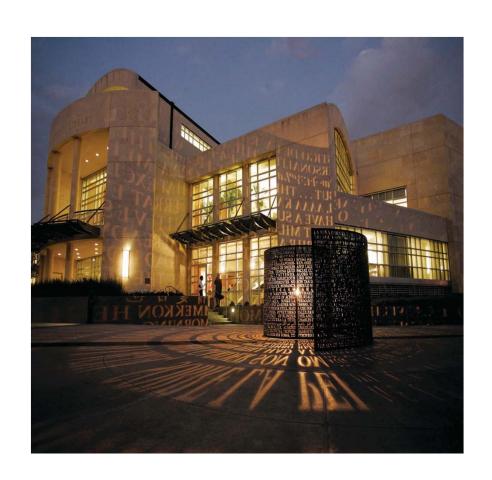
# Just Do It! Building a Student Data Warehouse at the University of Houston

Presented at SAIR 2015 by
Dr. Susan Moreno and Vyas Krishnamurthy
Office of Institutional Research

# University of Houston

- 42,704 students
- 13 colleges
- 111 bachelors, 121 masters, 47 doctoral, and 3 professional programs
- 9,160 degrees awarded annually



## **Outline**

- Why Data Warehouse?
- Decisions for DW Implementation
- Model Schema
- Type of Data and Tables
- Data Validation Process
- User Access
- Documentation and Training
- Reports Demonstration

# Why a Data Warehouse?

- UH Finance data first in 2007 then student data in 2009
- Longitudinal outlook and analysis of student admissions and enrollment data
- One source of data for the truth
- Easily accessible historical trends of data

# Why Data Warehouse?

- Options for data view or query:
  - IR Statistical Handbook
  - PeopleSoft Query Tool
  - Reporting Tables
  - Dashboard
- Collaboration between Institutional Research and the Data Warehouse team in IT

# Decisions for DW Implementation

- Data and reporting needs of the business user
- Source Data: PeopleSoft, CB Reports, Derived fields
- Time period of data in the DW
- Choice of schema model

# Decisions for DW Implementation

- Frequency of data capture each semester snapshots/key dates
- Capture changes in major/department hierarchy for trending
- Accessing the DW tables by users
- Data for UH Main campus only

## **User Access**

- Data Warehouse is license restricted
- Shared between Student, Finance and Research DW users
- Each college is given two licenses

 Power user - Hyperion Interactive Reporting Studio tool should be installed on user's machine

## **Model Schema**

- The initial proposed design was star schema using facts and dimensions
- The current schema is a normalized model
- This minimized redundancy and easy to maintain
- Key fields in tables

# Snapshots

- Pulled on key dates in a semester
- Enrollment and admission tables have the snapshot date
- Enrollment tables 9 snapshots
- Admission snapshots are weekly

# **Enrollment Tables Snapshots**

## • Fall 2014 Semester

Snapshot	Period Description	Capture Date		
PFC	ONE WEEK PRIOR FIRST CLASS DAY	8/18/2014		
FCD	FIRST CLASS DAY	8/25/2014		
CEN	CENSUS CENSUS			
TCD	TWENTIETH CLASS DAY	9/25/2014		
LDD	LAST DROP DATE	10/31/2014		
TED	TERM END DT	12/18/2014		
GD1	GRADE DT 1	1/8/2015		
GD2	GRADE DT 2	2/7/2015		
FGD	FINAL GRADE DT	3/22/2015		

# **Admissions Tables Snapshots**

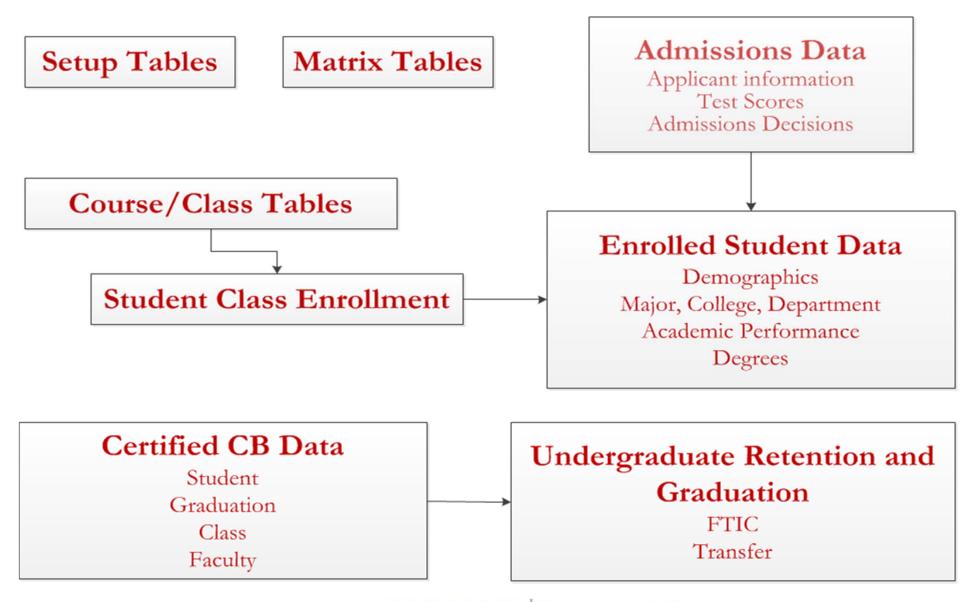
## • Fall 2014 Admissions

Snapshot	<b>Period Description</b>	Capture Date
WK1	WEEK 1	9/8/2013
WK10	WEEK 10	11/10/2013
WK20	WEEK 20	1/19/2014
WK30	WEEK 30	3/30/2014
WK40	WEEK 40	6/8/2014
WK50	WEEK 50	8/17/2014
WK57	WEEK 57	10/5/2014

# Data Warehouse Tables

- CB tables: Data from Fall 2007 to present
- Setup tables: Facilitates DW functionality
- Enrollment tables: Data from Summer 2000 to present
- Admissions tables: Data from Fall 2010 to present
- <u>Matrix tables</u>: Maps latest organizational hierarchy
- <u>Retention Tables</u>: Retention & Graduation data for specific cohorts

## Student Data Warehouse Tables



UNIVERSITY of HOUSTON INSTITUTIONAL RESEARCH

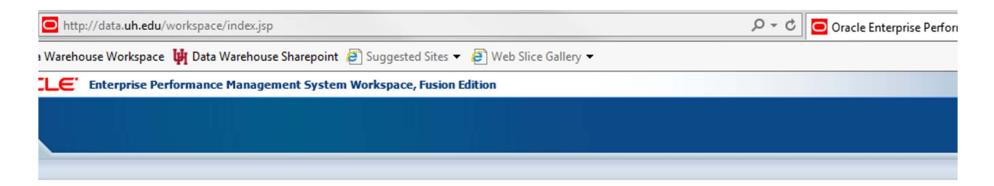
## **Data Validation Process**

- Compare DW vs IR office data
- Frequency counts of different fields and look at differences
- CB tables counts should have exact match
- Enrollment and Admissions tables close match
- If large discrepancy, understand the difference

# **Documentation & Power User Training**

- Hyperion Interactive Reporting Studio tool
- Data Warehouse tables
- Examples for users to work
- Work Sessions

# Reports Demonstration



User Name:		
Password:		
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	Log On	
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## UNIVERSITY of HOUSTON

## **DATA WAREHOUSE**

INFORMATION ON:

**Academic** 

Research

**Human Resources** 

**Finance** 

#### Welcome to EPM 11

We have recently upgraded from Oracle Hyperion 9 to Oracle Enterprise Performance Manager 11. This version provides the same data and reports as the previous one but in a faster, more reliable environment.

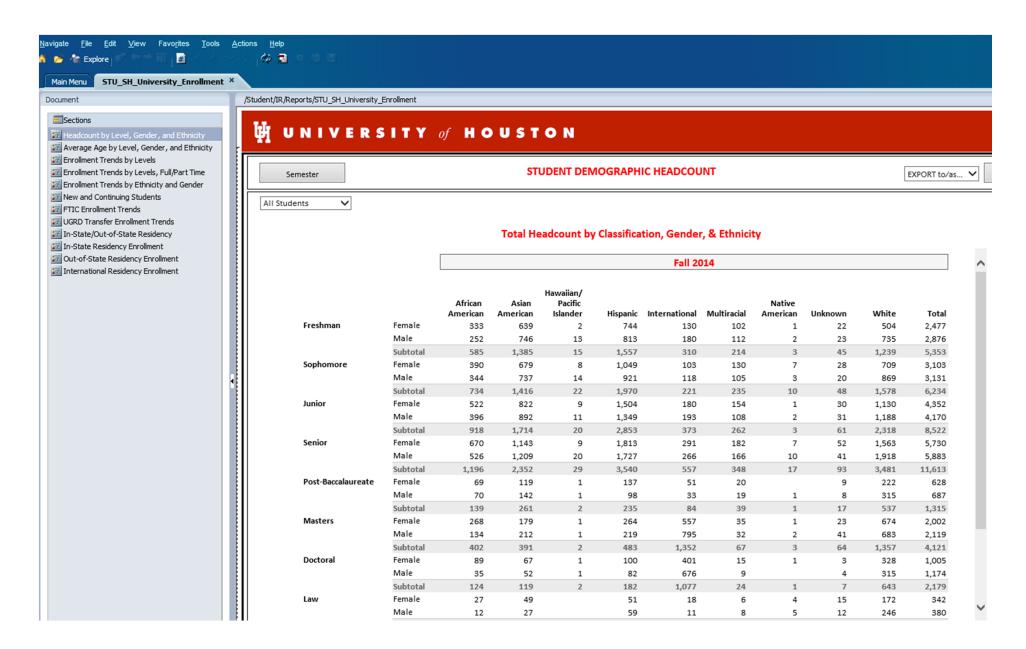


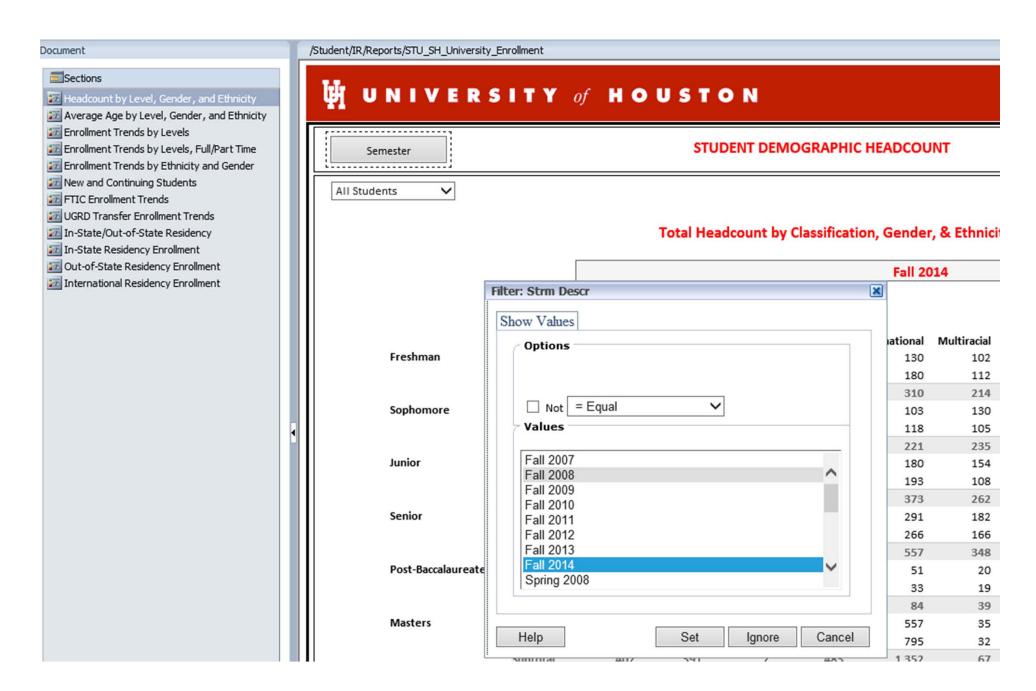
### **DATA WAREHOUSE REPORTS**

# **UNIVERSITY REPORTS** Admissions Student Enrollment Semester Credit Hours Financial Aid **Graduation Statistics** Faculty Statistics Performance Reports

COLLEGE & DEPARTMENTAL REPORTS					
Architecture	Business				
Education	Engineering				
Hotel & Restaurant Management	Law				
Liberal Arts & Social Sciences	Natural Science & Math				
Optometry	Pharmacy				
Social Work	Technology				
Exploratory Studies	Honors College				

Create Custom Reports





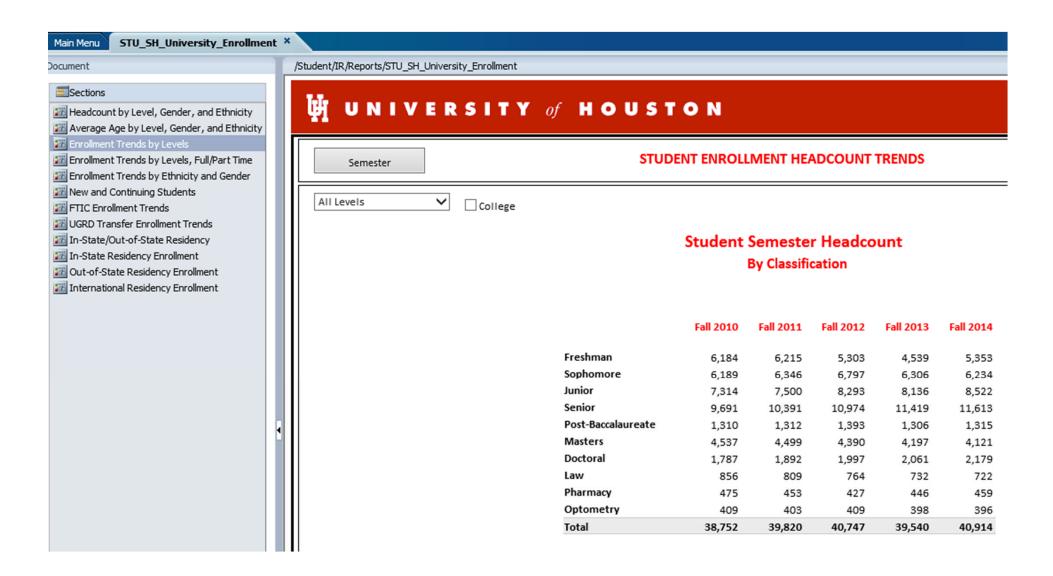
### STUDENT DEMOGRAPHIC HEADCOUNT

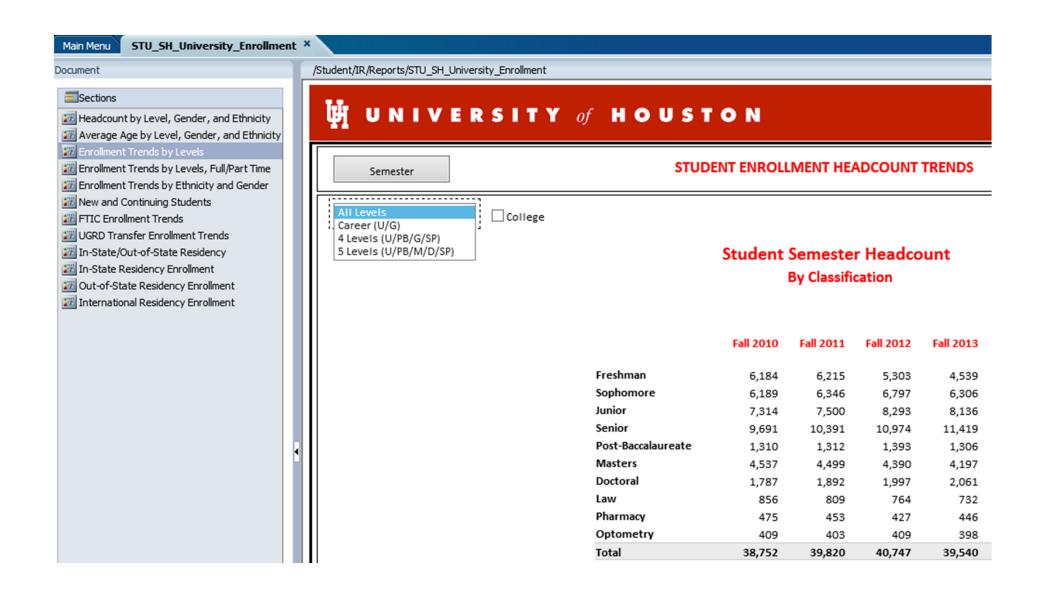
EXPORT to/as... ?
CSV
Excel

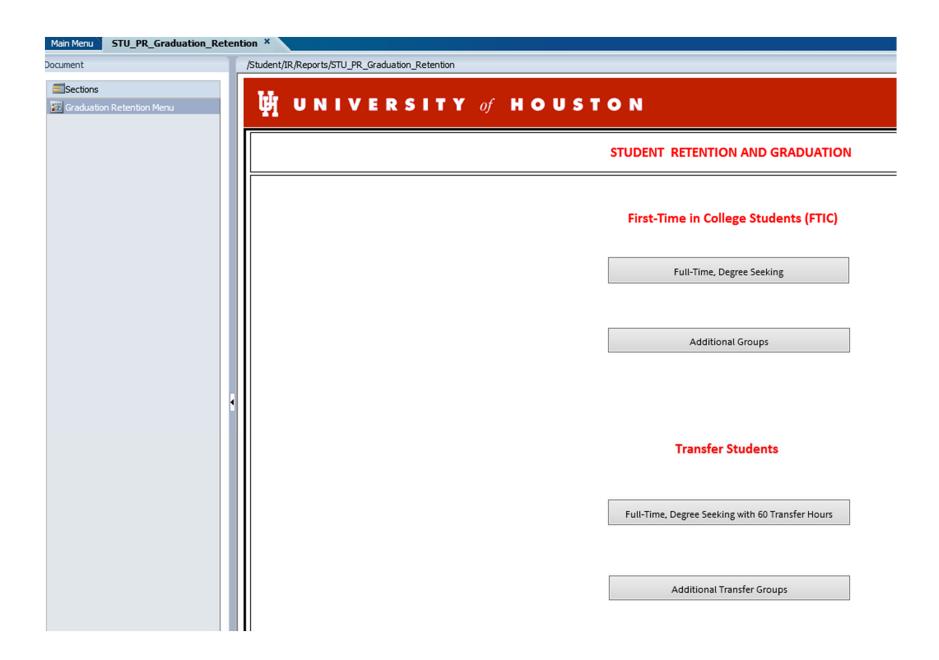
## al Headcount by Classification, Gender, & Ethnicity

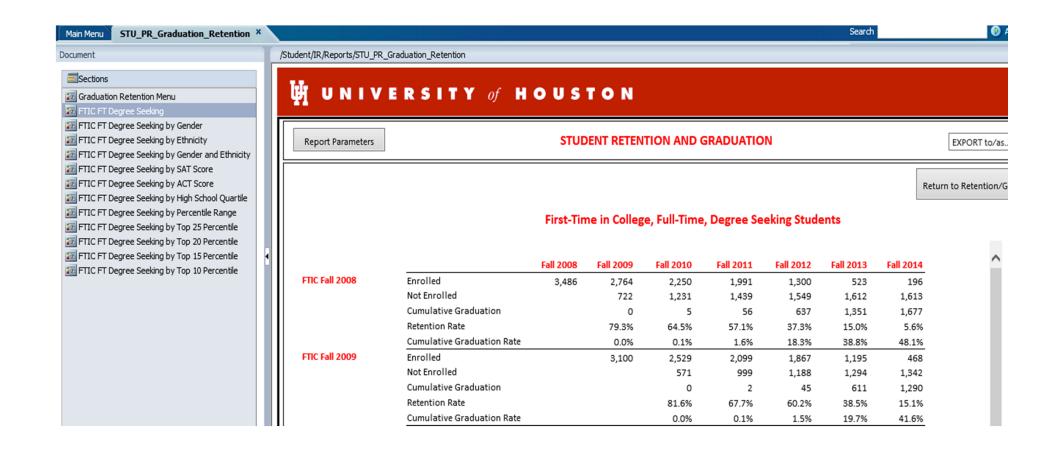
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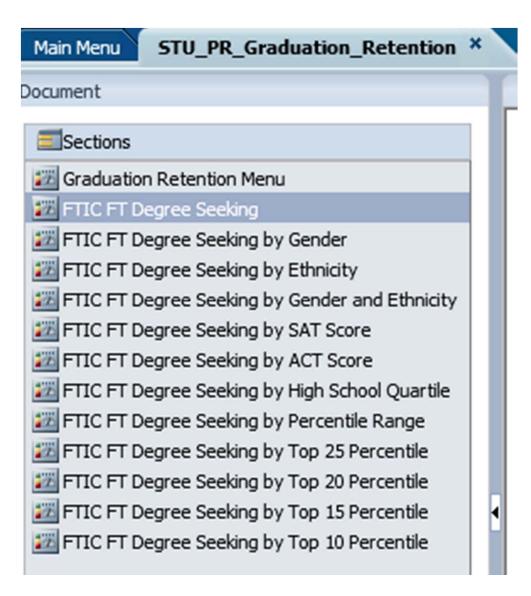
ian	Hawaiian/ Pacific				Native			
ican	Islander	Hispanic	International	Multiracial	American	Unknown	White	Total
639	2	744	130	102	1	22	504	2,477
746	13	813	180	112	2	23	735	2,876
385	15	1,557	310	214	3	45	1,239	5,353
679	8	1,049	103	130	7	28	709	3,103
737	14	921	118	105	3	20	869	3,131
416	22	1,970	221	235	10	48	1,578	6,234
822	9	1,504	180	154	1	30	1,130	4,352
892	11	1,349	193	108	2	31	1,188	4,170
714	20	2,853	373	262	3	61	2,318	8,522
143	9	1,813	291	182	7	52	1,563	5,730
209	20	1,727	266	166	10	41	1,918	5,883
352	29	3,540	557	348	17	93	3,481	11,613
119	1	137	51	20		9	222	628
142	1	98	33	19	1	8	315	687
261	2	235	84	39	1	17	537	1,315
470	4	0.54		0.5		00	c7.	0.000











Cumulative Graduation Rate

**Cumulative Graduation Rate** 

**Cumulative Graduation** 

Enrolled

Enrolled

Not Enrolled

Not Enrolled

Retention Rate

FTIC Fall 2010

Female

Male

0.0%

1,649

1,804

0.0%

1,364

82.7%

0.0%

1,435

369

285

0

1.0%

1,154

70.0%

0.2%

1,147

657

492

15.3%

1,034

62.7%

2.0%

1,033

754

582

33

35.3%

558

640

451

33.8%

27.3%

658

813

#### STUDENT ENROLLMENT HEADCOUNT & SEMESTER CREDIT HOURS

#### Step by Step Instructions:

Show Instructions on New Tab

Show Instructions in New Window

You will be prompted to select: Semester(s) and College(s).

Click Here to Begin Session

Return to List of Reports

#### Facts - Numeric Fields for Reporting:

Headcount

Semester Credit Hours (SCH)

#### Fields to Populate Rows and Columns of the Output Table:

Semester,

College,

Department,

Plan,

Gender,

Ethnicity(Diversity)

Classification,

Level2 (UGRD/GRAD),

Level4 (UGRD,PB,GRAD,SP),

Level5 (UG/PB/MS/DR/SP),

Academic Career,

FT PT Federal,

FT PT State,

Residency Group (Harris County, Adj Counties,

Other Texas Counties,

Out-of-State, International),

Residency Status (In-State, Out-of-State, International),

County,

State,

Country,

**Cohort Group** 

FTIC Flag

Degr FTIC Flag (Degree-seeking),

FT Degr FTIC Flag (Full-Time Degree-seeking),

UG transfer Flag,

New Grad/SP Flag,

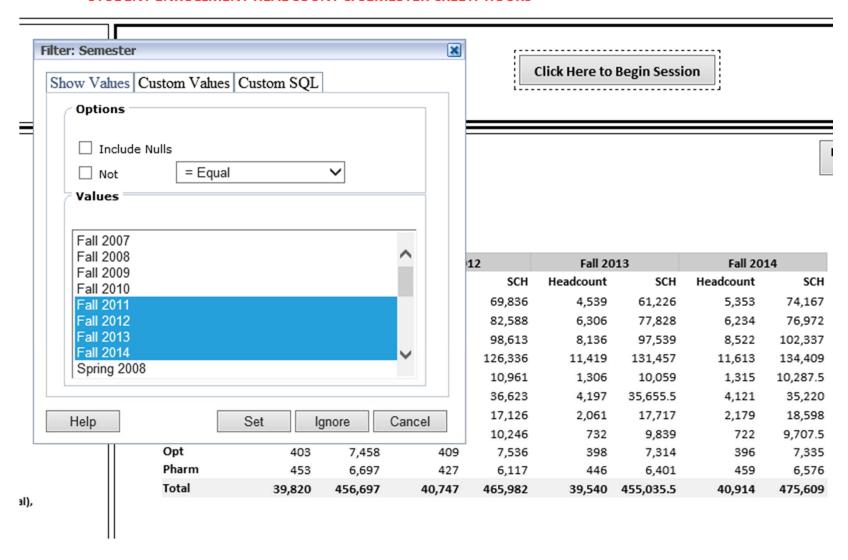
Transfer 60-Hrs Flag,

Fall FTIC Flag.

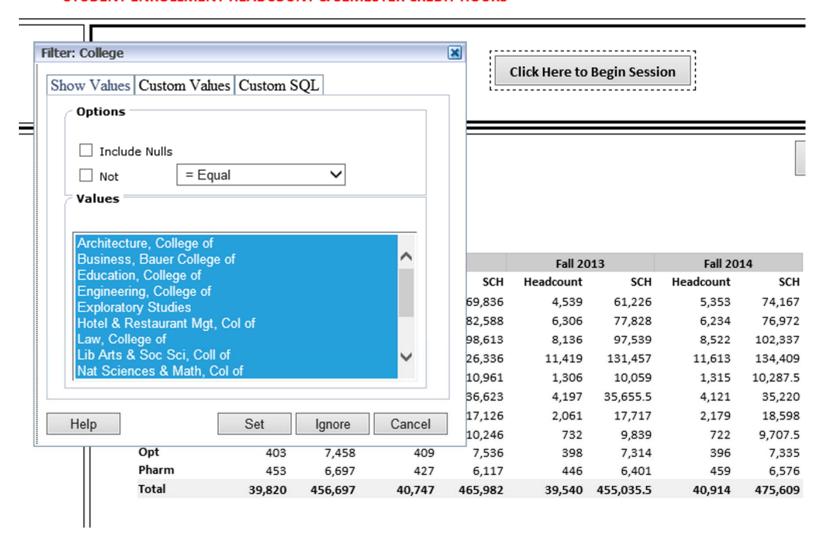
#### Sample Table:

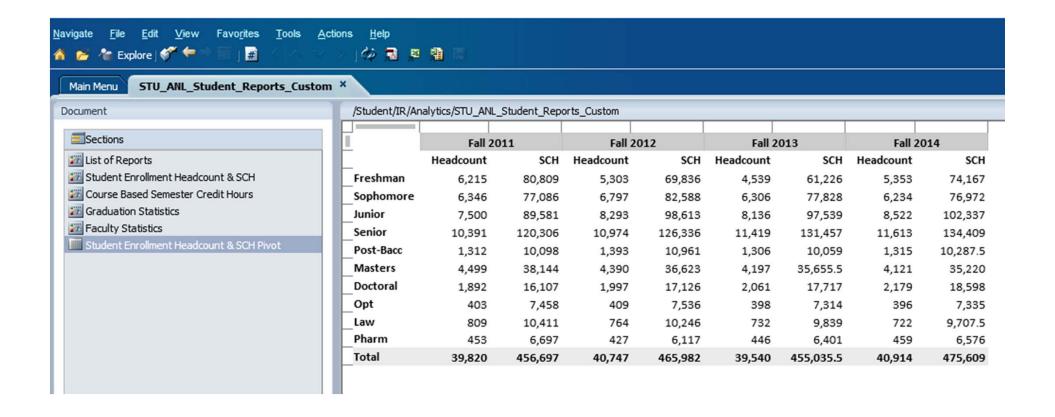
	Fall 2011		Fall 2012		Fall 2013		Fall 2014	
	Headcount	SCH	Headcount	SCH	Headcount	SCH	Headcount	SCH
Freshman	6,215	80,809	5,303	69,836	4,539	61,226	5,353	74,167
Sophomore	6,346	77,086	6,797	82,588	6,306	77,828	6,234	76,972
Junior	7,500	89,581	8,293	98,613	8,136	97,539	8,522	102,337
Senior	10,391	120,306	10,974	126,336	11,419	131,457	11,613	134,409
Post-Bacc	1,312	10,098	1,393	10,961	1,306	10,059	1,315	10,287.5
Masters	4,499	38,144	4,390	36,623	4,197	35,655.5	4,121	35,220
Doctoral	1,892	16,107	1,997	17,126	2,061	17,717	2,179	18,598
Law	809	10,411	764	10,246	732	9,839	722	9,707.5
Opt	403	7,458	409	7,536	398	7,314	396	7,335
Pharm	453	6,697	427	6,117	446	6,401	459	6,576
Total	39,820	456,697	40,747	465,982	39,540	455,035.5	40,914	475,609

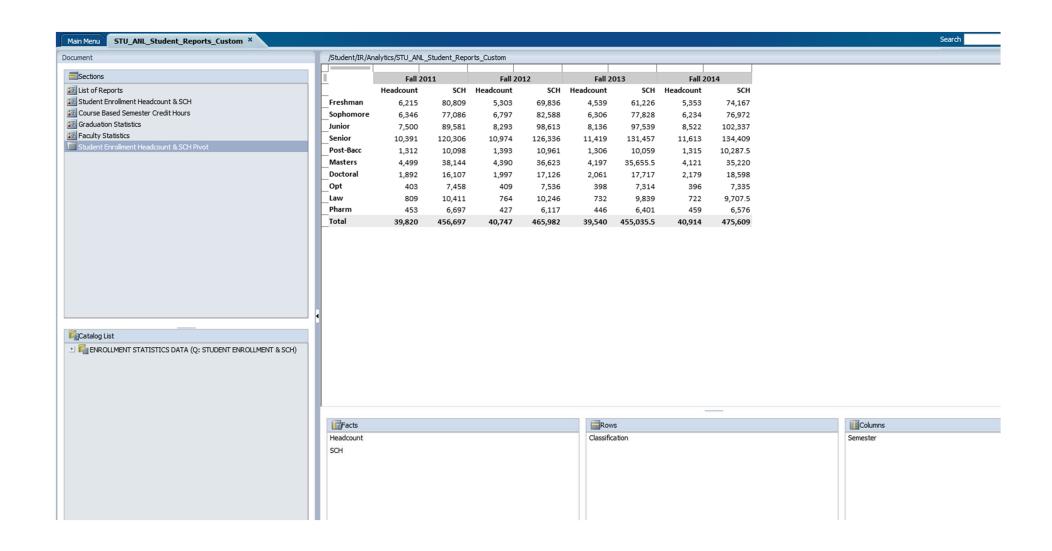
#### STUDENT ENROLLMENT HEADCOUNT & SEMESTER CREDIT HOURS



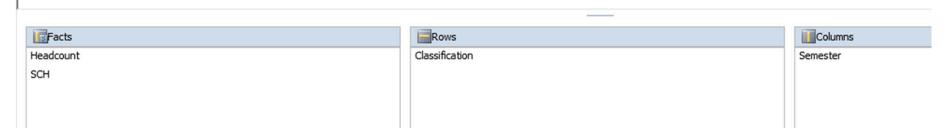
#### STUDENT ENROLLMENT HEADCOUNT & SEMESTER CREDIT HOURS



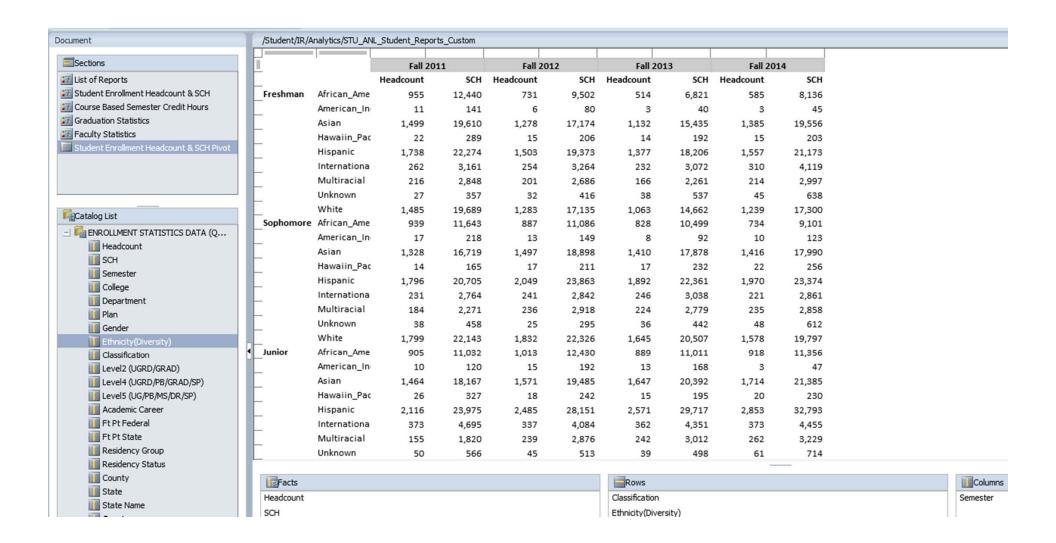




#### /Student/IR/Analytics/STU\_ANL\_Student\_Reports\_Custom Fall 2011 Fall 2012 Fall 2013 Fall 2014 Headcount SCH Headcount SCH Headcount SCH Headcount <u>SCH</u> 80,809 Freshman 6,215 5,303 69,836 4,539 61,226 5,353 74,167 Sophomore 6,346 77,086 6,797 82,588 6,306 77,828 6,234 76,972 Junior 7,500 89,581 8,293 98,613 8,136 97,539 8,522 102,337 Senior 10,391 120,306 10,974 126,336 11,419 131,457 11,613 134,409 Post-Bacc 10,098 10,961 10,059 1,315 1,312 1,393 1,306 10,287.5 Masters 35,220 4,499 38,144 4,390 36,623 4,197 35,655.5 4,121 Doctoral 17,126 17,717 18,598 1,892 16,107 1,997 2,061 2,179 Opt 403 7,458 409 7,536 398 7,314 396 7,335 10,246 Law 809 10,411 764 732 9,839 722 9,707.5 Pharm 453 6,697 427 6,117 446 6,401 459 6,576 Total 39,820 456,697 40,747 465,982 39,540 455,035.5 40,914 475,609







## **Future**

- Modules to add data: Financial Aid, Student Financials
- Building Reports: Admissions, Financial Aid, Honors College
- On-going data improvements
- Access DW tables by SAS, SPSS



# Thank you!!

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