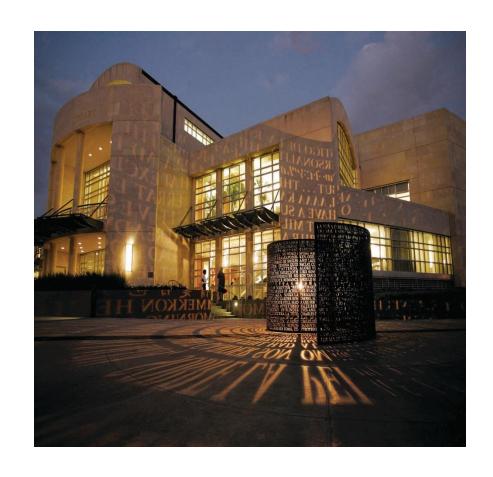
Just Do It! Building a Student Data Warehouse at the University of Houston

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

University of Houston

- 40,914 students
- 12 colleges
- 111 bachelors, 121 masters, 47 doctoral, and 3 professional programs
- 9,238 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 2013 Semester

Snapshot	Period Description	Capture Date
PFC	ONE WEEK PRIOR FIRST CLASS DAY	8/19/2013
FCD	FIRST CLASS DAY	8/26/2013
CEN	CENSUS	9/11/2013
TCD	TWENTIETH CLASS DAY	9/26/2013
LDD	LAST DROP DATE	11/1/2013
TED	TERM END DT	12/20/2013
GD1	GRADE DT 1	1/10/2014
GD2	GRADE DT 2	2/9/2014
FGD	FINAL GRADE DT	3/24/2014

Admissions Tables Snapshots

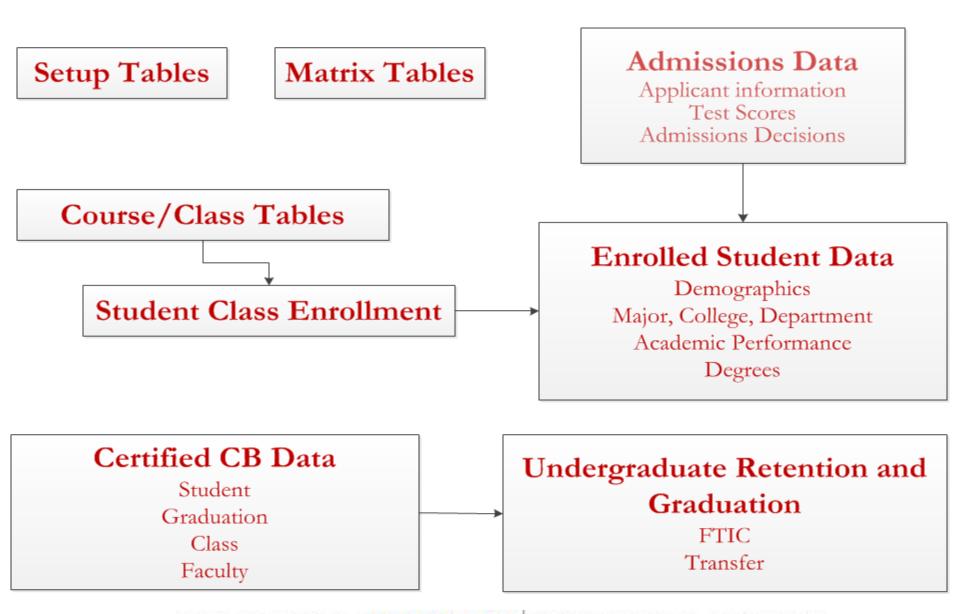
Fall 2014 Admissions

Snapshot	Period Description	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
- Retention Tables: Retention & Graduation data for specific cohorts

Student Data Warehouse Tables



UNIVERSITY of HOUSTON INSTITUTIONAL RESEARCH

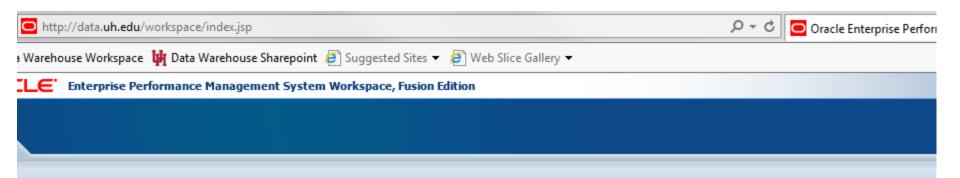
Data Validation Process

- 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



	Jser Name:
	Password:
	Log On
OR	
ENTERPRISE	

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Main Menu X

/Main Menu

W UNIVERSITY of HOUSTON

DATA WAREHOUSE

INFORMATION ON:

Academic

Research

Human Resources

Finance

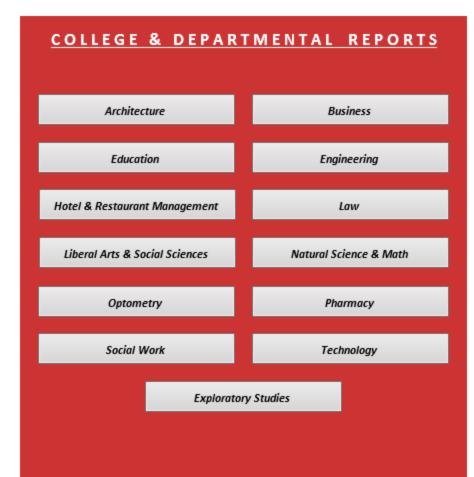
Welcome to EPM 11

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.

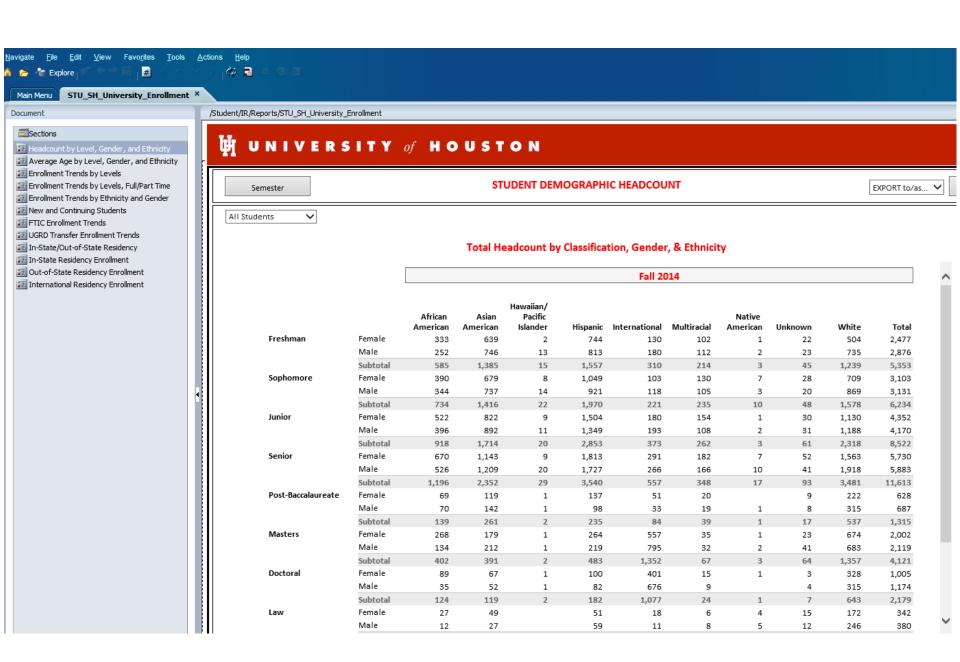


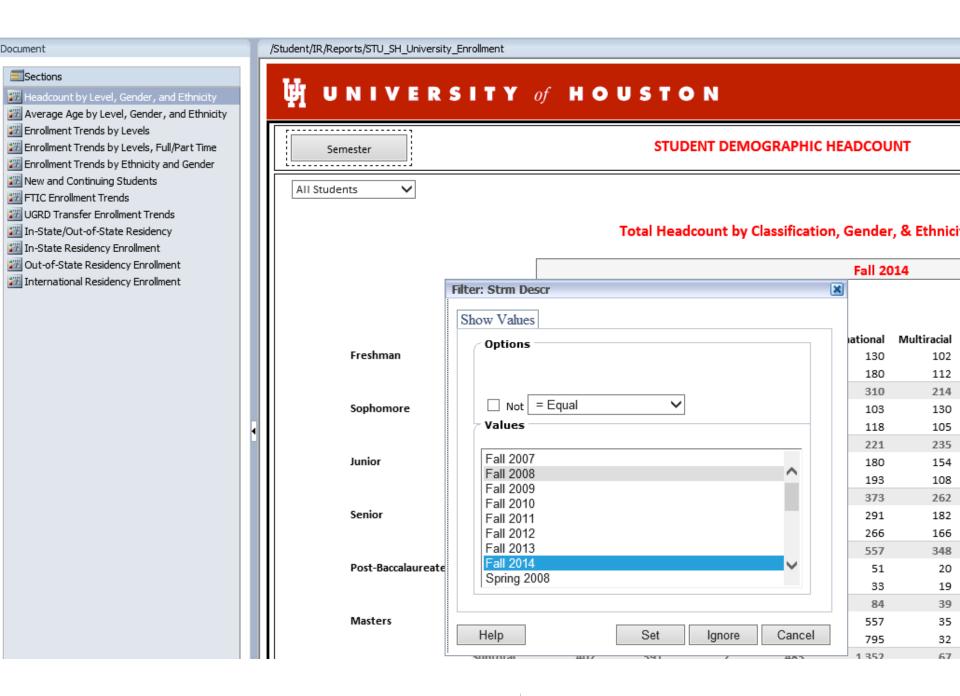
DATA WAREHOUSE REPORTS

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



Create Custom Reports

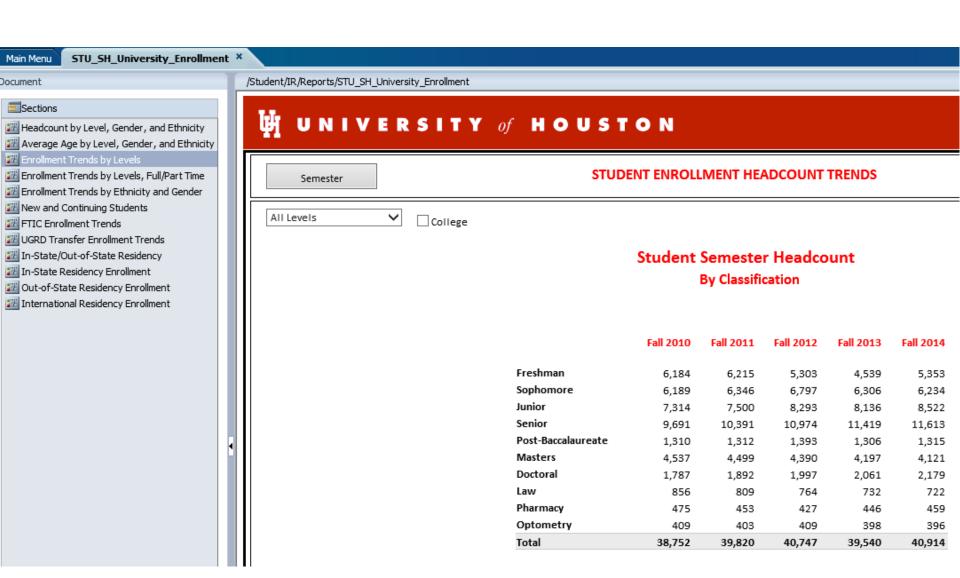


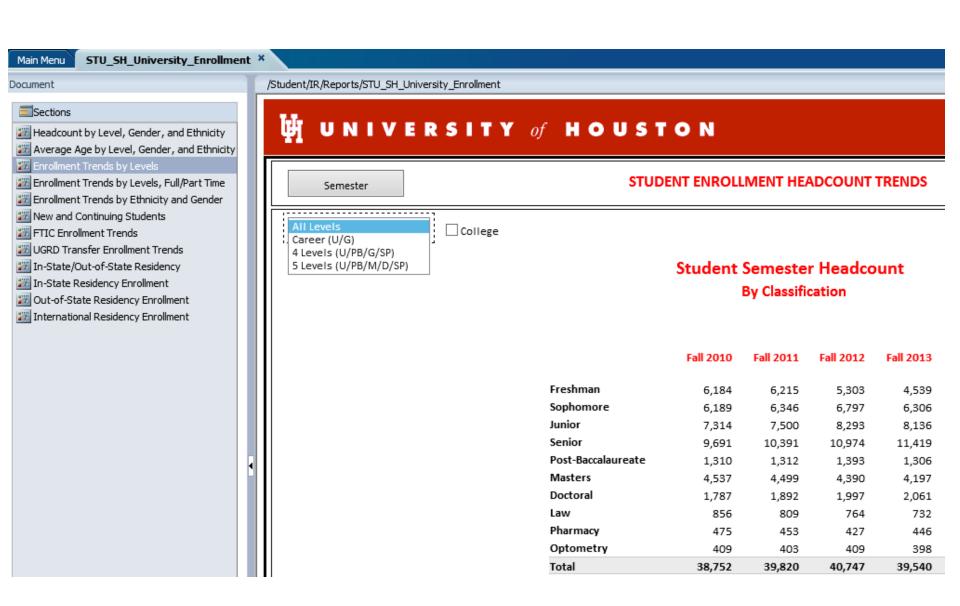


al Headcount by Classification, Gender, & Ethnicity

Fall 2014

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	-			25		22		2 222

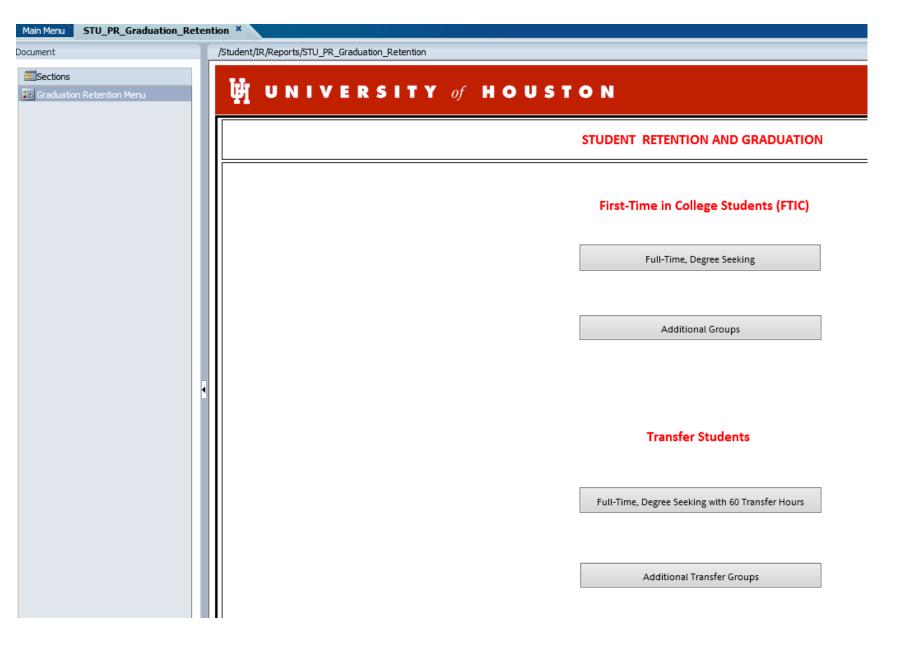


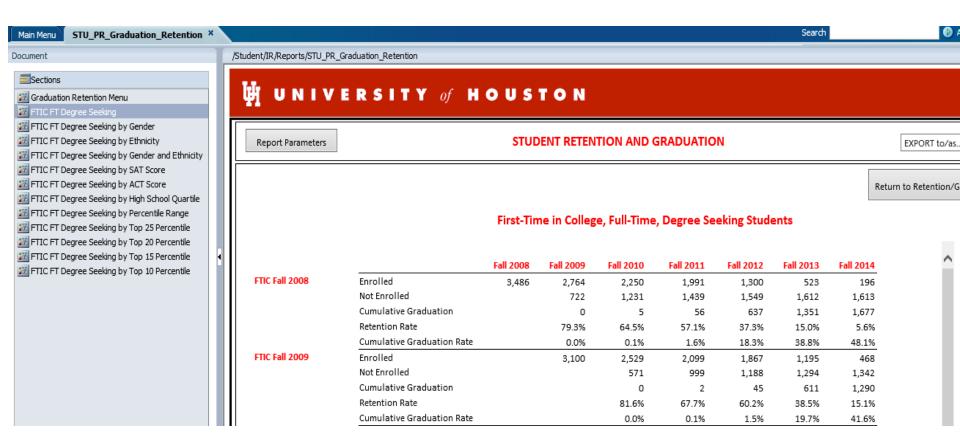


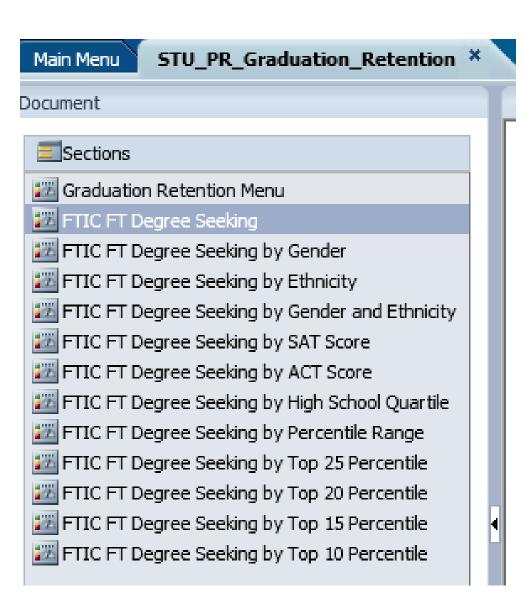
University Performance Reports

Undergraduate SCH Attempted/Completed

Retention & Graduation







W UNIVERSITY of HOUSTON

Report Parameters

STUDENT RETENTION AND GRADUATION

EXPORT to/as...

Return to Retention/Graduatio

First-Time in College, Full-Time, Degree Seeking Students By Gender

			Fall 2008	Fall 2009	Fall 2010	Fall 2011	Fall 2012	Fall 2013	Fall 2014
FTIC Fall 2008	Female	Enrolled	1,770	1,430	1,189	1,073	660	228	81
		Not Enrolled		340	580	667	720	747	737
		Cumulative Graduation		0	1	30	390	795	952
		Retention Rate		80.8%	67.2%	60.6%	37.3%	12.9%	4.6%
		Cumulative Graduation Rate		0.0%	0.1%	1.7%	22.0%	44.9%	53.89
	Male	Enrolled	1,716	1,334	1,061	918	640	295	11
		Not Enrolled		382	651	772	829	865	87
		Cumulative Graduation		0	4	26	247	556	72
		Retention Rate		77.7%	61.8%	53.5%	37.3%	17.2%	6.79
		Cumulative Graduation Rate		0.0%	0.2%	1.5%	14.4%	32.4%	42.29
TIC Fall 2009	Female	Enrolled		1,567	1,276	1,080	965	578	18
		Not Enrolled			291	485	573	612	62
		Cumulative Graduation			0	2	29	377	74
		Retention Rate			81.4%	68.9%	61.6%	36.9%	12.19
		Cumulative Graduation Rate			0.0%	0.1%	1.9%	24.1%	47.89
	Male	Enrolled		1,533	1,253	1,019	902	617	27
		Not Enrolled			280	514	615	682	71
		Cumulative Graduation			0	0	16	234	54
		Retention Rate			81.7%	66.5%	58.8%	40.2%	18.29
		Cumulative Graduation Rate			0.0%	0.0%	1.0%	15.3%	35.39
TIC Fall 2010	Female	Enrolled			1,649	1,364	1,154	1,034	55
		Not Enrolled				285	492	582	64
		Cumulative Graduation				0	3	33	45
		Retention Rate				82.7%	70.0%	62.7%	33.89
		Cumulative Graduation Rate				0.0%	0.2%	2.0%	27.39
	Male	Enrolled			1,804	1,435	1,147	1,033	65
		Not Enrolled				369	657	754	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,

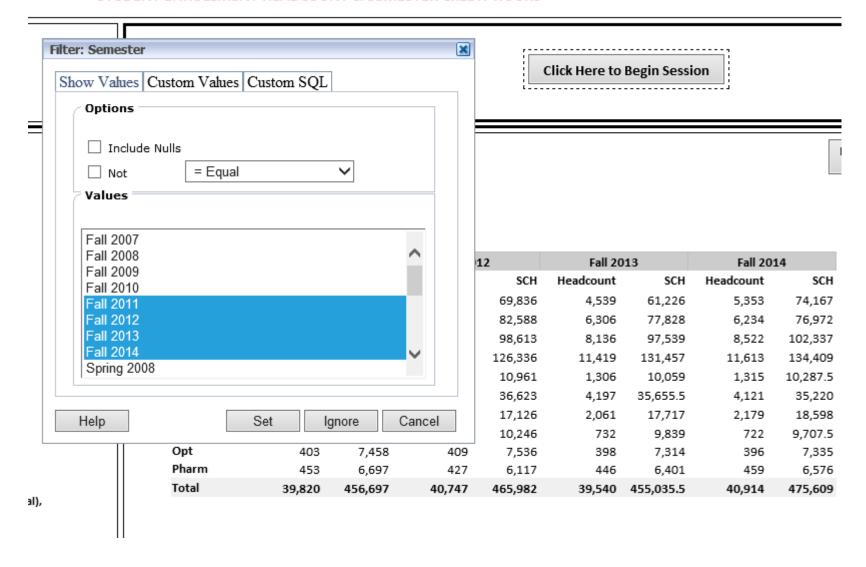
Transfer 60-Hrs Flag,

Fall FTIC Flag.

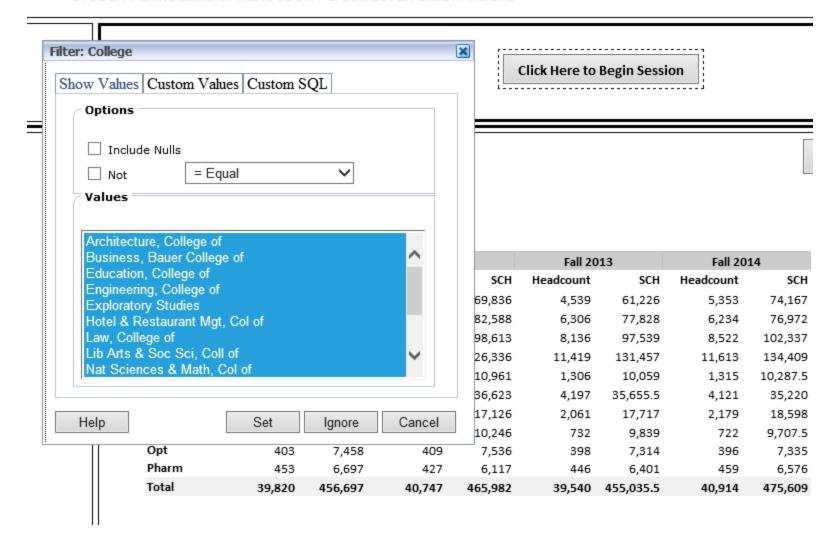
Sample Table:

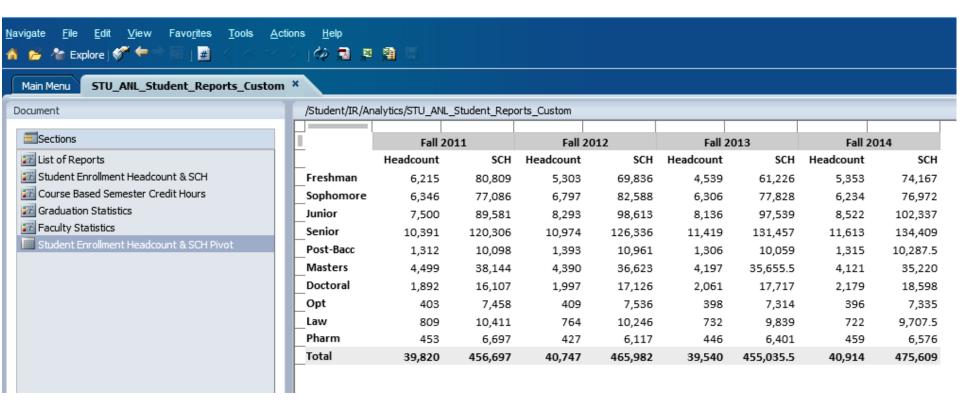
	Fall 2011		Fall 2011 Fall 2012		Fall 2013		Fall 2014	
	Headcount	SCH	Headcount	SCH	Headcount	SCH	Headcount	SCH
Freshman	6,215	80,809	5,303	69,836	4,539	61,226	5,353	74,167
Sophomore	6,346	77,086	6,797	82,588	6,306	77,828	6,234	76,972
Junior	7,500	89,581	8,293	98,613	8,136	97,539	8,522	102,337
Senior	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

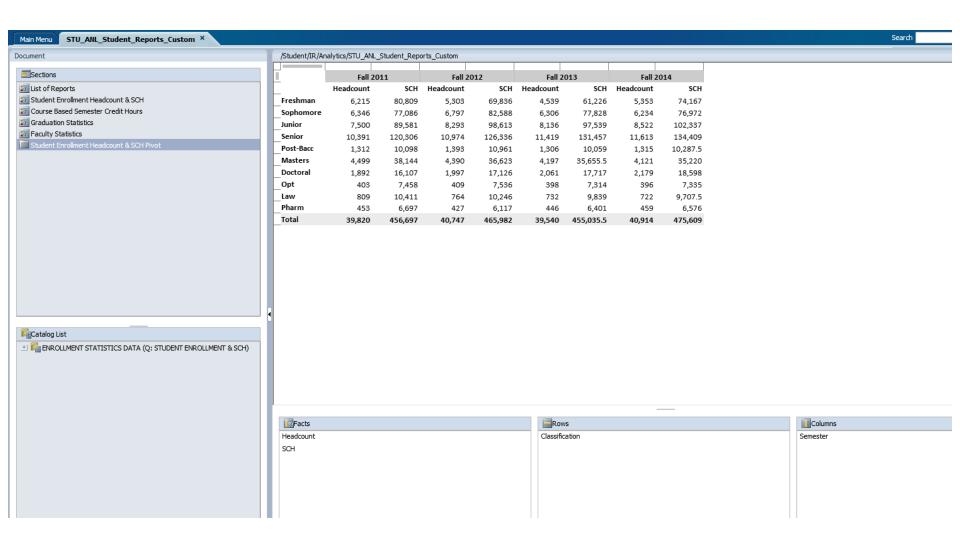
STUDENT ENROLLMENT HEADCOUNT & SEMESTER CREDIT HOURS



STUDENT ENROLLMENT HEADCOUNT & SEMESTER CREDIT HOURS







/Student/IR/Analytics/STU_ANL_Student_Reports_Custom									
	Fall 2011		Fall 2011 Fall 2012		Fall 2013		Fall 2014		
_	Headcount	<u>SCH</u>	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	

7,536

10,246

6,117

465,982

398

732

446

39,540

7,314

9,839

6,401

455,035.5

396

722

459

40,914

7,335

6,576

9,707.5

475,609

Opt

Law

Pharm

Total

403

809

453

39,820

7,458

10,411

456,697

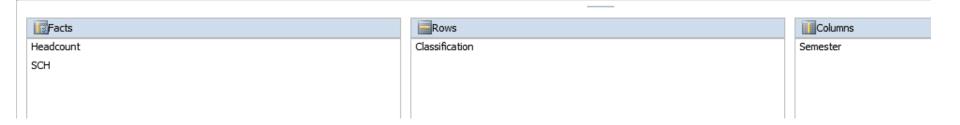
6,697

409

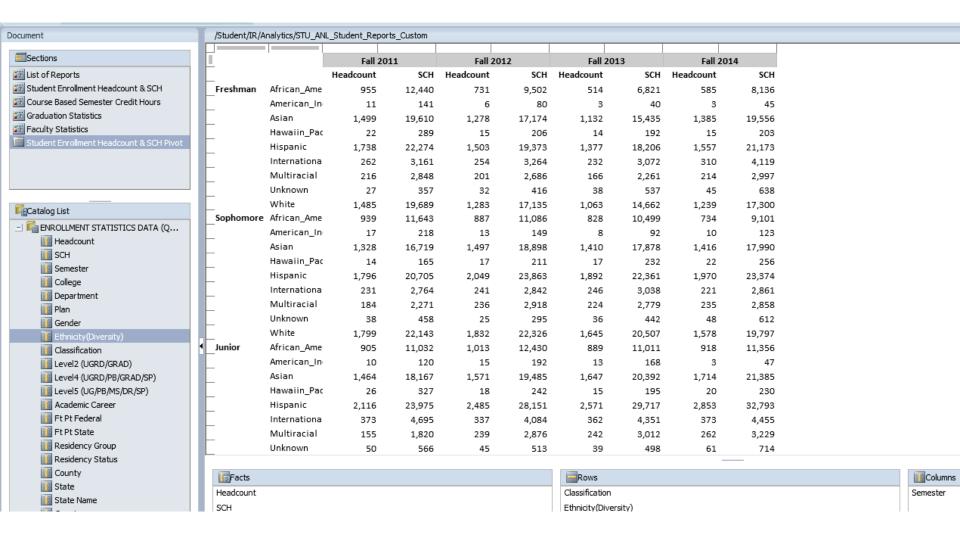
764

427

40,747







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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Vyas Krishnamurthy <vkrishn2@central.uh.edu>