\$4,214,213.31	\$4,115,030.59	\$4,603,044.33	\$4,603,000.71	\$4,226,413.97	\$4,500,637.81	\$4,300,940.41	\$4,207,848.82	\$42,223,888.83
Professional	\$10,075,083.94	\$9,446,398.07	\$10,796,291.91	\$10,821,193.01	\$9,826,325.40	\$10,407,019.18	\$10,214,170.64	\$9,567,490.58	\$10,263,758.55	\$10,480,313.58	\$9,611,424.88	\$9,561,423.47	\$120,918,996.77
Total	\$14,574,605.64	\$14,150,689.34	\$14,178,128.24	\$15,062,016.45	\$14,409,148.84	\$14,868,206.80	\$15,117,195.14	\$14,455,871.68	\$14,837,617.77	\$15,299,386.04	\$13,908,306.38	\$14,033,172.68	\$177,226,487.89

Segment: Non Union Retiree Preferred

Date	JAN2009	FEB2009	MAR2009	APR2009	MAY2009	JUN2009	JUL2009	AUG2009	SEP2009	OCT2009	NOV2009	DEC2009	Total
Claims Type													
Cost Rate													
Adjustment	\$271.08	\$356.42	\$496.33	\$46.45	\$747.76	\$557.68							\$2,491.02
Inpatient Facility	\$38,882.35	\$24,320.03	\$152,822.53	\$96,297.39	\$164,726.20	\$8,743.85	\$134,843.18	\$372,712.49	\$111,076.44	\$164,471.88	\$171,264.93	\$210,658.61	\$1,644,678.81
Outpatient Facility	\$29,485.30	\$40,464.51	\$24,995.21	\$68,156.66	\$83,481.66	\$62,630.26	\$157,871.47	\$176,712.00	\$167,862.19	\$199,134.23	\$124,975.84	\$142,296.13	\$1,343,826.66
Professional	\$65,915.02	\$54,150.92	\$95,189.59	\$111,040.84	\$144,345.73	\$91,034.25	\$132,287.01	\$191,847.65	\$132,970.76	\$144,050.50	\$142,713.11	\$170,818.68	\$1,476,364.67
Total	\$134,583.76	\$125,293.88	\$333,203.66	\$269,546.81	\$393,300.76	\$162,946.10	\$425,007.89	\$741,372.14	\$471,909.39	\$607,556.61	\$438,953.88	\$623,733.47	\$4,467,291.78

Segment: Non Union Retiree Preferred (Continued)

Date	JAN2009	FEB2009	MAR2009	APR2009	MAY2009	JUN2009	JUL2009	AUG2009	SEP2009	OCT2009	NOV2009	DEC2009	Total
Claims Type													
Cost Rate													
Adjustment	\$32,568.36	\$58,117.75	\$65,300.43	\$11,270.63	\$61,360.55	\$56,216.31							\$284,834.02
Inpatient Facility	\$31,272.11	\$21,422.24	\$130,517.34	\$75,982.50	\$137,752.37	\$7,089.18	\$111,625.44	\$316,889.93	\$84,888.80	\$137,317.97	\$126,652.20	\$150,428.12	\$1,345,443.20
Outpatient Facility	\$178,503.39	\$167,199.09	\$255,126.87	\$252,996.36	\$253,766.15	\$224,625.61	\$262,290.78	\$414,284.50	\$382,885.28	\$433,796.82	\$257,845.74	\$356,859.06	\$3,529,361.88
Professional	\$258,447.12	\$345,640.63	\$637,790.19	\$670,820.67	\$648,186.87	\$542,743.76	\$629,837.12	\$792,630.25	\$681,132.43	\$796,171.50	\$694,088.06	\$758,977.33	\$7,517,282.18
Total	\$601,790.99	\$602,379.62	\$1,068,742.83	\$1,070,288.35	\$1,101,067.94	\$837,474.96	\$1,103,853.36	\$1,517,788.19	\$1,159,107.61	\$1,327,286.28	\$1,057,786.01	\$1,266,264.61	\$12,726,927.34

Segment: Not Categorized

Date	JAN2009	FEB2009	MAR2009	APR2009	MAY2009	JUN2009	JUL2009	AUG2009	SEP2009	OCT2009	NOV2009	DEC2009	Total
Claims Type													
Cost Rate													
Adjustment	\$1,753.62	\$1,998.68	\$10,539.67	\$1,120.88	\$896.52	\$1,996.01							\$18,105.89
Drug	\$504.07	\$1,593.65	\$874.68	\$2,038.38	\$279.65	\$1,682.39	\$1,147.11						\$13,791.72
Drug Rebate	\$-1,166.15			\$-1,770.98		\$-1,190.02							\$-5,838.80
Inpatient Facility	\$947,762.85	\$1,487,340.74	\$1,440,342.01	\$962,153.12	\$961,568.42	\$885,078.98	\$1,043,181.29	\$584,291.00	\$818,097.58	\$914,204.63	\$678,233.99	\$628,089.57	\$11,942,822.09
Major Medical	\$6,509.45	\$9,681.85	\$12,736.61	\$9,549.37	\$9,549.37	\$10,194.79	\$9,090.20	\$8,211.41	\$9,088.53	\$11,533.30	\$9,577.80	\$10,461.37	\$119,699.27
Outpatient Facility	\$1,958,103.13	\$1,811,026.02	\$1,070,450.56	\$980,793.33	\$824,186.77	\$858,275.72	\$899,948.73	\$930,527.91	\$699,662.98	\$781,662.43	\$815,413.33	\$834,866.62	\$10,964,827.42
Professional	\$1,626,534.72	\$1,530,387.47	\$1,488,028.99	\$1,386,819.30	\$1,292,762.29	\$1,341,024.81	\$1,336,159.70	\$1,215,997.90	\$1,262,618.25	\$1,384,084.86	\$1,253,353.50	\$1,293,849.76	\$16,423,527.46
Total	\$3,642,001.70	\$4,042,028.40	\$4,023,872.65	\$3,383,007.42	\$3,085,447.63	\$3,098,393.72	\$3,288,265.07	\$2,740,968.38	\$2,791,742.36	\$3,091,856.08	\$2,448,610.21	\$2,768,647.46	\$38,576,628.76

Segment: Not Categorized (Continued)

Date	JAN2009	FEB2009	MAR2009	APR2009	MAY2009	JUN2009	JUL2009	AUG2009	SEP2009	OCT2009	NOV2009	DEC2009	Total
Claims Type													
Cost Rate													
Adjustment	\$300,891.13	\$352,589.47	\$1,322,567.69	\$203,094.63	\$130,327.48	\$274,829.48							\$2,584,196.88
Drug	\$1,332.00	\$6,327.00	\$5,328.00	\$6,993.00	\$2,997.00	\$4,329.00	\$1,998.00	\$1,998.00	\$3,336.00	\$5,994.00	\$999.00	\$2,694.00	\$44,209.00
Drug Rebate	\$1,665.00			\$2,664.00		\$2,997.00							\$9,324.00
Inpatient Facility	\$835,997.56	\$1,294,856.19	\$1,250,824.16	\$839,787.31	\$847,586.19	\$733,917.12	\$681,418.43	\$529,726.96	\$563,302.51	\$602,332.67	\$514,865.64	\$546,425.71	\$9,623,820.45
Major Medical	\$133,890.39	\$135,179.22	\$151,992.54	\$126,086.38	\$116,583.16	\$127,203.45	\$120,034.51	\$124,536.18	\$118,355.20	\$134,034.99	\$107,785.15	\$137,126.13	\$1,633,887.21
Outpatient Facility	\$4,844,272.03	\$4,594,201.23	\$4,719,594.68	\$4,456,672.62	\$4,420,370.62	\$4,207,269.37	\$4,625,635.64	\$4,109,425.30	\$3,787,595.44	\$3,917,836.09	\$3,683,966.64	\$3,643,716.32	\$81,060,756.83
Professional	\$9,987,486.60	\$9,842,919.96	\$10,188,711.35	\$9,475,375.61	\$9,810,922.54	\$9,955,407.72	\$9,028,411.18	\$8,573,890.50	\$8,683,863.31	\$9,384,147.50	\$8,481,896.64	\$7,565,675.17	\$109,718,125.08
Total	\$16,026,347.71	\$16,026,173.06	\$17,640,918.83	\$15,173,853.47	\$14,627,886.98	\$14,413,136.73	\$14,640,494.77	\$12,389,685.94	\$13,464,446.46	\$14,296,343.20	\$12,769,312.08	\$12,318,804.33	\$174,574,401.15

As shown in Example #3, the user may choose to email or export the report.

DECISION MATRIX / CONCLUSIONS

METHOD	TIME ELAPSED	ADVANTAGES	DISADVANTAGES
EXAMPLE #1 12 Information Map for each of 12 Segments	44 minutes > 3.5 minutes per segment	Requires little user interaction (jobs are scheduled)	Report additions or modifications require each IM to be altered; Run-time exceeds acceptable limits set by Admin
EXAMPLE #2 One Information Map with Segment Filter	34 minutes > 2.5 minutes per segment	User chooses segment	Run-time exceeds acceptable limits set by Admin
EXAMPLE #3 One Information Map / Group Break by Segment	5.5 minutes < 30 seconds per segment	User chooses segment; Meets run-time requirements	
EXAMPLE #4 One Information Map / No Break by Segment	7.5 minutes	All reports generate at one time	User needs segments to be run with varying date selection criteria; Run-time exceeds acceptable limits set by Admin

It is clear from the decision matrix that our choice had to be the methodology of Example #3. This technique proved not only to deliver the reports quickly, but also to satisfy the user's novice abilities with SAS tools.

Lessons Learned:

- Data needs to be IM/WRS ready. (Meaning that data processing should be kept to a minimum inside these BI tools. Data transformations need to be completed outside the IM/WRS tools for the reports to run efficiently. Trying to do otherwise significantly impedes the turn around time for data delivery.)
- Create reports with a focus on the abilities of the end users. (The end user in this case was neither technically-oriented nor experienced with SAS tools; therefore, little to no interaction with these applications was a main requirement. A point-and-click solution that we were looking for was found in our third example.)
- Being able to schedule the reports to run at off-peak times would have expanded the options we could have used for meeting all administrative and user requirements.

* All jobs were run using the Unix operating system – Sun Microsystems, Inc. OS version 5.9.

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