



## Reporting on Education



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**PSAL** PUBLIC SCHOOLS ATHLETIC LEAGUE

Sports MPL MSBL Events & Standings Safety & Certification Resources & Procedures Schools

All Boros At Bronx At Brooklyn At Manhattan At Queens At Staten Island

**Tue Feb 4 2020 Today's Events** Change Date

**Staten Island** Details >>

**BASKETBALL GIRLS JV** 2/4/2020 04:00 PM  
[Tottenville vs Susan Wagner @ Tottenville HS-Gym](#) map

**Manhattan** Details >>

**BASKETBALL BOYS JV** 2/4/2020 04:30 PM  
[Baruch College Campus High School vs East Side Community @ Baruch College - Auxillary Gym II- Lower Level](#) map

**Brooklyn** Details >>

**BASKETBALL BOYS JV** 2/4/2020 04:30 PM  
[HS Telecommunication Arts & Technology vs Brooklyn High School for Law and Technology @ HS for Telecommunication- Gym](#) map

**Brooklyn** Details >>

**BASKETBALL BOYS JV** 2/4/2020 04:30 PM  
[Paul Robeson Campus High School vs Canarsie Educational Campus @ Paul Robeson - Gym](#) map

**Brooklyn** Details >>

**BASKETBALL BOYS JV** 2/4/2020 04:30 PM  
[Erasmus Hall Campus vs Midwood @ Erasmus Hall Campus-Gym](#) map

**2019 – 2020 Indoor Track Last Chance Invitational**

[2019 - 2020 PSAL Mandatory Boys Tennis Coaches Clinics](#)

[2019 - 2020 Mandatory Flag Football Coaches Clinics](#)

[2019 - 2020 Softball Mandatory Coaches Meetings/Clinics](#)

[2019 - 2020 Girls Badminton Post Season Dates and Special Events Calendar](#)

[PSAL 2020 Varsity Baseball Schedule](#)

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**NYC MAYOR'S CUP**  
BEST IN THE CITY  
FACEBOOK.COM/NYCMAYORS CUP

BASEBALL

Not Secure | psal.org/sports/sport.aspx?spCode=006&flag>All

PSAL PUBLIC SCHOOLS ATHLETIC LEAGUE

Sports MPL MSBL Events & Standings Safety & Certification Resources & Procedures Schools

All BOYS V BOYS JV BOYS MPL

BASEBALL --Select Sport--



MANDATORY 2020 Baseball Coaches Clinic

Baseball Players Impress at Nineteenth Annual Senior Fall Showcase  
Big Score for The Sixteenth Annual Junior Fall Showcase  
The 19th Annual Baseball Senior Fall Showcase Roster  
The 16th Annual Baseball Junior Fall Showcase Roster  
Multiple Pathways League Season Switch  
The 19th Annual Baseball Senior Fall Showcase  
The 16th Annual Baseball Junior Fall Showcase  
PSAL All-Stars capture 3rd place at the Inaugural Geico City Series in

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All Boros At Bronx At Brooklyn At Manhattan At Queens At Staten Island

Tue Feb 04 2020 Upcoming Events Change Date

Manhattan Details >  
**BASEBALL BOYS V** 03/17/2020 04:00 PM  
[East Side Community vs HS Health Profession/Human Services @ Central](#) map  
Park North Meadow #6: bb

Manhattan Details >  
**BASEBALL BOYS V** 03/17/2020 04:00 PM  
[Seward Park Campus vs Queens Technical HS @ East River Park 6: bb](#) map

Manhattan Details >  
**BASEBALL BOYS V** 03/17/2020 04:00 PM  
[HS Environmental Studies vs Graphics Campus @ Randall's Island Field 43](#) map

Manhattan Details >  
**BASEBALL BOYS V** 03/17/2020 04:00 PM  
[Murry Bergtraum vs Academy for Careers In Television and Film @ Murry Bergtraum HS - Field](#) map

Manhattan Details >

SCHOOL	TEAM	TYPE	LEAGUE	BOROUGH
A.E. Smith Campus	Warriors	Boys V	Bronx AA East	Bronx
A.E. Smith Campus	Warriors	Boys JV	Bronx	Bronx
A.P. Randolph	Cougars	Boys JV	Manhattan	Manhattan
A.P. Randolph	Cougars	Boys V	Manhattan AA West	Manhattan
Amer. Studies	Eagles	Boys V	Queens AA East	Queens
American Studies	Senators	Boys V	Bronx AA West	Bronx
Archimedes Acad	Griiffs	Boys V	Bronx A South	Bronx
Art and Design	Bulldogs	Boys V	Manhattan A North	Manhattan

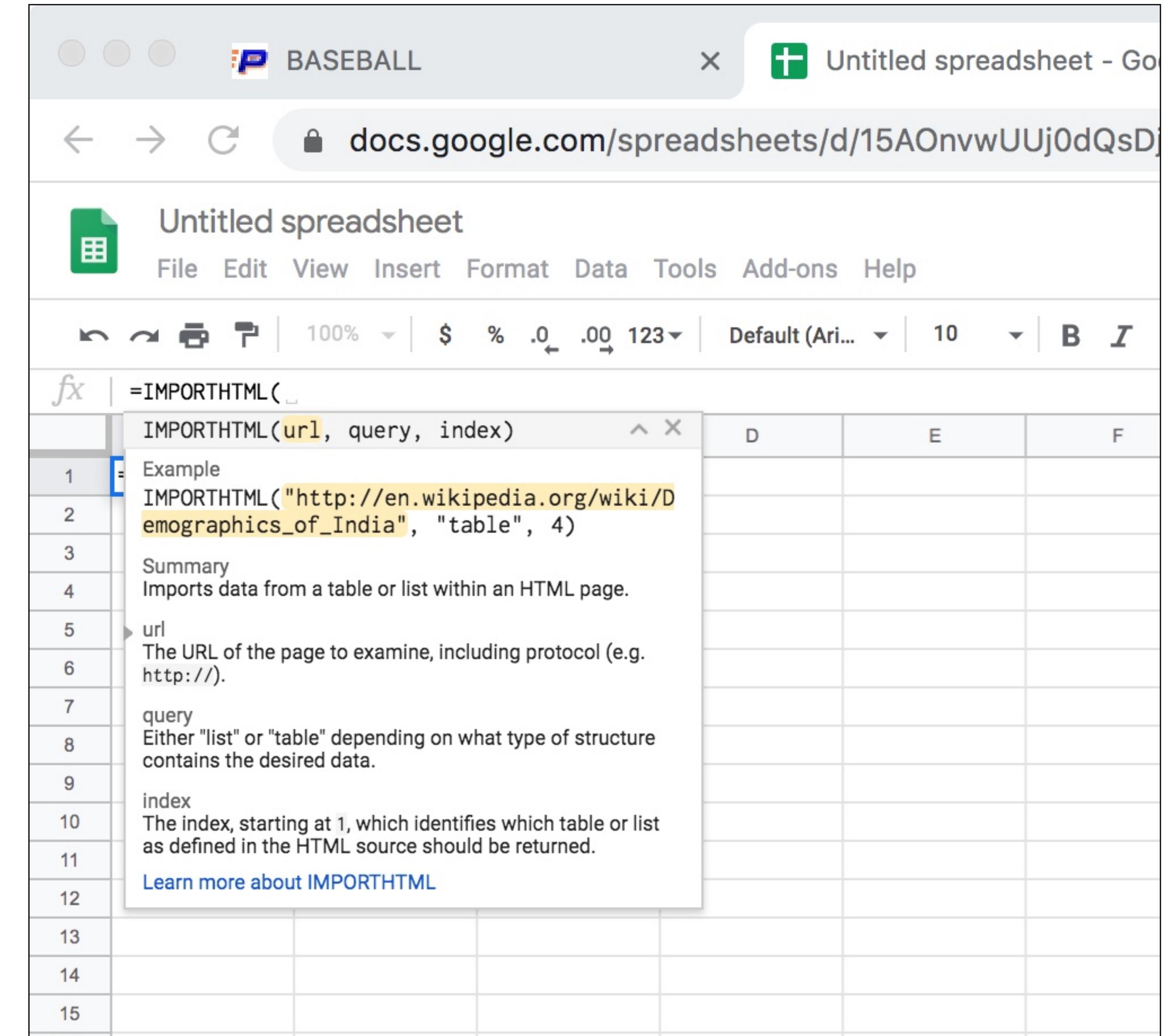
## Scraping data from the web

Here we open a new sheet and in the A1 cell we use the `IMPORTHTML` function. Specifically, you call it using the command

```
=IMPORTHTML( url, item, number)
```

where `url` is the address of the web page we want to scrape a table from, `item` specifies either a “table” or a “list” (more on the latter shortly), and `number` specifies which table on the page we want (where we start counting from 1)

The table with all the baseball teams is table three on the page. Experiment with other values and see what you get!



```
=IMPORTHTML("http://www.psal.org/sports/sport.aspx?spCode=006&flag>All","table",3)
```

```
=IMPORTHTML("http://www.psal.org/sports/sport.aspx?spCode=006&flag>All","table",3)
```

Untitled spreadsheet - Google

docs.google.com/spreadsheets/d/15AOnvwUUj0dQsDjPPtBpTY32VjzyOTQ7H...

SCHOOL TEAM TYPE LEAGUE BOROUGH

	A	B	C	D	E	F	G	H	I	J	K
1	SCHOOL	TEAM	TYPE	LEAGUE	BOROUGH						
2	A.E. Smith Camp	warriors	boys v	Bronx AA East	Bronx						
3	A.E. Smith Camp	warriors	boys JV	Bronx	Bronx						
4	A.P. Randolph	cougars	boys JV	Manhattan	Manhattan						
5	A.P. Randolph	cougars	boys v	Manhattan AA W	Manhattan						
6	Amer. Studies	eagles	boys v	Queens AA East	Queens						
7	American Studies	senators	boys v	Bronx AA West	Bronx						
8	Archimedes Acad.	griffins	boys v	Bronx A South	Bronx						
9	Art and Design	bulldogs	boys v	Manhattan A Nor	Manhattan						
10	Arts and Busines	bulls	boys v	Queens A Centra	Queens						
11	August Martin	falcons	boys v	Queens A South	Queens						
12	Automotive	pistons	boys v	Brooklyn A North	Brooklyn						
13	Aviation	flyers	boys v	Queens AA Wes	Queens						
14	Aviation	flyers	boys JV	Queens West	Queens						
15	Banneker	warriors	boys v	Brooklyn A North	Brooklyn						
16	Baruch Col.	blue devils	boys v	Manhattan A Cer	Manhattan						
17	Bathgate	bulldogs	boys v	Bronx AA East	Bronx						
18	Bayard Rustin	titans	boys v	Manhattan A Cer	Manhattan						
19	Bayside	commodores	boys v	AAA Eastern	Queens						
20	Bayside	commodores	boys JV	Queens East	Queens						
21	Beach Channel	dolphins	boys JV	Queens West	Queens						
22	Beach Channel	dolphins	boys v	Queens AA Wes	Queens						
23	Beacon	blue demons	boys v	AAA Western	Manhattan						
24	BHS and Digital	jaguars	boys v	Brooklyn A North	Brooklyn						
25	Bklyn Colab	Studies	boys v	Brooklyn A North	Brooklyn						
26	Bklyn Secondary	knights	boys v	Brooklyn A South	Brooklyn						
27	Bklyn Tech.	engineers	boys v	AAA Southeaster	Brooklyn						
28	Brandeis	bulldogs	boys v	Manhattan A Cer	Manhattan						
29	Brandeis	bulldogs	boys JV	Manhattan	Manhattan						
30	Bronx Science	wolverines	boys JV	Bronx	Bronx						

## Scraping data from the web

Now, the PSAL page being displayed in your browser is written in HTML (the Hypertext Markup Language). This is a format that allows you to describe “documents.”

HTML is rich in “tags” that format information for display in a browser. There are tags to indicate titles (headers), paragraphs, lists, tables, and links. You can find [a complete list here](#).

At the right, I’ve put a (slightly simplified) version of the table of baseball teams on the PSAL page. You can see the content in your browser by “right clicking” on the table and choosing “inspect” — it will open the “Developer Tools” pane in Chrome and let you see the HTML behind this element.

```
<table>
  <tbody>
    <tr>
      <th>SCHOOL</th>
      <th>TEAM</th>
      <th>TYPE</th>
      <th>LEAGUE</th>
      <th>BOROUGH</th>
    </tr>
    <tr>
      <td>A.E. Smith Campus</td>
      <td>warriors</td>
      <td>boys v</td>
      <td>Bronx AA East</td>
      <td>Bronx</td>
    </tr>
    <tr>
      <td>A.E. Smith Campus</td>
      <td>warriors</td>
      <td>boys JV</td>
      <td>Bronx</td>
      <td>Bronx</td>
    </tr>
    <tr>
      <td>A.P. Randolph</td>
      <td>cougars</td>
      <td>boys JV</td>
      <td>Manhattan</td>
      <td>Manhattan</td>
    </tr>
    ...
  </tbody>
</table>
```

## Scraping data from the web

Now, the PSAL page being displayed in your browser is written in HTML (the Hypertext Markup Language). This is a format that allows you to describe “documents.”

HTML is rich in “tags” that format information for display in a browser. There are tags to indicate titles (headers), paragraphs, lists, tables, and links. You can find [a complete list here](#).

At the right, I’ve put a (slightly simplified) version of the table of baseball teams on the PSAL page. You can see the content in your browser by “right clicking” on the table and choosing “inspect” — it will open the “Developer Tools” pane in Chrome and let you see the HTML behind this element.

# Simple data manipulations

Suppose we want to look up the mascot for any team. (With all the pressing questions about this data, this is an admittedly strange place to start.)

The function `MATCH` takes a pattern (or a cell) and then returns the index of the matching row. Here (just cut off out of sight) in position 14 we have the school “Aviation”.

We can now use this MATCH to extract data associated with the school.

# Simple data manipulations

Feeding this into the function INDEX, we can now extract data from a particular cell, say finding the mascot in column “B”.

Here, we use MATCH to tell us which cell to extract from the range of cells.

BASEBALL X PSAL - Google Sheets +

docs.google.com/spreadsheets/d/15AOnvwUUj0dQsDjPPtBpTY32VjzyOTQ7H... Q ☆

PSAL

File Edit View Insert Format Data Tools Add-ons Help All changes saved in Drive

100% | \$ % .0 .00 123 Default (Ari... 10 B I F G H

=INDEX(B:B,MATCH(G8,A:A))

	A	B	C	D	E	F	G	H	I
2	A.E. Smith Camp	warriors	boys v	Bronx AA East	Bronx				
3	A.E. Smith Camp	warriors	boys JV	Bronx	Bronx				
4	A.P. Randolph	cougars	boys JV	Manhattan	Manhattan				
5	A.P. Randolph	cougars	boys v	Manhattan AA W	Manhattan				
6	Amer. Studies	eagles	boys v	Queens AA East	Queens				
7	American Studies	senators	boys v	Bronx AA West	Bronx	School	fliers x		
8	Archimedes Acad.	griffins	boys v	Bronx A South	Bronx	Aviation	=INDEX(B:B,MATCH(G8,A:A))		
9	Art and Design	bulldogs	boys v	Manhattan A Nor	Manhattan				
10	Arts and Business	bulls	boys v	Queens A Centra	Queens				
11	August Martin	falcons	boys v	Queens A South	Queens				
12	Automotive	pistons	boys v	Brooklyn A North	Brooklyn				
13	Aviation	flyers	boys v	Queens AA West	Queens				
14	Health	Scorpions	boys v	Queens A West	Queens				

## Simple data manipulations

Feeding this into the function INDEX, we can now extract data from a particular cell, say finding the mascot in column “B”.

Here, we use MATCH to tell us which cell to extract from the range of cells.

The screenshot shows a Google Sheets document titled "PSAL - Google Sheets". The URL is <https://docs.google.com/spreadsheets/d/15AOnvwUUj0dQsDjPPtBpTY32VjzyOTQ7H...>. The spreadsheet contains a table with columns A through I. Column A lists schools, column B lists mascots, column C lists gender, column D lists Bronx teams, and column E lists Bronx boroughs. Row 8 shows a formula in cell G8: =vlookup(G7,A:E,2). The formula is highlighted with a blue border. A tooltip shows the formula as =vlookup(G8,A:E,2). The cell G8 contains the value "Automotive". The formula is intended to return the mascot for "Automotive", which is "pistons".

School	Mascot	Gender	Bronx Team	Bronx Borough
A.E. Smith Camp	warriors	boys v	Bronx AA East	Bronx
A.E. Smith Camp	warriors	boys JV	Bronx	Bronx
A.P. Randolph	cougars	boys JV	Manhattan	Manhattan
A.P. Randolph	cougars	boys v	Manhattan AA W	Manhattan
Amer. Studies	eagles	boys v	Queens AA East	Queens
American Studies	senators	boys v	Bronx AA West	Bronx
Archimedes Acad	griffins	boys v	Bronx A South	Bronx
Art and Design	bulldogs	boys v	Manhattan A Nor	Manhattan
Arts and Busines	bulls	boys v	Queens A Centra	Queens
August Martin	falcons	boys v	Queens A South	Queens
Automotive	pistons	boys v	Brooklyn A North	Brooklyn
Aviation	flyers	boys v	Queens AA West	Queens

## Simple data manipulations

If you want more than a single row, you can use the command `FILTER` to pull out all the matches that are found.

My point here is that subsetting is something we will do often, isolating schools that have a large number of programs or surveys that have low response rates.

The screenshot shows a Google Sheets document titled "PSAL - Google Sheets". The spreadsheet contains a table of school data with columns: SCHOOL, TEAM, TYPE, LEAGUE, and BOROUGH. A formula bar at the top shows the formula `=FILTER(C:C,A:A=G8)`. In the bottom right corner, there is a smaller table with two columns: School and Type. The School column has a value "Bayside" and the Type column has a value "boys JV". The formula `=FILTER(C:C,A:A=G8)` is also present in the formula bar for this smaller table.

SCHOOL	TEAM	TYPE	LEAGUE	BOROUGH
A.E. Smith Camp	warriors	boys v	Bronx AA East	Bronx
A.E. Smith Camp	warriors	boys JV	Bronx	Bronx
A.P. Randolph	cougars	boys JV	Manhattan	Manhattan
A.P. Randolph	cougars	boys v	Manhattan AA W	Manhattan
Amer. Studies	eagles	boys v	Queens AA East	Queens
American Studie	senators	boys v	Bronx AA West	Bronx
Archimedes Acad	griffins	boys v	Bronx A South	Bronx
Art and Design	bulldogs	boys v	Manhattan A Nor	Manhattan
Arts and Busines	bulls	boys v	Queens A Centra	Queens
August Martin	falcons	boys v	Queens A South	Queens
Automotive	pistons	boys v	Brooklyn A North	Brooklyn

School	Type
Bayside	boys JV

# Simple data manipulations

The other common operation you will do with data tables is, well, produce other tables by tabulating the values of one variable or by summing things up by category of another variable.

Here we use a so-called “pivot table” to cross tabulate a pair of variables. In Sheets, we just ask for Data > Pivot Table.

The screenshot shows a Google Sheets document titled "PSAL - Google Sheets". The Data menu is open, and the "Pivot table" option is highlighted. The spreadsheet contains a table with columns labeled "TYPE", "LEAGUE", and "BOROUGH". The "Data" menu also includes options like Sort sheet by column G, A → Z, Sort sheet by column G, Z → A, Sort range, Create a filter, Filter views, Slicer, Data validation, Pivot table, Randomize range, Named ranges, Protected sheets and ranges, Split text to columns, Remove duplicates, Trim whitespace, Group, Ungroup, and Data connectors.

	C	D	
1	TYPE	LEAGUE	BOROUGH
2	boys v	Bronx AA East	Bronx
3	boys JV	Bronx	Bronx
4	boys JV	Manhattan	Manhat
5	boys v	Manhattan AA W Manhat	
6	boys v	Queens AA East	Queens
7	boys v	Bronx AA West	Bronx
8	boys v	Bronx A South	Bronx
9	boys v	Manhattan A Nor Manhat	
10	boys v	Queens A Centra	Queens
11	boys v	Queens A South	Queens
12	boys v	Brooklyn A North Brookly	
13	boys v	Queens AA West	Queens
14	boys JV	Queens West	Queens
15	boys v	Brooklyn A North Brookly	
16	boys v	Manhattan A Cer Manhat	
17	boys v	Bronx AA East	Bronx
18	boys v	Manhattan A Cer Manhat	
19	boys v	AAA Eastern	Queens
20	boys JV	Queens East	Queens
21	boys JV	Queens West	Queens
22	boys v	Queens AA West	Queens
23	boys v	AAA Western	Manhat
24	boys v	Brooklyn A North Brookly	
25	boys v	Brooklyn A North Brookly	
26	boys v	Brooklyn A South Brookly	
27	boys v	AAA Southeaster Brookly,	
28	boys v	Manhattan A Cer Manhattan	
29	boys JV	Manhattan	Manhattan
30	boys JV	Bronx	Bronx

# Simple data manipulations

You then specify where you want to put it (in a new sheet or on the existing one) and the data range you want to include for consideration.

Here we take our whole table and place it in the existing sheet so we can make sure we understand what's going on.

BASEBALL PSAL - Google Sheets

docs.google.com/spreadsheets/d/15AOnvwUUj0dQsDjPPtBpTY32VjzyOTQ7H...

PSAL

File Edit View Insert Format Data Tools Add-ons Help All changes saved in Drive

100% Default (Ari... 10 B I S A fx

	C	D	E	F	G	H	I	J	K	L	M
1	TYPE	LEAGUE	BOROUGH								
2	boys v	Bronx AA East	Bronx								
3	boys JV	Bronx	Bronx								
4	boys JV	Manhattan	Manhattan								
5	boys v	Manhattan AA W	Manhattan								
6	boys v	Queens AA East	Queens								
7	boys v	Bronx AA West	Bronx								
8	boys v	Bronx A South	Bronx								
9	boys v	Manhattan A Nor	Manhattan								
10	boys v	Queens A Centra	Queens								
11	boys v	Queens A South	Queens								
12	boys v	Brooklyn A North	Brooklyn								
13	boys v	Queens AA West	Queens								
14	boys JV	Queens West	Queens								
15	boys v	Brooklyn A North	Brooklyn								
16	boys v	Manhattan A Cer	Manhattan								
17	boys v	Bronx AA East	Bronx								
18	boys v	Manhattan A Cer	Manhattan								
19	boys v	AAA Eastern	Queens								
20	boys JV	Queens East	Queens								
21	boys JV	Queens West	Queens								
22	boys v	Queens AA West	Queens								
23	boys v	AAA Western	Manhattan								
24	boys v	Brooklyn A North	Brooklyn								
25	boys v	Brooklyn A North	Brooklyn								
26	boys v	Brooklyn A South	Brooklyn								
27	boys v	AAA Southeaster	Brooklyn								
28	boys v	Manhattan A Cer	Manhattan								
29	boys JV	Manhattan	Manhattan								
30	boys JV	Bronx	Bronx								

Create pivot table

Data range: e.g., Sheet1!A1:D100

Insert to: Sheet1!G3

New sheet

Existing sheet

Cancel Create

Sheet1 + M Explore

# Simple data manipulations

You then specify where you want to put it (in a new sheet or on the existing one) and the data range you want to include for consideration.

Here we take our whole table and place it in the existing sheet so we can make sure we understand what's going on.

The screenshot shows a Google Sheets document titled "PSAL". The formula bar contains the formula: =IMPORTHTML("http://www.psal.org/sports/sport.aspx?spCode=006&flag>All", "table", 3). The main table consists of columns A through E, with rows 1 through 30. Column A is labeled "SCHOOL", column B is "TEAM", column C is "TYPE", column D is "LEAGUE", and column E is "BOROUGH". A "Create pivot table" dialog box is open, showing the "Data range" as "Sheet1!A:E" and the "Insert to" option set to "Existing sheet" with the target cell "Sheet1!G3". There are "Cancel" and "Create" buttons at the bottom of the dialog.

SCHOOL	TEAM	TYPE	LEAGUE	BOROUGH
A.E. Smith Camp	warriors	boys v	Bronx AA East	Bronx
A.E. Smith Camp	warriors	boys JV	Bronx	Bronx
A.P. Randolph	cougars	boys JV	Manhattan	Manhattan
A.P. Randolph	cougars	boys v	Manhattan AA W	
Amer.Studies	eagles	boys v	Queens AA East	
American Studie	senators	boys v	Bronx AA West	
Archimedes Acad	griffins	boys v	Bronx A South	
Art and Design	bulldogs	boys v	Manhattan A Nor	
Arts and Busines	bulls	boys v	Queens A Centra	
August Martin	falcons	boys v	Queens A South	
Automotive	pistons	boys v	Brooklyn A North	
Aviation	flyers	boys v	Queens AA West	
Aviation	flyers	boys JV	Queens West	
Banneker	warriors	boys v	Brooklyn A North	
Baruch Col.	blue devils	boys v	Manhattan A Cer	
Bathgate	bulldogs	boys v	Bronx AA East	
Bayard Rustin	titans	boys v	Manhattan A Cer	
Bayside	commodores	boys v	AAA Eastern	
Bayside	commodores	boys JV	Queens East	
Beach Channel	dolphins	boys JV	Queens West	
Beach Channel	dolphins	boys v	Queens AA West	
Beacon	blue demons	boys v	AAA Western	Manhattan
BHS and Digital	jaguars	boys v	Brooklyn A North	Brooklyn
Bklyn Colab Studies		boys v	Brooklyn A North	Brooklyn
Bklyn Secondary	knights	boys v	Brooklyn A South	Brooklyn
Bklyn Tech.	engineers	boys v	AAA Southeaster	Brooklyn
Brandeis	bulldogs	boys v	Manhattan A Cer	Manhattan
Brandeis	bulldogs	boys JV	Manhattan	Manhattan
Bronx Science	wolverines	boys JV	Bronx	Bronx

# Simple data manipulations

This then sets us up to do various computations. Google (being Google) provides you with some suggestions that actually are quite informative about the process of making a pivot table.

Here we are going to just look at the number of

The screenshot shows a Google Sheets interface with a pivot table editor open. The main table contains data from the PSAL dataset, with columns labeled SCHOOL, TEAM, TYPE, LEAGUE, and BOROUGH. The pivot table editor sidebar on the right shows suggested calculations:

- Count of SCHOOL for each BOROUGH
- Number of unique TEAM for each TYPE
- Number of unique LEAGUE for each BOROUGH

The 'Values' section of the editor is currently selected, indicating the user is focused on summarizing the data by count or type.

	A	B	C	D	E	F	G	H
1	SCHOOL	TEAM	TYPE	LEAGUE	BOROUGH			
2	A.E. Smith Camp	warriors	boys v	Bronx AA East	Bronx			
3	A.E. Smith Camp	warriors	boys JV	Bronx	Bronx			
4	A.P. Randolph	cougars	boys JV	Manhattan	Manhattan			
5	A.P. Randolph	cougars	boys v	Manhattan AA W	Manhattan			
6	Amer.Studies	eagles	boys v	Queens AA East	Queens			
7	American Studies	senators	boys v	Bronx AA West	Bronx			
8	Archimedes Aca	griffins	boys v	Bronx A South	Bronx			
9	Art and Design	bulldogs	boys v	Manhattan A Nor	Manhattan			
10	Arts and Busines	bulls	boys v	Queens A Centr	Queens			
11	August Martin	falcons	boys v	Queens A South	Queens			
12	Automotive	pistons	boys v	Brooklyn A North	Brooklyn			
13	Aviation	flyers	boys v	Queens AA Wesl	Queens			
14	Aviation	flyers	boys JV	Queens West	Queens			
15	Banneker	warriors	boys v	Brooklyn A North	Brooklyn			
16	Baruch Col.	blue devils	boys v	Manhattan A Cer	Manhattan			
17	Bathgate	bulldogs	boys v	Bronx AA East	Bronx			
18	Bayard Rustin	titans	boys v	Manhattan A Cer	Manhattan			
19	Bayside	commodores	boys v	AAA Eastern	Queens			
20	Bayside	commodores	boys JV	Queens East	Queens			
21	Beach Channel	dolphins	boys JV	Queens West	Queens			
22	Beach Channel	dolphins	boys v	Queens AA Wesl	Queens			
23	Beacon	blue demons	boys v	AAA Western	Manhattan			
24	BHS and Digital	jaguars	boys v	Brooklyn A North	Brooklyn			
25	Bklyn Colab Studies		boys v	Brooklyn A North	Brooklyn			
26	Bklyn Secondary	knights	boys v	Brooklyn A South	Brooklyn			
27	Bklyn Tech.	engineers	boys v	AAA Southeaster	Brooklyn			
28	Brandeis	bulldogs	boys v	Manhattan A Cer	Manhattan			
29	Brandeis	bulldogs	boys JV	Manhattan	Manhattan			
30	Bronx Science	wolverines	boys JV	Bronx	Bronx			

# Simple data manipulations

The other common operation you will do with data tables is, well, produce other tables by tabulating the values of one variable or by summing things up by category of another variable.

Here we use a so-called “pivot table” to look at the counts of boy’s baseball offered in each borough.

The screenshot shows a Google Sheets document titled "PSAL - Google Sheets" with the URL [docs.google.com/spreadsheets/d/15AOnvwUUj0dQsDjPPtBpTY32VjzyOTQ7H...](https://docs.google.com/spreadsheets/d/15AOnvwUUj0dQsDjPPtBpTY32VjzyOTQ7H...). The main spreadsheet area displays a table of baseball data with columns: SCHOOL, TEAM, TYPE, LEAGUE, and BOROUGH. A pivot table editor sidebar is open on the right, showing the formula `=Pivot table editor` and the current configuration:

Rows	Values
SCHOOL	Count of TEAM for each BOROUGH
TEAM	Number of unique TYPE for each LEAGUE
TYPE	Number of unique LEAGUE for each BOROUGH

The "Values" section has three items selected for addition:

- Count of SCHOOL for each BOROUGH
- Number of unique TEAM for each TYPE
- Number of unique LEAGUE for each BOROUGH

Below the "Values" section are four buttons: "Add" for Rows, Columns, Values, and Filters.

BASEBALL PSAL - Google Sheets

docs.google.com/spreadsheets/d/15AOnvwUUj0dQsDjPPtBpTY32VjzyOTQ7H...

PSAL

File Edit View Insert Format Data Tools Add-ons Help All changes saved in Drive

BOROUGH

	A	B	C	D	E	F	G	H
1	SCHOOL	TEAM	TYPE	LEAGUE	BOROUGH			
2	A.E. Smith Camp	warriors	boys v	Bronx AA East	Bronx			
3	A.E. Smith Camp	warriors	boys JV	Bronx	Bronx			
4	A.P. Randolph	cougars	boys JV	Manhattan	Manhattan			
5	A.P. Randolph	cougars	boys v	Manhattan AA W	Manhattan			
6	Amer. Studies	eagles	boys v	Queens AA East	Queens	Bronx	48	
7	American Studies	senators	boys v	Bronx AA West	Bronx	Brooklyn	47	
8	Archimedes Acad.	griffins	boys v	Bronx A South	Bronx	Manhattan	44	
9	Art and Design	bulldogs	boys v	Manhattan A Nor	Manhattan	Queens	49	
10	Arts and Busines	bulls	boys v	Queens A Centra	Queens	Staten Island	14	
11	August Martin	falcons	boys v	Queens A South	Queens	Grand Total	202	
12	Automotive	pistons	boys v	Brooklyn A North	Brooklyn			
13	Aviation	flyers	boys v	Queens AA West	Queens			
14	Aviation	flyers	boys JV	Queens West	Queens			
15	Banneker	warriors	boys v	Brooklyn A North	Brooklyn			
16	Baruch Col.	blue devils	boys v	Manhattan A Cer	Manhattan			
17	Bathgate	bulldogs	boys v	Bronx AA East	Bronx			
18	Bayard Rustin	titans	boys v	Manhattan A Cer	Manhattan			
19	Bayside	commodores	boys v	AAA Eastern	Queens			
20	Bayside	commodores	boys JV	Queens East	Queens			
21	Beach Channel	dolphins	boys JV	Queens West	Queens			
22	Beach Channel	dolphins	boys v	Queens AA West	Queens			
23	Beacon	blue demons	boys v	AAA Western	Manhattan			
24	BHS and Digital	jaguars	boys v	Brooklyn A North	Brooklyn			
25	Bklyn Colab Studies		boys v	Brooklyn A North	Brooklyn			
26	Bklyn Secondary	knights	boys v	Brooklyn A South	Brooklyn			
27	Bklyn Tech.	engineers	boys v	AAA Southeast	Brooklyn			
28	Brandeis	bulldogs	boys v	Manhattan A Cer	Manhattan			
29	Brandeis	bulldogs	boys JV	Manhattan	Manhattan			
30	Bronx Science	wolverines	boys JV	Bronx	Bronx			

Pivot table editor

Sheet1!A1:E203

Suggested

Rows

BOROUGH

Order: Ascending, Sort by: BOROUGH, Show totals: checked

Columns

Values

SCHOOL

Summarize by: COUNTA, Show as: Default

Filters

Add

Share

M

Sheet1

BASEBALL PSAL - Google Sheets

docs.google.com/spreadsheets/d/15AOnvwUUj0dQsDjPPtBpTY32VjzyOTQ7H...

PSAL

File Edit View Insert Format Data Tools Add-ons Help All changes saved in Drive

COUNTUNIQUE of SCHOOL

	E	F	G	H	I	J	K	L
1	BOROUGH							
2	Bronx							
3	Bronx							
4	Manhattan							
5	Manhattan	COUNTUNIQUE	TYPE					
6	Queens	BOROUGH	boys JV	boys mpl	boys v	Grand Total		
7	Bronx	Bronx		8	2	38	40	
8	Bronx	Brooklyn		6		41	41	
9	Manhattan	Manhattan		6	1	37	38	
10	Queens	Queens		11		38	38	
11	Queens	Staten Island		6		8	8	
12	Brooklyn	Grand Total		37	3	162	165	
13	Queens							
14	Queens							
15	Brooklyn							
16	Manhattan							
17	Bronx							
18	Manhattan							
19	Queens							
20	Queens							
21	Queens							
22	Queens							
23	Manhattan							
24	Brooklyn							
25	Brooklyn							
26	Brooklyn							
27	Brooklyn							
28	Manhattan							
29	Manhattan							
30	Bronx							

Pivot table editor

Sheet1!A1:E203

Suggested

Rows

BOROUGH

Order: Ascending, Sort by: BOROUGH, Show totals: checked

Columns

TYPE

Order: Ascending, Sort by: TYPE, Show totals: checked

Values

SCHOOL

Summarize by: COUNTUNIQ..., Show as: Default

Filters

Add

31

Sheet1

BASEBALL x PSAL - Google Sheets x ALL TEAMS-Table 1 - Google Sheets x computationaljournalism/c x +

docs.google.com/spreadsheets/d/1Z5MkJ5fu5BX\_vYavX03gUPGYAVfGdgDtn... 🔍 ⭐ 🌐 ct InVID SH 🖊 M ⋮

### ALL TEAMS-Table 1

File Edit View Insert Format Data Tools Add-ons Help All changes saved in Drive

SUM of Cost

	F	G	H	I	J	K	L	M	N
1	League	Cost							
2	SSAL	\$14,033.29							
3	SSAL	\$14,011.52							
4	SSAL	\$12,672.16							
5	SSAL	\$12,672.16	SUM of Cost	Gender					
6	SSAL	\$12,414.75	PSAL Program	Boys	Coed	Girls	Grand Total		
7	SSAL	\$9,626.43	Tottenville	\$199,379.53	\$5,777.33	\$171,682.63	\$376,839.49		
8	SSAL	\$9,606.82	Brooklyn Technic	\$182,334.56	\$21,105.61	\$162,646.92	\$366,087.09		
9	SSAL	\$9,606.82	James Madison	\$188,887.02	\$12,340.26	\$164,665.40	\$365,892.68		
10	SSAL	\$9,606.82	Stuyvesant High	\$199,720.45	\$21,105.61	\$143,758.89	\$364,584.95		
11	SSAL	\$9,606.82	Bronx HS Of Scie	\$157,027.09	\$14,542.68	\$182,005.15	\$353,574.92		
12	SSAL	\$8,936.68	Curtis	\$175,507.14	\$12,486.23	\$163,495.37	\$351,488.74		
13	SSAL	\$8,936.68	Susan Wagner	\$169,882.32	\$12,340.26	\$159,742.44	\$341,965.02		
14	SSAL	\$8,314.00	New Dorp	\$160,459.99	\$12,340.26	\$155,339.11	\$328,139.36		
15	SSAL	\$8,302.65	Benjamin N. Caro	\$173,025.59	\$12,340.26	\$141,471.14	\$326,836.99		
16	SSAL	\$7,144.47	Midwood	\$169,882.32	\$14,542.68	\$124,543.74	\$308,968.74		
17	SSAL	\$7,124.86	Port Richmond	\$169,882.32	\$12,340.26	\$126,174.86	\$308,397.44		
18	SSAL	\$6,493.59	McKee/Staten Isl	\$171,408.55	\$12,340.26	\$121,845.16	\$305,593.97		
19	SSAL	\$6,161.29	Bayside High Scl	\$150,157.40	\$5,777.33	\$136,787.51	\$292,722.24		
20	SSAL	\$6,161.29	Fort Hamilton	\$141,207.22	\$5,777.33	\$136,787.51	\$283,772.06		
21	SSAL	\$6,161.29	John Adams	\$143,975.98	\$8,765.35	\$130,726.40	\$283,467.73		
22	SSAL	\$6,094.63	Long Island City	\$150,340.43	\$14,542.68	\$115,016.80	\$279,899.91		
23	SSAL	\$5,744.56	Francis Lewis	\$122,989.59	\$8,765.35	\$147,566.36	\$279,321.30		
24	SSAL	\$5,725.60	Dewitt Clinton	\$142,478.86	\$8,765.35	\$117,928.11	\$269,172.32		
25	SSAL	\$5,725.60	Lehman Campus	\$143,219.63	\$15,328.28	\$107,568.30	\$266,116.21		
26	SSAL	\$2,657.01	Jamaica	\$149,810.83	\$27,814.51	\$88,225.07	\$265,850.41		
27	SSAL	\$2,655.65	Petrides	\$152,629.74	\$5,777.33	\$106,569.11	\$264,976.18		
28	SSAL	\$2,655.65	John F. Kennedy	\$141,706.25	\$12,340.26	\$110,272.27	\$264,318.78		
29	SSAL	\$2,655.65	William C. Bryant	\$127,501.59	\$8,765.35	\$120,861.49	\$257,128.43		
30	MPL	\$10,459.26	Hunter College H	\$119,552.02	\$5,777.33	\$130,036.21	\$255,365.56		

ALL TEAMS-Table 1

Pivot table editor

Suggested

Rows

PSAL Program Name

Order: Descending Sort by: SUM of Cost ... Grand Total

Show totals

Columns

Gender

Order: Ascending Sort by: Gender

Show totals

Values

Cost

Summarize by: SUM Show as: Default

Filters

Explore

BASEBALL X PSAL - Google Sheets X ALL TEAMS-Table 1 - Google Sheets computationaljournalism/c +

docs.google.com/spreadsheets/d/1Z5MkJ5fu5BX\_vYavX03gUPGYAVfGdgDtn... M

ALL TEAMS-Table 1

File Edit View Insert Format Data Tools Add-ons Help All changes saved in Drive

100% \$ % .0 .00 123 Arial 10 B I S A ...

fx PSAL Program Name

	E	F	G	H	I	J	K	L	M
1	Season	League	Cost						
2	W	SSAL	\$14,033.29						
3	W	SSAL	\$14,011.52						
4	S	SSAL	\$12,672.16						
5	S	SSAL	\$12,672.16		PSAL Program Name	SUM of Cost			
6	S	SSAL	\$12,414.75	Tottenville	\$376,839.49				
7	F	SSAL	\$9,626.43	Brooklyn Technic	\$366,087.09				
8	F	SSAL	\$9,606.82	James Madison	\$365,892.68				
9	F	SSAL	\$9,606.82	Stuyvesant High	\$364,584.95				
10	F	SSAL	\$9,606.82	Bronx HS Of Sci	\$353,574.92				
11	F	SSAL	\$9,606.82	Curtis	\$351,488.74				
12	W	SSAL	\$8,936.68	Susan Wagner	\$341,965.02				
13	W	SSAL	\$8,936.68	New Dorp	\$328,139.36				
14	S	SSAL	\$8,314.00	Benjamin N. Caro	\$326,836.99				
15	S	SSAL	\$8,302.65	Midwood	\$308,968.74				
16	F	SSAL	\$7,144.47	Port Richmond	\$308,397.44				
17	F	SSAL	\$7,124.86	McKee/Staten Isl	\$305,593.97				
18	F	SSAL	\$6,493.59	Bayside High Sci	\$292,722.24				
19	F	SSAL	\$6,161.29	Fort Hamilton	\$283,772.06				
20	F	SSAL	\$6,161.29	John Adams	\$283,467.73				
21	F	SSAL	\$6,161.29	Long Island City	\$279,899.91				
22	W	SSAL	\$6,094.63	Francis Lewis	\$279,321.30				
23	S	SSAL	\$5,744.56	Dewitt Clinton	\$269,172.32				
24	W	SSAL	\$5,725.60	Lehman Campus	\$266,116.21				
25	W	SSAL	\$5,725.60	Jamaica	\$265,850.41				
26	S	SSAL	\$2,657.01	Petrides	\$264,976.18				
27	W	SSAL	\$2,655.65	John F. Kennedy	\$264,318.78				
28	W	SSAL	\$2,655.65	William C. Bryant	\$257,128.43				
29	W	SSAL	\$2,655.65	Hunter College H	\$255,365.56				
30	S	MPL	\$10,459.26	Abraham Lincoln	\$254,828.14				

Pivot table editor

'ALL TEAMS-Table 1'!A1:G3388

Suggested

Rows Add

PSAL Program Name

Order Descending Sort by SUM of Cost

Show totals

Columns Add

Values Add

Cost

Summarize by SUM Show as Default

Filters Add

Explore

ALL TEAMS Table 1 csv - Open x PSAL Program DBN crosswalk x +

127.0.0.1:3333/project?project=2355490543564

OpenRefine ALL TEAMS Table 1 csv Permalink

Facet / Filter Undo / Redo 8 / 8

Refresh Reset All Remove All

**Cost** change reset

1,000.00 — 31,000.00

Numeric 1641  Non-numeric 0  Blank 0  Error 0

**Gender** change invert reset

3 choices Sort by: name count Cluster

**Boys** 1641 exclude

**Coed** 145

**Girls** 1601

**(blank)** 1

Facet by choice counts

1641 matching rows (3388 total) Extensions: Wikidata

Show as: rows records Show: 5 10 25 50 rows « first < previous 1 - 10 next > last »

portName	Gender	PSAL Program Name	PSAL Code	DBN	Season	League	Cost
ETBALL BOYS VARSITY	Boys	Explorations Academy	12251	12X251	W	SSAL	14011.52
BALL BOYS VARSITY	Boys	Bronx United	07551	07X551	S	SSAL	12672.16
BALL BOYS VARSITY	Boys	Health Opportunities Social Justice HS	07498	07X427	S	SSAL	12672.16
ER BOYS VARSITY	Boys	Explorations Academy	12251	12X251	F	SSAL	9606.82
ER BOYS VARSITY	Boys	Graphics Campus	02541	02M139	F	SSAL	9606.82
ER BOYS VARSITY	Boys	Morrisania Educational Campus	09260	09X250	F	SSAL	9606.82
ER BOYS VARSITY	Boys	Queens High School Complex	24552	24Q264	F	SSAL	9606.82
OOR TRACK BOYS	Boys	HS Economics & Finance	02350	02M489	S	SSAL	8314
ER BOYS VARSITY	Boys	Murry Bergtraum	02546	02M135	F	SSAL	7124.86
E TENNIS BOYS VARSITY	Boys	Civic Leadership Academy	24293	24Q293	W	SSAL	5725.6

Google Create & use pivot tables - Con X ALL TEAMS Table 1 csv - Open X PSAL Program DBN crosswalk X +

127.0.0.1:3333/project?project=2355490543564

OpenRefine ALL TEAMS Table 1 csv Permalink Open... Export Help

Facet / Filter Undo / Redo 7 / 7 3388 rows Extensions: Wikidata

**Add column based on column PSAL Code**

New column name: DBN

On error:  set to blank  store error  copy value from original column

Expression: Language: General Refine Expression Language (GREL)

```
cell.cross("PSAL Program DBN crosswalk Table 1 csv", "PSAL Program Code").cells["DBN"].value[0]
```

No syntax error.

Preview History Starred Help

row	value	cell.cross("PSAL Program DBN c ...
1.	09263	09X241
2.	12251	12X251
3.	07551	07X551
4.	07498	07X427
5.	12251	12X251
6.	13483	13K483
7.	10251	10X251

OK Cancel

PSAL Code Season

PSAL Code	Season
09263	W
12251	W
07551	S
07498	S
12251	S
13483	F
1251	F
0541	F
0260	F
0552	F