How to load data

Dealing with PDFs

- PDFs are terrible files for storing data
- Some PDFs are machine-readable, others aren’t
    - Machine-readable means the underlying data in the PDF is still intact
    - How can you tell? Try to highlight the text.

Dealing with PDFs

- If you can highlight the data in the PDF, it **IS** machine-readable
  - Try an online tool like Tabula to get the data into to a spreadsheet

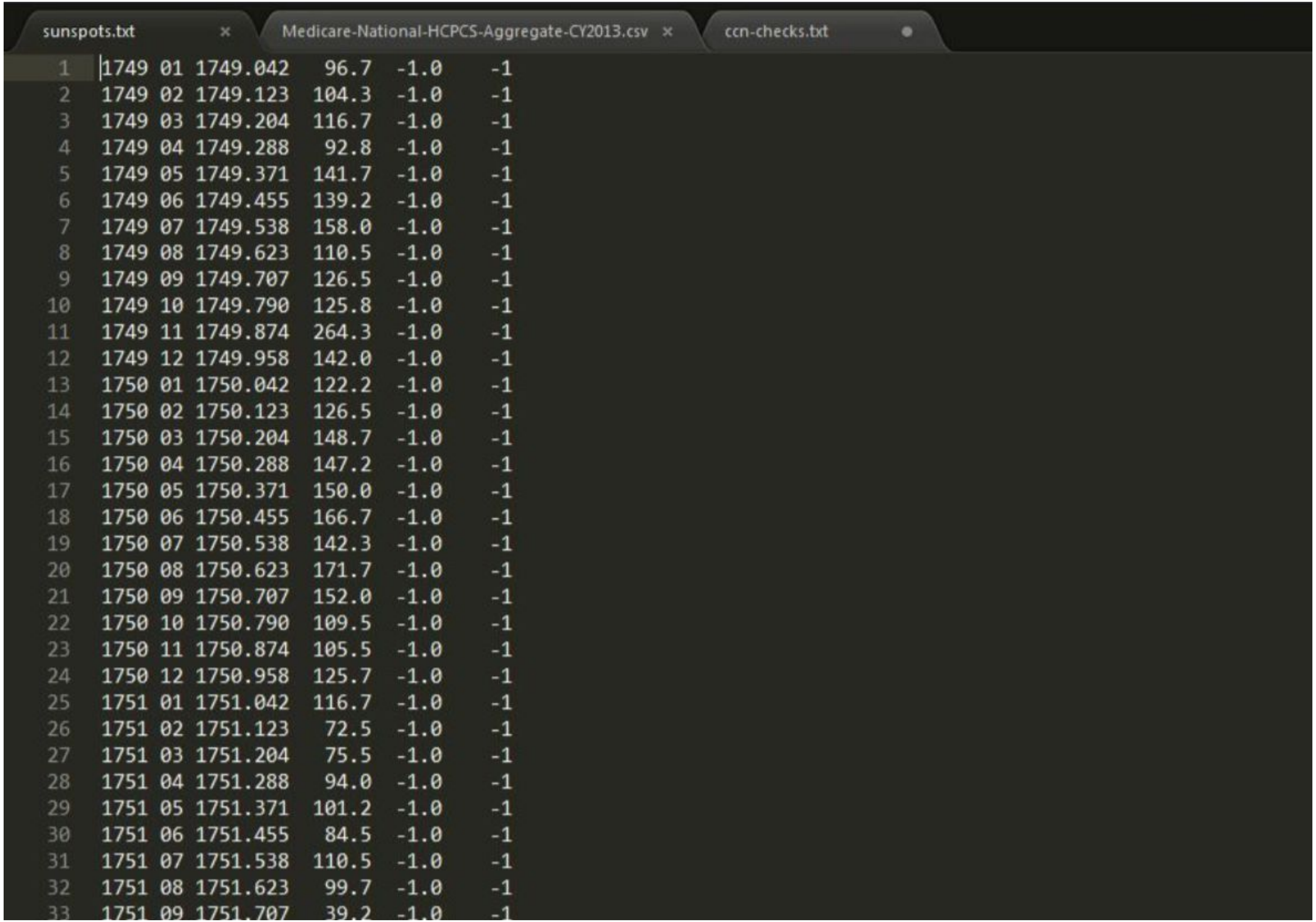
- If you can't highlight it, i.e. if it looks like a scanned document or a photo, it's **NOT** machine-readable
  - You'll need OCR (optical character recognition software to convert into machine-readable data. Try Acrobat or Document Cloud or new Excel hotness
  - OR go back to your data source and ask for a machine-readable file

File Types

- Data can be stored in lots of file types
- Text files - the simplest. Basically a text document of data
- File type is usually .txt
    - Obviously a 10,000-page document of data isn’t useful. We have to separate it somehow.
    - Generally two ways to do this

File Types

- Check the file name extension (.csv, .txt, etc.)
- Open the file up in a text editor and browse
- Do you have a header row?
- What's separating each field?



```
1749 01 1749.042   96.7  -1.0    -1
1749 02 1749.123  104.3  -1.0    -1
1749 03 1749.204  116.7  -1.0    -1
1749 04 1749.288   92.8  -1.0    -1
1749 05 1749.371  141.7  -1.0    -1
1749 06 1749.455  139.2  -1.0    -1
1749 07 1749.538  158.0  -1.0    -1
1749 08 1749.623  110.5  -1.0    -1
1749 09 1749.707  126.5  -1.0    -1
1749 10 1749.790  125.8  -1.0    -1
1749 11 1749.874  264.3  -1.0    -1
1749 12 1749.958  142.0  -1.0    -1
1750 01 1750.042  122.2  -1.0    -1
1750 02 1750.123  126.5  -1.0    -1
1750 03 1750.204  148.7  -1.0    -1
1750 04 1750.288  147.2  -1.0    -1
1750 05 1750.371  150.0  -1.0    -1
1750 06 1750.455  166.7  -1.0    -1
1750 07 1750.538  142.3  -1.0    -1
1750 08 1750.623  171.7  -1.0    -1
1750 09 1750.707  152.0  -1.0    -1
1750 10 1750.790  109.5  -1.0    -1
1750 11 1750.874  105.5  -1.0    -1
1750 12 1750.958  125.7  -1.0    -1
1751 01 1751.042  116.7  -1.0    -1
1751 02 1751.123   72.5  -1.0    -1
1751 03 1751.204   75.5  -1.0    -1
1751 04 1751.288   94.0  -1.0    -1
1751 05 1751.371  101.2  -1.0    -1
1751 06 1751.455   84.5  -1.0    -1
1751 07 1751.538  110.5  -1.0    -1
1751 08 1751.623   99.7  -1.0    -1
1751 09 1751.707   39.2  -1.0    -1
```

File Type: Fixed Width

- You must manually put breaks in the data to tell your computer where a new field ends and another begins

- If you have a fixed width file, make sure your source gives you a guide or schema that tells you where to put the breaks. Don’t guess!
    - Example

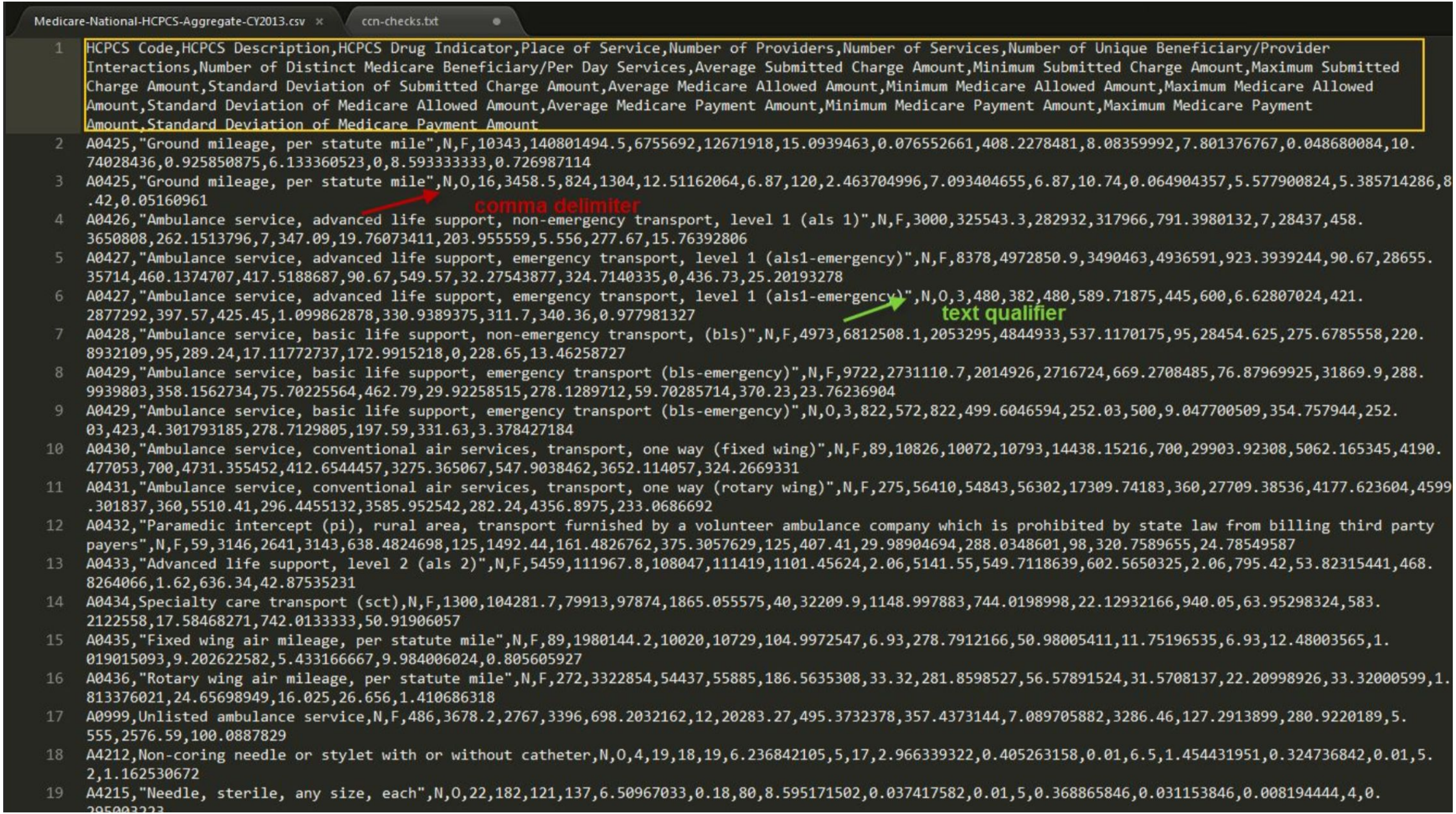
File Type: Delimited

- The data fields are separated by a delimited (often punctuation) that tells our computer where a new field ends and another begins
  - This is more common that fixed width
  - Common delimiters
    - Commas
    - Tabs
    - Pipes (|)

File Type: CSV

- Commas are the most common delimiters
- delimited files that use commas are also known as CSVs, aka comma-separated values
- File type can be .csv instead of .txt

- But what if you have commas in a field?
    - A text qualifier (usually quote marks) tells the computer to ignore commas within fields
    - Example: AT&T, Inc. will look like “AT&T, Inc.” in the text file



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HCPCS Code,HCPCS Description,HCPCS Drug Indicator,Place of Service,Number of Providers,Number of Services,Number of Unique Beneficiary/Provider Interactions,Number of Distinct Medicare Beneficiary/Per Day Services,Average Submitted Charge Amount,Minimum Submitted Charge Amount,Maximum Submitted Charge Amount,Standard Deviation of Submitted Charge Amount,Average Medicare Allowed Amount,Minimum Medicare Allowed Amount,Maximum Medicare Allowed Amount,Standard Deviation of Medicare Allowed Amount,Average Medicare Payment Amount,Minimum Medicare Payment Amount,Maximum Medicare Payment Amount,Standard Deviation of Medicare Payment Amount
A0425,"Ground mileage, per statute mile",N,F,10343,140801494.5,6755692,12671918,15.0939463,0.076552661,408.2278481,8.08359992,7.801376767,0.048680084,10.74028436,0.925850875,6.133360523,0,8.593333333,0.726987114
A0425,"Ground mileage, per statute mile",N,O,16,3458.5,824,1304,12.51162064,6.87,120,2.463704996,7.093404655,6.87,10.74,0.064904357,5.577900824,5.385714286,8.42,0.05160961
A0426,"Ambulance service, advanced life support, non-emergency transport, level 1 (als 1)",N,F,3000,325543.3,282932,317966,791.3980132,7,28437,458.3650808,262.1513796,7,347.09,19.76073411,203.955559,5.556,277.67,15.76392806
A0427,"Ambulance service, advanced life support, emergency transport, level 1 (als1-emergency)",N,F,8378,4972850.9,3490463,4936591,923.3939244,90.67,28655.35714,460.1374707,417.5188687,90.67,549.57,32.27543877,324.7140335,0,436.73,25.20193278
A0427,"Ambulance service, advanced life support, emergency transport, level 1 (als1-emergency)",N,O,3,480,382,480,589.71875,445,600,6.62807024,421.2877292,397.57,425.45,1.099862878,330.9389375,311.7,340.36,0.977981327
A0428,"Ambulance service, basic life support, non-emergency transport, (bls)",N,F,4973,6812508.1,2053295,4844933,537.1170175,95,28454.625,275.6785558,220.8932109,95,289.24,17.11772737,172.9915218,0,228.65,13.46258727
A0429,"Ambulance service, basic life support, emergency transport (bls-emergency)",N,F,9722,2731110.7,2014926,2716724,669.2708485,76.87969925,31869.9,288.9939803,358.1562734,75.70225564,462.79,29.92258515,278.1289712,59.70285714,370.23,23.76236904
A0429,"Ambulance service, basic life support, emergency transport (bls-emergency)",N,O,3,822,572,822,499.6046594,252.03,500,9.047700509,354.757944,252.03,423,4.301793185,278.7129805,197.59,331.63,3.378427184
A0430,"Ambulance service, conventional air services, transport, one way (fixed wing)",N,F,89,10826,10072,10793,14438.15216,700,29903.92308,5062.165345,4190.477053,700,4731.355452,412.6544457,3275.365067,547.9038462,3652.114057,324.2669331
A0431,"Ambulance service, conventional air services, transport, one way (rotary wing)",N,F,275,56410,54843,56302,17309.74183,360,27709.38536,4177.623604,4599.301837,360,5510.41,296.4455132,3585.952542,282.24,4356.8975,233.0686692
A0432,"Paramedic intercept (pi), rural area, transport furnished by a volunteer ambulance company which is prohibited by state law from billing third party payers",N,F,59,3146,2641,3143,638.4824698,125,1492.44,161.4826762,375.3057629,125,407.41,29.98904694,288.0348601,98,320.7589655,24.78549587
A0433,"Advanced life support, level 2 (als 2)",N,F,5459,111967.8,108047,111419,1101.45624,2.06,5141.55,549.7118639,602.5650325,2.06,795.42,53.82315441,468.8264066,1.62,636.34,42.87535231
A0434,Specialty care transport (sct),N,F,1300,104281.7,79913,97874,1865.055575,40,32209.9,1148.997883,744.0198998,22.12932166,940.05,63.95298324,583.2122558,17.58468271,742.0133333,50.91906057
A0435,"Fixed wing air mileage, per statute mile",N,F,89,1980144.2,10020,10729,104.9972547,6.93,278.7912166,50.98005411,11.75196535,6.93,12.48003565,1.019015093,9.202622582,5.433166667,9.984006024,0.805605927
A0436,"Rotary wing air mileage, per statute mile",N,F,272,3322854,54437,55885,186.5635308,33.32,281.8598527,56.57891524,31.5708137,22.20998926,33.32000599,1.813376021,24.65698949,16.025,26.656,1.410686318
A0999,Unlisted ambulance service,N,F,486,3678.2,2767,3396,698.2032162,12,20283.27,495.3732378,357.4373144,7.089705882,3286.46,127.2913899,280.9220189,5.555,2576.59,100.0887829
A4212,Non-coring needle or stylet with or without catheter,N,O,4,19,18,19,6.236842105,5,17,2.966339322,0.405263158,0.01,6.5,1.454431951,0.324736842,0.01,5.2,1.162530672
A4215,"Needle, sterile, any size, each",N,O,22,182,121,137,6.50967033,0.18,80,8.595171502,0.037417582,0.01,5,0.368865846,0.031153846,0.008194444,4,0.295003223
```

comma delimiter

text qualifier

data FIELD types

Just like there are different types of data files, there are different types of data fields (aka columns aka variables).

How you upload them can make a huge difference.

data FIELD types

- Text/character
  - Alphanumeric
  - Short or long
  - You don’t need to do calculations with these things
  - Ex: names, addresses, descriptions, **zip codes**
- Numeric
  - Things you want to calculate with
  - Ex: counts, sums, dollars amounts
  - Can be integers or decimal numbers
- Dates/times
  - Ex: 7/22/2019, July-19, 1:32PM
  - Storing these as dates or times instead of text will make it a lot easier to do calculations, for example, calculating how many days between admission and discharge

Why should you care about types of data fields?

- Different field types sort differently!!
- If you’re not careful when you load your data, Excel/Google sheets will try and be helpful and guess your data types.
    - It’s usually wrong.
    - THUS -> DO NOT JUST DOUBLE CLICK YOUR DATA FILE TO OPEN IT!!!!

Computers are dumb

How does Excel/Google sheets get things wrong when guessing field types?

- Drops leading zeros
  - New England zip codes almost always start with zero, e.g. 02901
  - Excel will assume it's a number. 02901 becomes 2901. BAD BAD BAD
  - Avoid this by explicitly loading as a text field
- Reformat numbers to dates
  - Maybe there's a code in your data, like 11-53
  - Excel assumes this is November 1953 and loads it as 11/1/1953.
  - Avoid this by explicitly loading as a text field