

# Building Self-Updating Excel Workbooks

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# Presentation outline

- External data sources
- Why use external data in Excel?
- Examples of using external data
- How to generate web reports and CSV files
- Questions

# External Data Sources

- Web pages for summary  
[www.humboldt.edu/anstud](http://www.humboldt.edu/anstud)
- Text files for list data
  - CSV files (comma-separated-value)
  - Tab-delimited
  - Fixed format

# Publishing summary data on the web

- Transparent data
- Allows campus users to answer their own questions
- Provides a consistent starting point for campus conversations
- Easily updated

# Delivery of text files

- Frees the report developers from details such as column headings and sort order
- Empowers users by allowing them to manipulate data using filters and pivot tables
- Enables mailmerge if address/email fields are included

# Why use external data in Excel?

- Saves time
- Avoids errors
- Enables updates with new data and minimizes use of stale data.
- Allows data to be combined and used in ways other than the original intent
- Create charts

# Example with summary web report

Start with a URL that contains data you want to use in Excel:

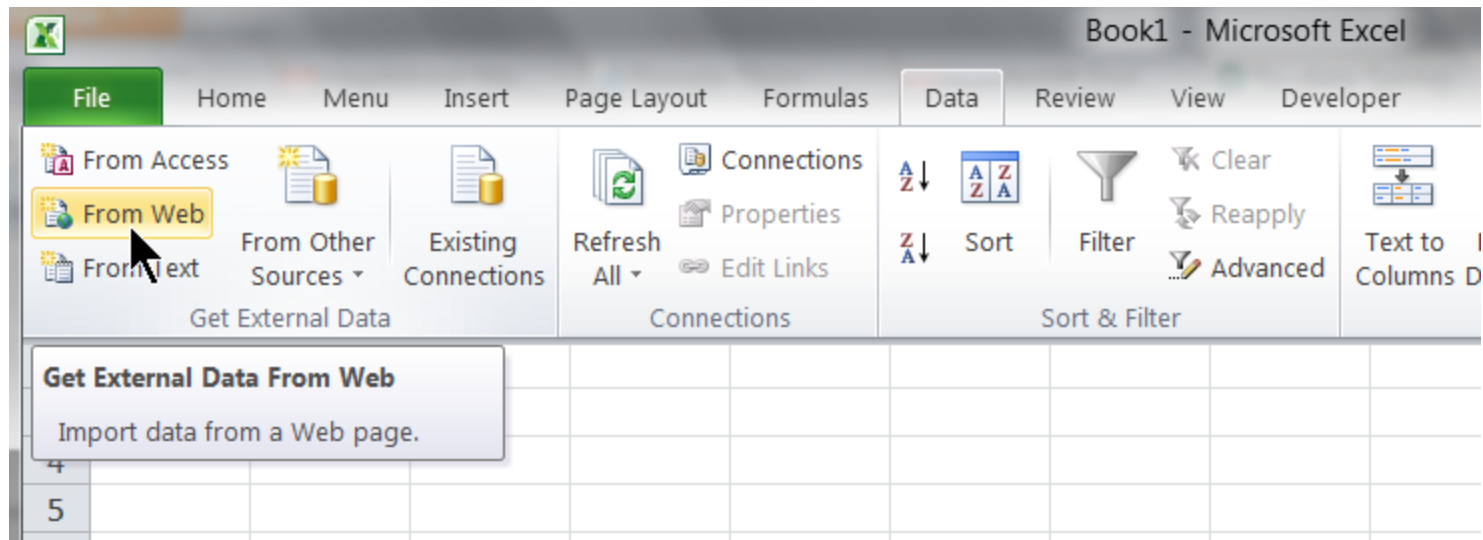
The screenshot shows a Firefox browser window with the address bar containing the URL: `pine.humboldt.edu/cgi-bin/cgiwrap/anstud/filter.pl?relevant=apptypeTSA`. The page title is "To-date Spring Applicants". A "Report Options" menu is visible, with a mouse cursor pointing to the "Time frame" dropdown. The menu options are:

- Time frame: To-date, Census
- Semester: Summer, Fall, Spring, Academic year
- Cohort: Applicants, Admits, Confirmed, Registered

Below the menu is a table titled "To-date Spring Applicants" with the subtitle "apptypeTSA report generated: 27-OCT-11". The table has columns for Applicant type and years from Spr 2005 to Spr 2012. The data is as follows:

Applicant type	Spr 2005	Spr 2006	Spr 2007	Spr 2008	Spr 2009	Spr 2010	Spr 2011	Spr 2012
First-time UG	45	55	81	84	87	5	93	98
Lower-div xfer	144	149	134	190	95	5	23	143
Upper-div xfer	415	453	375	479	580	114	638	698
Returning UG	35	47	38	41	46	20	99	120
Masters	36	48	40	55	56	7	34	56
Credential	3	2	3	1	1	7	1	3
Second Bachelor	31	40	45	39	61	22	6	1
Unclassified PB	6	1	12	14	9	0	3	4
Transitory	24	25	24	36	42	30	8	1
<b>Total</b>	<b>739</b>	<b>820</b>	<b>752</b>	<b>939</b>	<b>977</b>	<b>210</b>	<b>905</b>	<b>1,124</b>

# Get External Data From Web





# Enter URL, Go, Select table, choose HTML formatting

New Web Query

Address:

Click next to the tables you want to select, then click Import.

**Report**

<b>Time frame</b>	To-date	<a href="#">Census</a>
<b>Semester</b>	<a href="#">Summer</a>	<a href="#">Fall</a>
<b>Cohort</b>	Applicants	<a href="#">Admi</a>

**To-date Spring**  
apptypeTSA report g

Applicant type	Spr 2005	Spr 2006	Spr 2007
First-time UG	45	55	81
Lower-div xfer	144	149	134
Upper-div xfer	415	453	375
Returning UG	35	47	38
Masters	36	48	40

Done

Web Query Options

Formatting

None

Rich text formatting only

Full HTML formatting

Import settings for preformatted <PRE> blocks

Import <PRE> blocks into columns

Treat consecutive delimiters as one

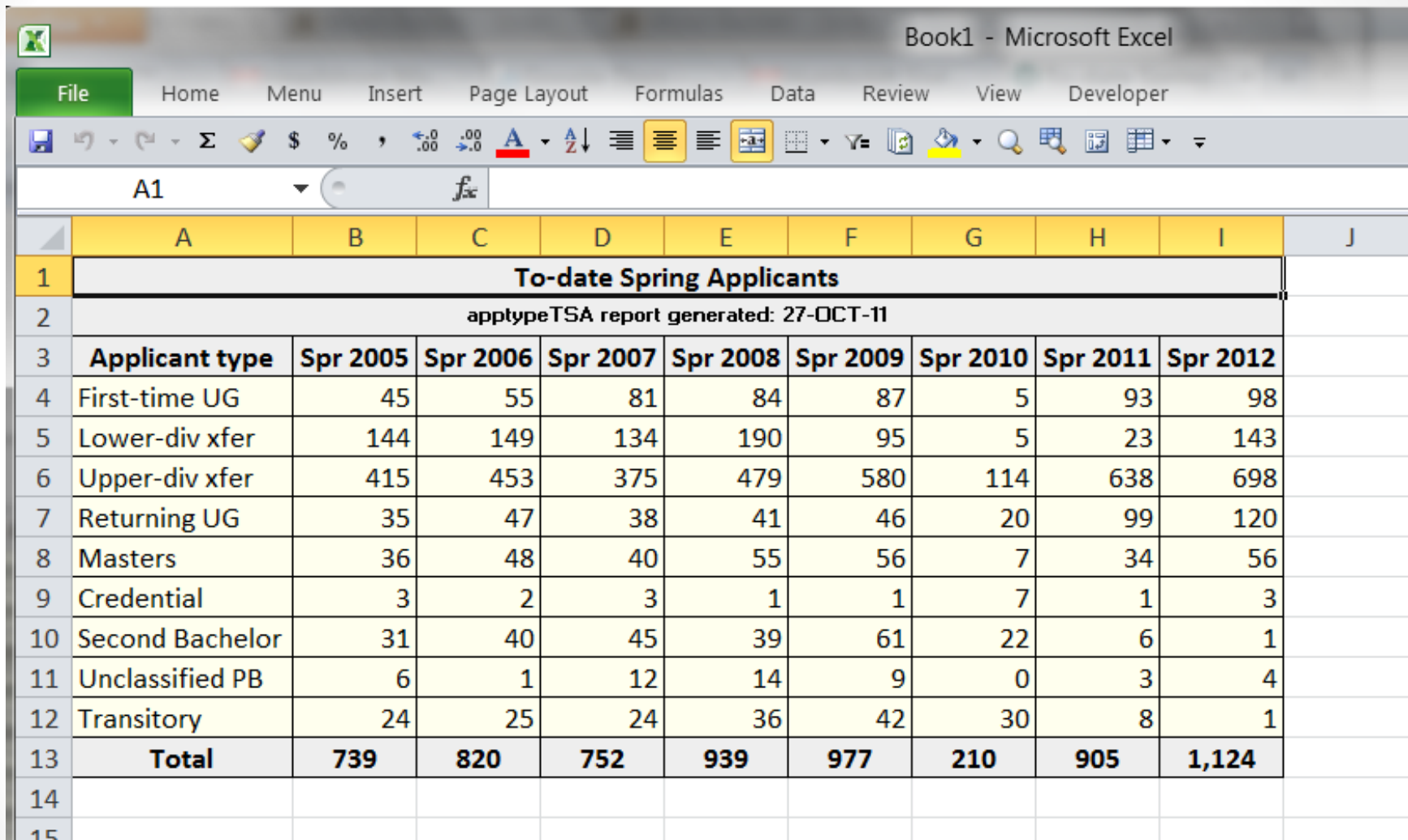
Use the same import settings for the entire section

Other Import settings

Disable date recognition

Disable Web query redirections

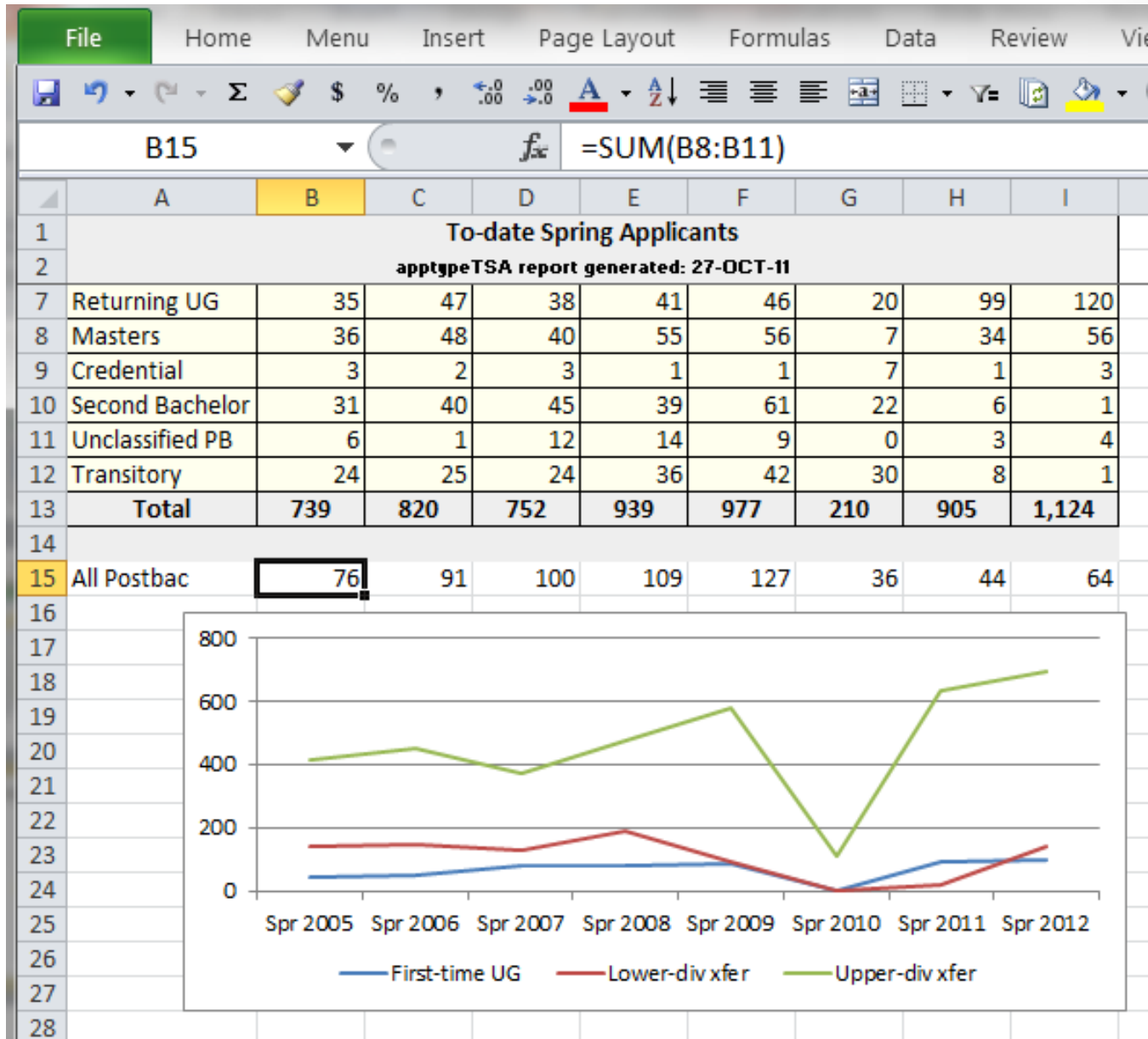
# Choose Import and select a place to put the data



The screenshot shows the Microsoft Excel interface with the following data table:

To-date Spring Applicants									
apptypeTSA report generated: 27-OCT-11									
Applicant type	Spr 2005	Spr 2006	Spr 2007	Spr 2008	Spr 2009	Spr 2010	Spr 2011	Spr 2012	
First-time UG	45	55	81	84	87	5	93	98	
Lower-div xfer	144	149	134	190	95	5	23	143	
Upper-div xfer	415	453	375	479	580	114	638	698	
Returning UG	35	47	38	41	46	20	99	120	
Masters	36	48	40	55	56	7	34	56	
Credential	3	2	3	1	1	7	1	3	
Second Bachelor	31	40	45	39	61	22	6	1	
Unclassified PB	6	1	12	14	9	0	3	4	
Transitory	24	25	24	36	42	30	8	1	
<b>Total</b>	<b>739</b>	<b>820</b>	<b>752</b>	<b>939</b>	<b>977</b>	<b>210</b>	<b>905</b>	<b>1,124</b>	

# Adding formulas and graphs



# Choose Data Refresh to update the spreadsheet

The screenshot shows the Microsoft Excel interface with the Data tab selected. The ribbon includes options like Refresh, Sort, Filter, and Text to Columns. A tooltip for 'Refresh All (Ctrl+Alt+F5)' is visible, stating 'Update all the information that is coming from a data source.' On the right, a context menu is open, listing various actions such as Cut, Copy, Paste Options, and Refresh. The Refresh option at the bottom of the menu is highlighted with a mouse cursor.

	2008	Spr 2009	Spr 2010	Spr 2011	Spr 2012
3 Applic					
4 First-time	84	87	5	93	98
5 Lower-div	190	95	5	23	143
6 Upper-div	479	580	114	638	698
7 Returning UG	35	47	38	41	46
8 Masters	36	48	40	55	56
9 Credential	3	2	3	1	1
10 Second Bachelor	31	40	45	39	61
11 Unclassified PB	6	1	12	14	9
12 Territory	24	25	24	26	42

Can also right-click and choose Refresh

## Combine multiple web imports to create projections.






To-date Spring Applicants apptypeTSA report generated: 30-OCT-11			Census Spring Registered apptypeCSR report generated: 30-OCT-11			projection
Applicant type	Spr 2011	Spr 2012	Applicant type	Spr 2011	Spr 2012	Spr 2012
First-time UG	93	98	First-time UG	20	0	21
Lower-div xfer	35	144	Lower-div xfer	40	0	165
Upper-div xfer	650	697	Upper-div xfer	203	0	218
Returning UG	100	120	Returning UG	38	0	46
Masters	34	56	Masters	16	0	26
Credential	1	3	Credential	2	0	6
Second Bachelor	6	1	Second Bachelor	1	0	0
Unclassified PB	3	4	Unclassified PB	1	0	1
Transitory	8	1	Transitory	90	0	126
<b>Total</b>	<b>930</b>	<b>1,124</b>	<b>Total</b>	<b>411</b>	<b>0</b>	<b>609</b>
<b>Census Fall Undergrad Headcount</b>			<b>Census Spring Undergrad Headcount</b>			
Student Type	Fall 2010	Fall 2011	Student Type	Spr 2010	Spr 2011	
Continuing	4,858	5,002	Continuing	6,404	6,368	6525
<b>Total</b>	<b>7,223</b>	<b>7,385</b>	<b>Total</b>	<b>6,551</b>	<b>6,729</b>	
<b>Census Fall Masters Headcount</b>			<b>Census Spring Masters Headcount</b>			
Continuing	292	280	Continuing	445	426	377
<b>Total</b>	<b>467</b>	<b>413</b>	<b>Total</b>	<b>455</b>	<b>442</b>	
<b>Census Fall Other Postbac Headcount</b>			<b>Census Spring Other Postbac Headcount</b>			
Continuing	86	54	Continuing	237	191	156
<b>Total</b>	<b>213</b>	<b>248</b>	<b>Total</b>	<b>263</b>	<b>263</b>	
<b>All students</b>	<b>7,903</b>	<b>8,046</b>		<b>6,814</b>	<b>7,434</b>	<b>7,666</b>

# Another example: CSU Campus Detailed Enrollment Workbook

Campus Detailed Enrollment Workbook\_1112\_HUM\_Fall.xlsx:2

	A	B	C	D	E	F	G
1	<b>Fall 2011</b>						
2		<b>Baccalaureate</b>	<b>Master's Degree</b>	<b>Doctoral Degree</b>			
3	<b>Summer 2011 Resident</b>	68	22				
4							
5	<b>Resident Headcounts</b>	<b>Lower Division</b>	<b>Upper Division</b>	<b>Teacher Credential PB</b>	<b>All Other PB</b>	<b>Graduate</b>	<b>Totals</b>
6	<b>Continuing Student</b>						0
7	<b>Returning Student</b>						0
8	<b>Returning Transfer Student</b>						0
9	<b>Transfer Student</b>						0
10	<b>First-Time Student</b>						0
11	<b>Transitory Student</b>						0
12	<b>Column Totals</b>	0	0	0	0	0	0
13							
14	Notes:						
15	0. A first-time student who is an undergraduate, i.e., a first-time freshman, may be in the upper-division by class level.						
16	1. A lower-division transfer student is one who has earned less than 60 semester (90 quarter) units prior to matriculation.						
17	2. An upper-division transfer student is one who has earned at least 60 semester (90 quarter) units prior to matriculation.						
18							
19							
20	<b>Resident Students</b>	<b>Lower Division</b>	<b>Upper Division</b>	<b>Teacher Credential PB</b>	<b>All Other PB</b>	<b>Graduate</b>	<b>Totals</b>
21	<b>Continuing Student</b>						0
22	<b>Returning Student</b>						0
23	<b>Returning Transfer Student</b>						0
24	<b>Transfer Student</b>						0
25	<b>First-Time Student</b>						0
26	<b>Transitory Student</b>						0
27	<b>Column Totals</b>	0	0	0	0	0	0
28							
29							
30	<b>ALL STUDENTS</b>	<b>Lower Division</b>	<b>Upper Division</b>	<b>Teacher Credential PB</b>	<b>All Other PB</b>	<b>Graduate</b>	<b>Totals</b>
31	<b>First-Time Student</b>						0
32	<b>Transfer Student</b>						0
33	<b>Headcount</b>						0
34	<b>Term FTES</b>						0

# Publish web data with matching rows and columns

← → ↻ 🏠 [pine.humboldt.edu/cgi-bin/cgiwrz](http://pine.humboldt.edu/cgi-bin/cgiwrz)     

resHC Fall 2011						
workbook2114 report generated: 11-OCT-11						
ENRSTAT	LD	UD	CREDPB	OTHERPB	GRADPB	TOTAL
1-Continuing	1,470	3,412	4	50	266	5,202
2-Returning	6	6	0	0	4	16
3-Returning Transfer	22	68	0	1	0	91
4-Transfer	130	772	0	0	0	902
5-First-time	1,258	1	111	4	104	1,478
6-Transitory	42	17	0	78	0	137
<b>sum</b>	<b>2,928</b>	<b>4,276</b>	<b>115</b>	<b>133</b>	<b>374</b>	<b>7,826</b>

resFTE Fall 2011						
workbook2114 report generated: 11-OCT-11						
ENRSTAT	LD	UD	CREDPB	OTHERPB	GRADPB	TOTAL
1-Continuing	1,435	3,268	4	33	202	4,942
2-Returning	5	5	0	0	3	13
3-Returning Transfer	16	52	0	0	0	69
4-Transfer	123	717	0	0	0	839
5-First-time	1,202	1	176	2	110	1,490
6-Transitory	29	11	0	15	0	55
<b>sum</b>	<b>2,810</b>	<b>4,053</b>	<b>179</b>	<b>50</b>	<b>315</b>	<b>7,408</b>

HC Fall 2011						
workbook2114 report generated: 11-OCT-11						
ENRSTAT	LD	UD	CREDPB	OTHERPB	GRADPB	TOTAL
1-Continuing	1,509	3,493	4	50	280	5,336
2-Returning	6	6	0	0	4	16
3-Returning Transfer	23	70	0	1	0	94
4-Transfer	148	786	0	0	0	934
5-First-time	1,281	1	111	4	129	1,526
6-Transitory	43	19	0	78	0	140
<b>sum</b>	<b>3,010</b>	<b>4,375</b>	<b>115</b>	<b>133</b>	<b>413</b>	<b>8,046</b>



# Import web data and point to it instead of entering data

MATCH    X ✓ f\_x    =J12

Campus Detailed Enrollment Workbook\_1112\_HUM\_Fall.xlsx:2

	A	B	C	D	E	F	G
4							
5	<b>Resident Headcounts</b>	Lower Division	Upper Division	Credential PB	All Other PB	Graduate	Totals
6	Continuing Student	=J12					0
7	Returning Student						0
8	Returning Transfer Student						0
9	Transfer Student						0
10	First-Time Student						0
11	Transitory Student						0
12	<b>Column Totals</b>	0	0	0	0	0	0
13	Notes:						
15	0. A first-time student who is an undergraduate, i.e., a first-time freshman, may be in the upper-division by class level.						
16	1. A lower-division transfer student is one who has earned less than 60 semester (90 quarter) units prior to matriculation.						
17	2. An upper-division transfer student is one who has earned at least 60 semester (90 quarter) units prior to matriculation.						
18							
19							
20	<b>Resident Students</b>	Lower Division	Upper Division	Credential PB	All Other PB	Graduate	Totals
21	Continuing Student						0
22	Returning Student						0
23	Returning Transfer Student						0
24	Transfer Student						0
25	First-Time Student						0
26	Transitory Student						0
27	<b>Column Totals</b>	0	0	0	0	0	0
28							
29							
30	<b>ALL STUDENTS</b>	Lower Division	Upper Division	Credential PB	All Other PB	Graduate	Totals
31	First-Time Student						0

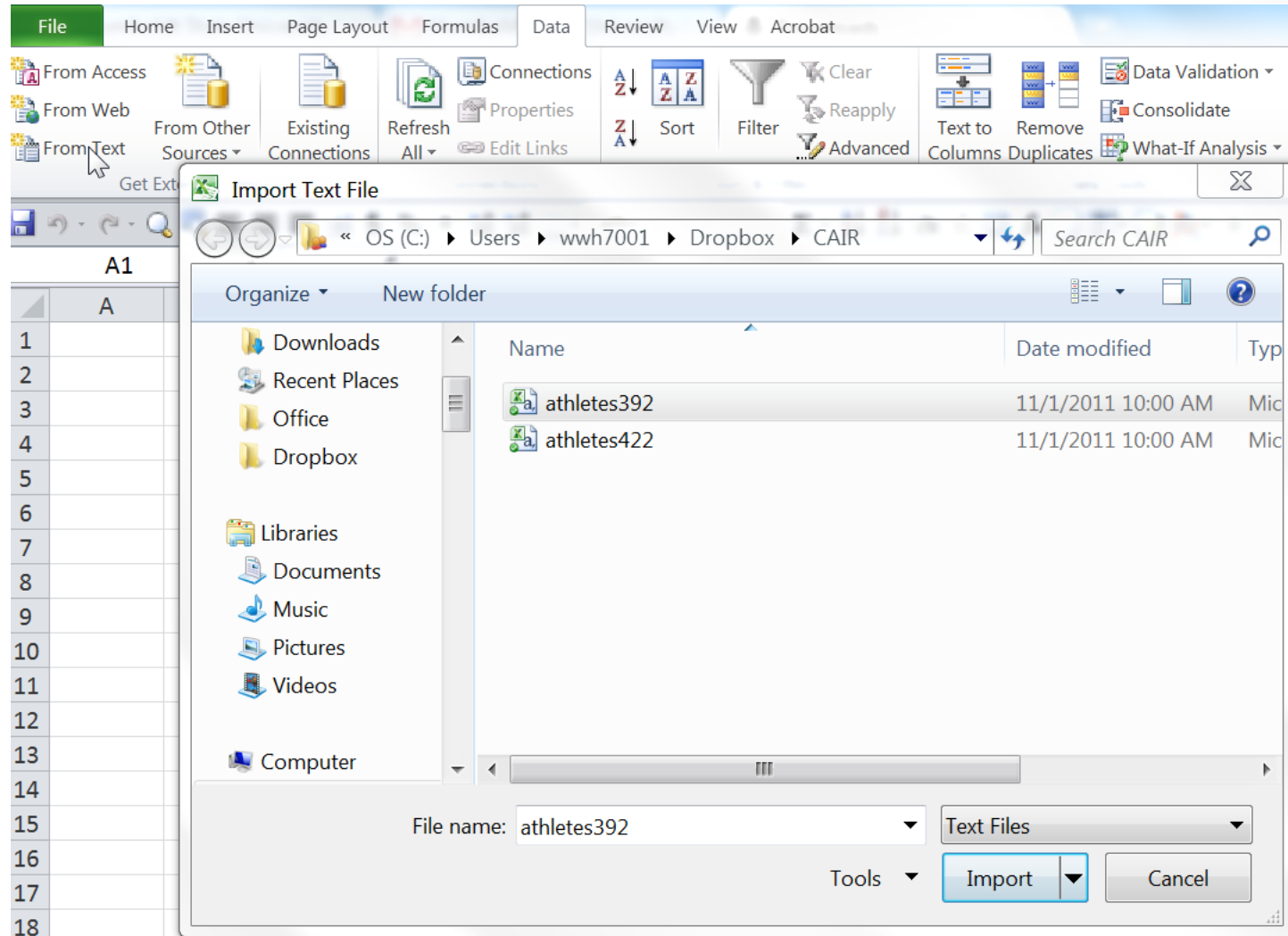
Campus Detailed Enrollment Workbook\_1112\_HUM.

	I	J	K	L
9		resHC Fall 2011		
10		workbook2114 report generated: 11-0C		
11	ENRSTAT	LD	UD	CREDP
12	1-Continuing	1,470	3,412	4
13	2-Returning	6	6	0
14	3-Returning Transfer	22	68	0
15	4-Transfer	130	772	0
16	5-First-time	1,258	1	111
17	6-Transitory	42	17	0
18	sum	2,928	4,276	115
19				
20		resFTE Fall 2011		
21		workbook2114 report generated: 11-0C		
22	ENRSTAT	LD	UD	CREDP
23	1-Continuing	1,435	3,268	4
24	2-Returning	5	5	0
25	3-Returning Transfer	16	52	0
26	4-Transfer	123	717	0
27	5-First-time	1,202	1	176
28	6-Transitory	29	11	0
29	sum	2,810	4,053	179
30				
31		HC Fall 2011		
32		workbook2114 report generated: 11-0C		
33	ENRSTAT	LD	UD	CREDP
34	1-Continuing	1,509	3,493	4
35	2-Returning	6	6	0



# Example of using text file containing list data

Start with a blank spreadsheet and Get External Data From Text:



# Create a pivot table based on imported data

The screenshot shows the Microsoft Excel interface with the 'Data' tab selected. The ribbon includes 'Get External Data', 'Connections', 'Sort & Filter', and 'Data Tools'. The active worksheet is named 'athletes392'. A data table is visible with columns A through G. The 'Create PivotTable' dialog box is open, showing the following options:

- Choose the data that you want to analyze:
  - Select a table or range
    - Table/Range: Sheet3!\$A\$1:\$AT\$393
  - Use an external data source
    - Choose Connection...
    - Connection name:
- Choose where you want the PivotTable report to be placed:
  - New Worksheet
  - Existing Worksheet
    - Location:

Buttons for 'OK' and 'Cancel' are at the bottom of the dialog box.

	A	B	C	D	E	F	G
1	TERM	STATUS	CAREER	STUTYPE	CLASS	COLLEGE	UNITS
2	2114-Fall 2011	7-Registered	UGRD	1:Continuing	2-Sophomore	Natural Resources & Sci	19
3	2114-Fall 2011	7-Registered	UGRD	1:Continuing	4-Senior	Professional Studies	16
4	2114-Fall 2011					l Studies	17
5	2114-Fall 2011					ources & Sci	17
6	2114-Fall 2011					l Studies	16
7	2114-Fall 2011					ources & Sci	14
8	2114-Fall 2011					y	13
9	2114-Fall 2011					ources & Sci	19
10	2114-Fall 2011					ources & Sci	13
11	2114-Fall 2011					l Studies	16
12	2114-Fall 2011					ources & Sci	12
13	2114-Fall 2011					t Soc Sci	17
14	2114-Fall 2011					l Studies	18
15	2114-Fall 2011					l Studies	20
16	2114-Fall 2011					t Soc Sci	13
17	2114-Fall 2011					t Soc Sci	16
18	2114-Fall 2011	7-Registered	UGRD	1:Continuing	1-Fresh	Professional Studies	14

Refresh will now update the pivot table with data from a new text file

	A	B	C	D
1	TERM	2114-Fall 2011		
2				
3	ATHAID			
4	ETHNICITY	N	Y Grand Total	
5	1-Am Indian	4	3	7
6	2-Black	22	25	47
7	3-Latino	38	12	50
8	4-Asian	8	3	11
9	5-Pac Isl	4	4	8
10	6-Two or more	14	8	22
11	7-White	143	93	236
12	8-Unknown	9	2	11
13	<b>Grand Total</b>	<b>242</b>	<b>150</b>	<b>392</b>

File Home Insert Page Layout Formulas Data Review View Acrobat Options Design

From Access From Web From Text From Other Sources Existing Connections Refresh All Edit Links Connections Properties Edit Links Sort Filter Clear Reapply Advanced Data Validation Consolidate What-If Analysis

Get External Data Import Text File

« OS (C:) » Users » wwh7001 » Dropbox » CAIR Search CAIR

Organize New folder

- Office
- Dropbox
- Libraries
- Documents
- Music
- Pictures
- Videos
- Computer

athletes392  
Microsoft Excel Comma Separate...  
108 KB

athletes422  
Microsoft Excel Comma Separate...  
141 KB

	A
1	TERM
2	
3	
4	ETHNICITY
5	1-Am Indian
6	2-Black
7	3-Latino
8	4-Asian
9	5-Pac Isl
10	6-Two or more
11	7-White

	A	B	C	D
1	TERM	2114-Fall 2011		
2				
3		ATHAID		
4	ETHNICITY	N	Y	Grand Total
5	1-Am Indian	8		8
6	2-Black	48	8	56
7	3-Latino	57	1	58
8	4-Asian	11	1	12
9	5-Pac Isl	8		8
10	6-Two or more	20	1	21
11	7-White	230	19	249
12	8-Unknown	10		10
13	Grand Total	392	30	422

athletes422

Text Files

Tools Import Cancel

# Considerations when publishing web data

- Use HTML tables (not PDF)
- Use consistent format (same number of rows and columns)
- constant URLs
- use same # of years for multi-year reports (specific years may change)
- pick up column headings in Excel models to automate yearly updates
- Include date last updated in report header and workbook

# Techniques for publishing web data

- SQL Plus
  - HTML table formatting (simple Oracle option)
  - Cgi (Perl) formatting
- Push to web (automatically if possible)
  - scp – secure copy (host to host)
  - Samba (initiated on client computer)
- OBI – use “web archive” format (.mht file)

# Considerations when generating text files

- Use standardized output data field sets. This can provide a requestor with additional indicators and leads to consistency in the order of data columns delivered.
- Include sorting information in the field data. Use either a leading sort number in text fields or provide separate sort value columns.
- Include date of data extract as a field
- If refreshing the data for pivot tables, changes in the distinct values returned may cause problems.

# Using Oracle SQL\*Plus to create an HTML Table for the web

```
set markup html on spool on
```

```
@tenyears
tttitle left 'Major Participation by Year - &today'
spool htmdemo.html

select major,
       sum(case when term='&selterm1' then 1 else 0 end) yr1col,
       sum(case when term='&selterm2' then 1 else 0 end) yr2col,
       sum(case when term='&selterm3' then 1 else 0 end) yr3col,
       sum(case when term='&selterm4' then 1 else 0 end) yr4col,
       sum(case when term='&selterm5' then 1 else 0 end) yr5col,
       sum(case when term='&selterm6' then 1 else 0 end) yr6col,
       sum(case when term='&selterm7' then 1 else 0 end) yr7col,
       sum(case when term='&selterm8' then 1 else 0 end) yr8col,
       sum(case when term='&selterm9' then 1 else 0 end) yr9col,
       sum(case when term='&selterm10' then 1 else 0 end) yr10col
from census
where term between '&selterm1' and '&selterm10' and semester='Fall'
group by major
order by 1;
```

Major Participation by Year - 03-NOV-11

MAJOR	Fall 01	Fall 02	Fall 03	Fall 04	Fall 05	Fall 06	Fall 07	Fall 08	Fall 09	Fall 10
Administrative Services	31	20	19	13	31	12	25	13	16	8
Anthropology	103	112	129	121	125	126	129	142	131	146
Art	548	580	592	516	503	437	458	454	426	443
Biology	501	561	568	574	573	562	583	601	682	702
Botany	91	89	83	86	89	80	90	98	113	97
Business Administration	365	384	367	351	323	357	414	427	457	439
Chemistry	45	48	62	71	74	83	77	80	80	82

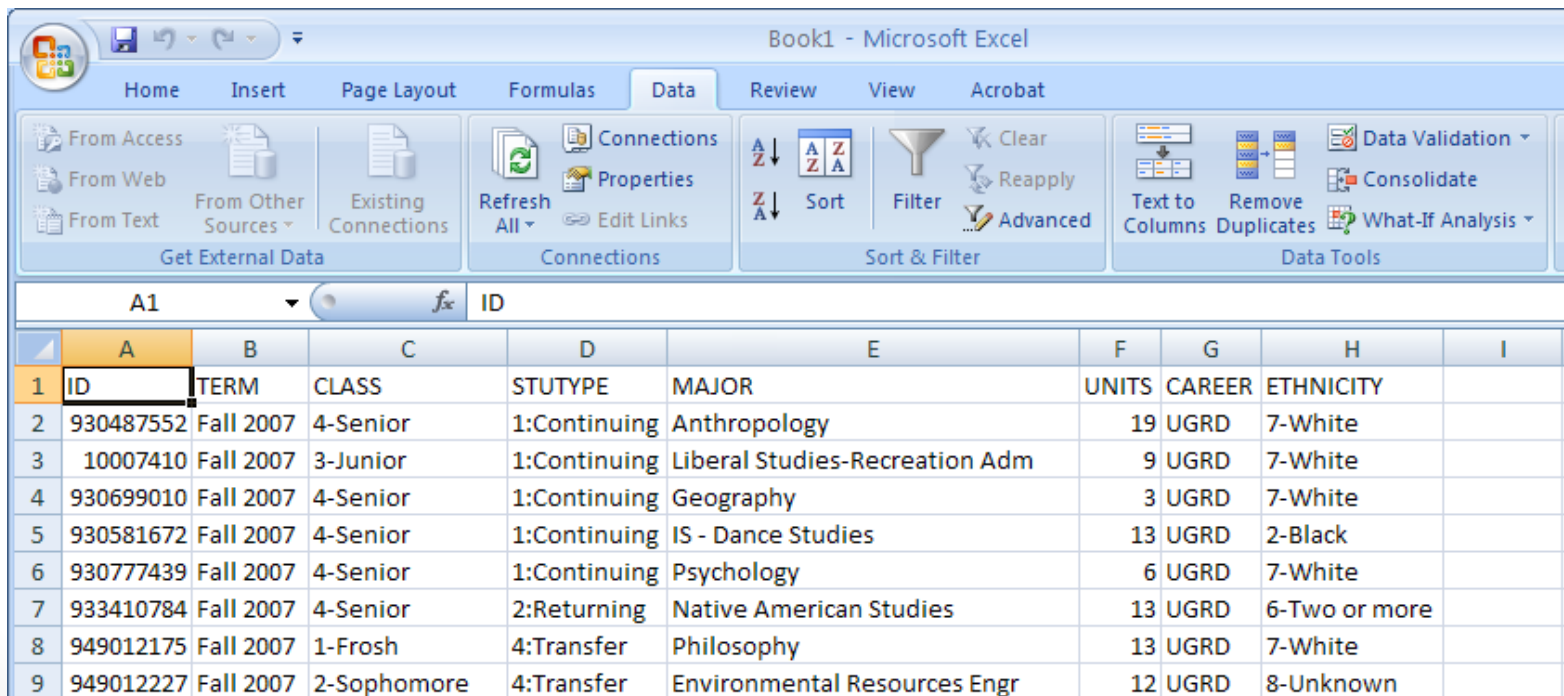


# Using Oracle to create a CSV or TAB delimited file

```
set pagesize 50000
set linesize 1000
set feedback off
-- The following quoted character is the TAB
set colsep ' '
spool tabdemo.txt

@tenyears
select id, class, stutype, major, units, career, ethnicity
  from census
 where term between '&selterm6' and '&selterm10' and semester = 'Fall';
```

NOTE: This creates a TAB delimited file which may be post-processed into a CSV file



The screenshot shows the Microsoft Excel interface with the 'Data' tab selected. The ribbon includes 'Get External Data', 'Connections', 'Sort & Filter', and 'Data Tools'. The active cell is A1, containing the formula '=ID'. The table below displays student records with columns for ID, TERM, CLASS, STUTYPE, MAJOR, UNITS, CAREER, and ETHNICITY.

	A	B	C	D	E	F	G	H	I
1	ID	TERM	CLASS	STUTYPE	MAJOR	UNITS	CAREER	ETHNICITY	
2	930487552	Fall 2007	4-Senior	1:Continuing	Anthropology	19	UGRD	7-White	
3	10007410	Fall 2007	3-Junior	1:Continuing	Liberal Studies-Recreation Adm	9	UGRD	7-White	
4	930699010	Fall 2007	4-Senior	1:Continuing	Geography	3	UGRD	7-White	
5	930581672	Fall 2007	4-Senior	1:Continuing	IS - Dance Studies	13	UGRD	2-Black	
6	930777439	Fall 2007	4-Senior	1:Continuing	Psychology	6	UGRD	7-White	
7	933410784	Fall 2007	4-Senior	2:Returning	Native American Studies	13	UGRD	6-Two or more	
8	949012175	Fall 2007	1-Frosh	4:Transfer	Philosophy	13	UGRD	7-White	
9	949012227	Fall 2007	2-Sophomore	4:Transfer	Environmental Resources Engr	12	UGRD	8-Unknown	

# Contact and Web data information

- [ward.headstrom@humboldt.edu](mailto:ward.headstrom@humboldt.edu)
- [john.filce@humboldt.edu](mailto:john.filce@humboldt.edu)
- HSU Institutional Research & Planning:  
[www.humboldt.edu/irp/](http://www.humboldt.edu/irp/)
- This presentation:  
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