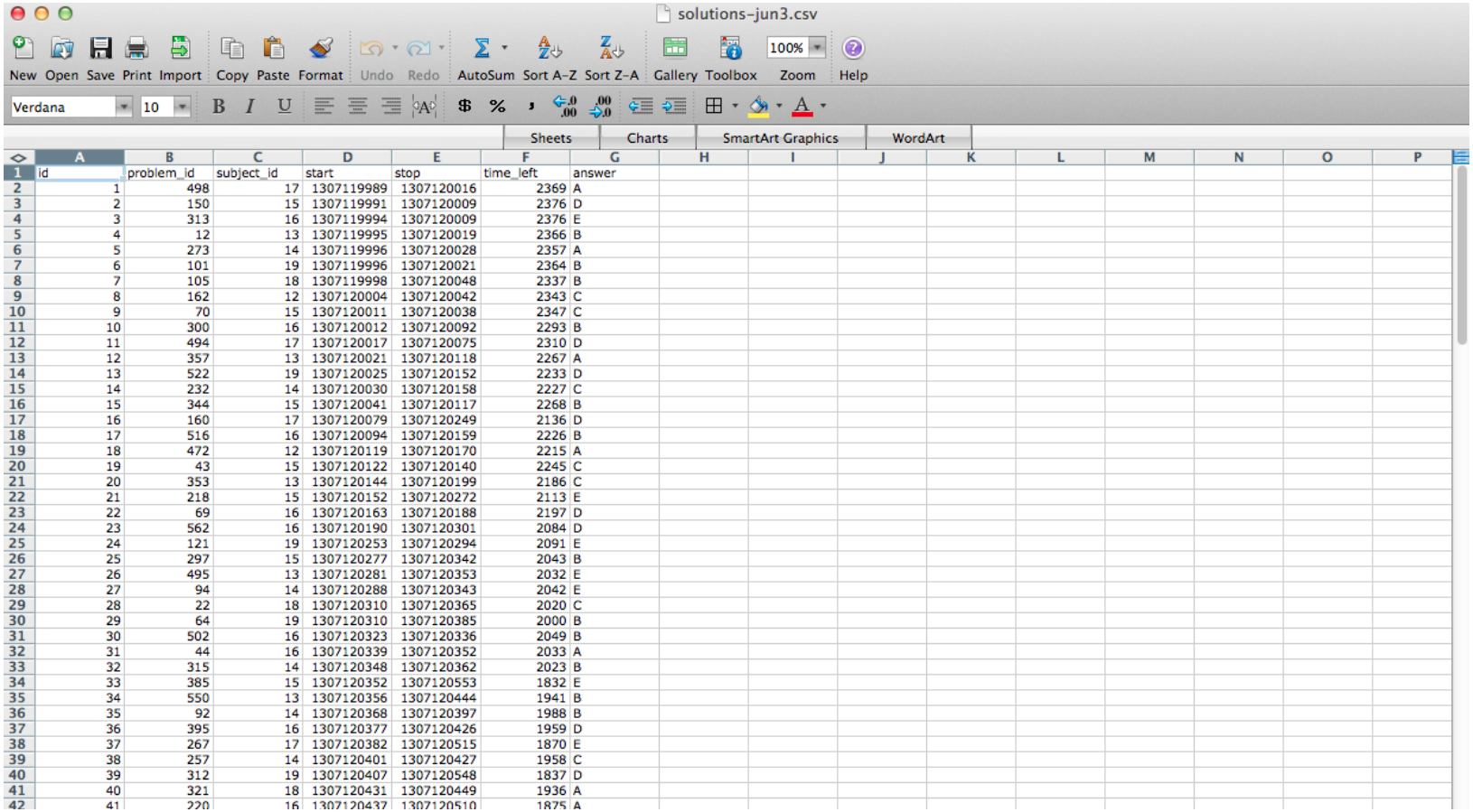
Motivation and pre-requisites

About this course

- This course covers the basic ideas behind getting data ready for analysis
  - Finding and extracting raw data
  - Tidy data principles and how to make data tidy
  - Practical implementation through a range of R packages
- What this course depends on
  - The Data Scientist's Toolbox
  - R Programming
- What would be useful
  - Exploratory analysis
  - Reporting Data and Reproducible Research

What you wish data looked like



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1	id	problem_id	subject_id	start	stop	time_left	answer
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3	2	150	15	1307119991	1307120009	2376	D
4	3	313	16	1307119994	1307120009	2376	E
5	4	12	13	1307119995	1307120019	2366	B
6	5	273	14	1307119996	1307120028	2357	A
7	6	101	19	1307119996	1307120021	2364	B
8	7	105	18	1307119998	1307120048	2337	B
9	8	162	12	1307120004	1307120042	2343	C
10	9	70	15	1307120011	1307120038	2347	C
11	10	300	16	1307120012	1307120092	2293	B
12	11	494	17	1307120017	1307120075	2310	D
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15	14	232	14	1307120030	1307120158	2227	C
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18	17	516	16	1307120094	1307120159	2226	B
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21	20	353	13	1307120144	1307120199	2186	C
22	21	218	15	1307120152	1307120272	2113	E
23	22	69	16	1307120163	1307120188	2197	D
24	23	562	16	1307120190	1307120301	2084	D
25	24	121	19	1307120253	1307120294	2091	E
26	25	297	15	1307120277	1307120342	2043	B
27	26	495	13	1307120281	1307120353	2032	E
28	27	94	14	1307120288	1307120343	2042	E
29	28	22	18	1307120310	1307120365	2020	C
30	29	64	19	1307120310	1307120385	2000	B
31	30	502	16	1307120323	1307120336	2049	B
32	31	44	16	1307120339	1307120352	2033	A
33	32	315	14	1307120348	1307120362	2023	B
34	33	385	15	1307120352	1307120553	1832	E
35	34	550	13	1307120356	1307120444	1941	B
36	35	92	14	1307120368	1307120397	1988	B
37	36	395	16	1307120377	1307120426	1959	D
38	37	267	17	1307120382	1307120515	1870	E
39	38	257	14	1307120401	1307120427	1958	C
40	39	312	19	1307120407	1307120548	1837	D
41	40	321	18	1307120431	1307120449	1936	A
42	41	220	16	1307120437	1307120510	1875	A

What does data really look like?

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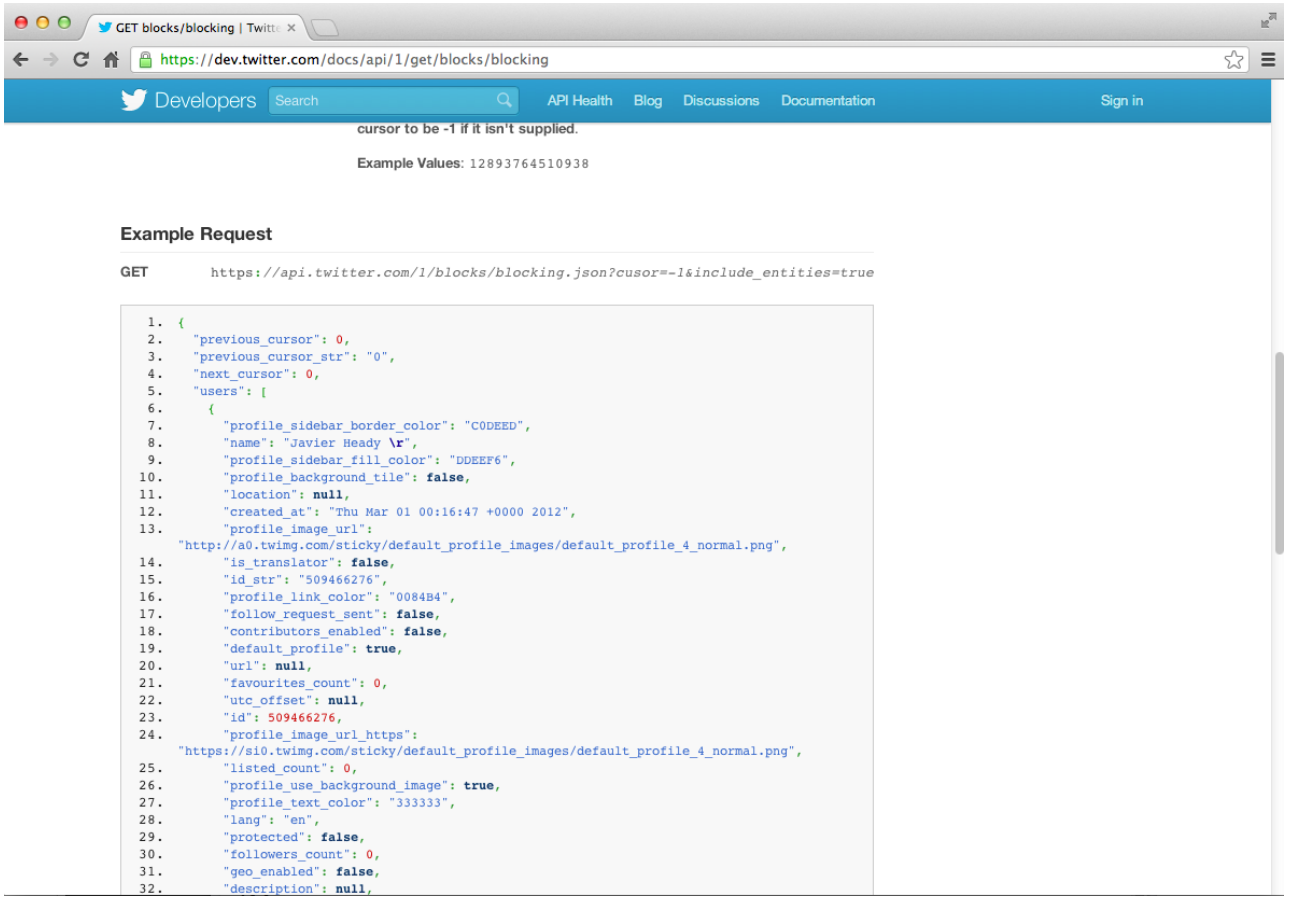
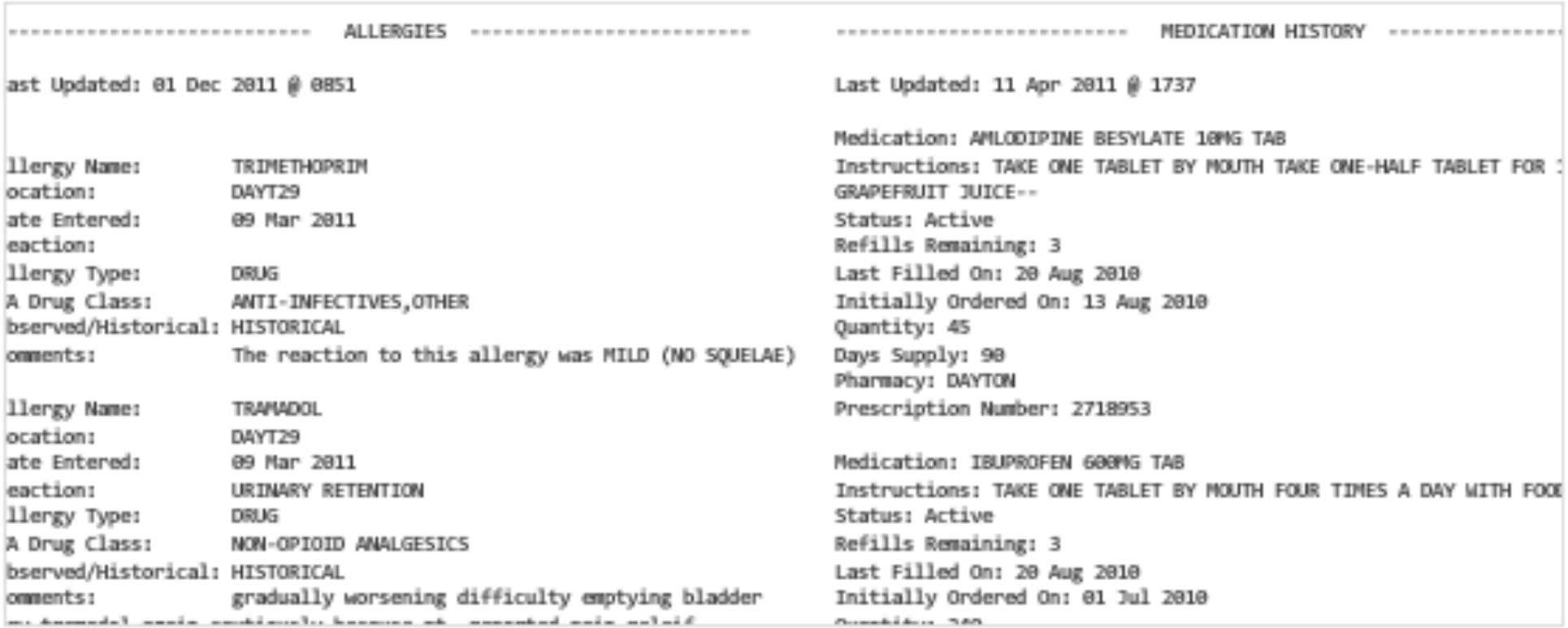
abb_babbabaabbbbbbbbbbbbbbba\`b`\abbbabbbbabbbbbbaabbbbb`bb`ab_O_bab_Q_bbabaa_a
```

http://brianknaus.com/software/srtoolbox/s_4_1_sequence80.txt
```

What does data really look like?



https://dev.twitter.com/docs/api/1/get/blocks/blocking

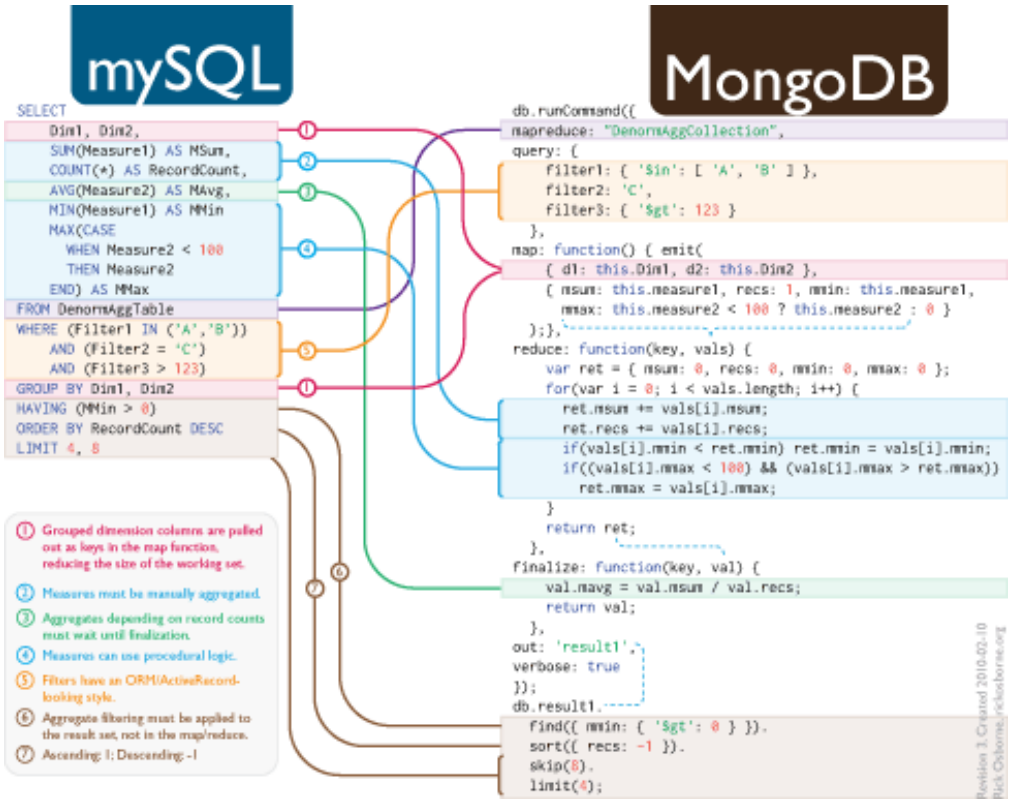
What does data really look like?



```
-------------------------   ALLERGIES   -------------------------      -------------------------   MEDICATION HISTORY   ----------------

ast Updated: 01 Dec 2011 @ 0851                                       Last Updated: 11 Apr 2011 @ 1737

                                                                      Medication: AMLODIPINE BESYLATE 10MG TAB
llergy Name:        TRIMETHOPRIM                                      Instructions: TAKE ONE TABLET BY MOUTH TAKE ONE-HALF TABLET FOR
ocation:            DAYT29                                            GRAPEFRUIT JUICE--
ate Entered:        09 Mar 2011                                       Status: Active
eaction:                                                              Refills Remaining: 3
llergy Type:        DRUG                                              Last Filled On: 20 Aug 2010
A Drug Class:       ANTI-INFECTIVES,OTHER                             Initially Ordered On: 13 Aug 2010
bserved/Historical: HISTORICAL                                        Quantity: 45
omments:            The reaction to this allergy was MILD (NO SQUELAE) Days Supply: 90
                                                                      Pharmacy: DAYTON
llergy Name:        TRAMADOL                                          Prescription Number: 2718953
ocation:            DAYT29
ate Entered:        09 Mar 2011                                       Medication: IBUPROFEN 600MG TAB
eaction:            URINARY RETENTION                                 Instructions: TAKE ONE TABLET BY MOUTH FOUR TIMES A DAY WITH FOO
llergy Type:        DRUG                                              Status: Active
A Drug Class:       NON-OPIOID ANALGESICS                             Refills Remaining: 3
bserved/Historical: HISTORICAL                                        Last Filled On: 20 Aug 2010
omments:            gradually worsening difficulty emptying bladder   Initially Ordered On: 01 Jul 2010
```

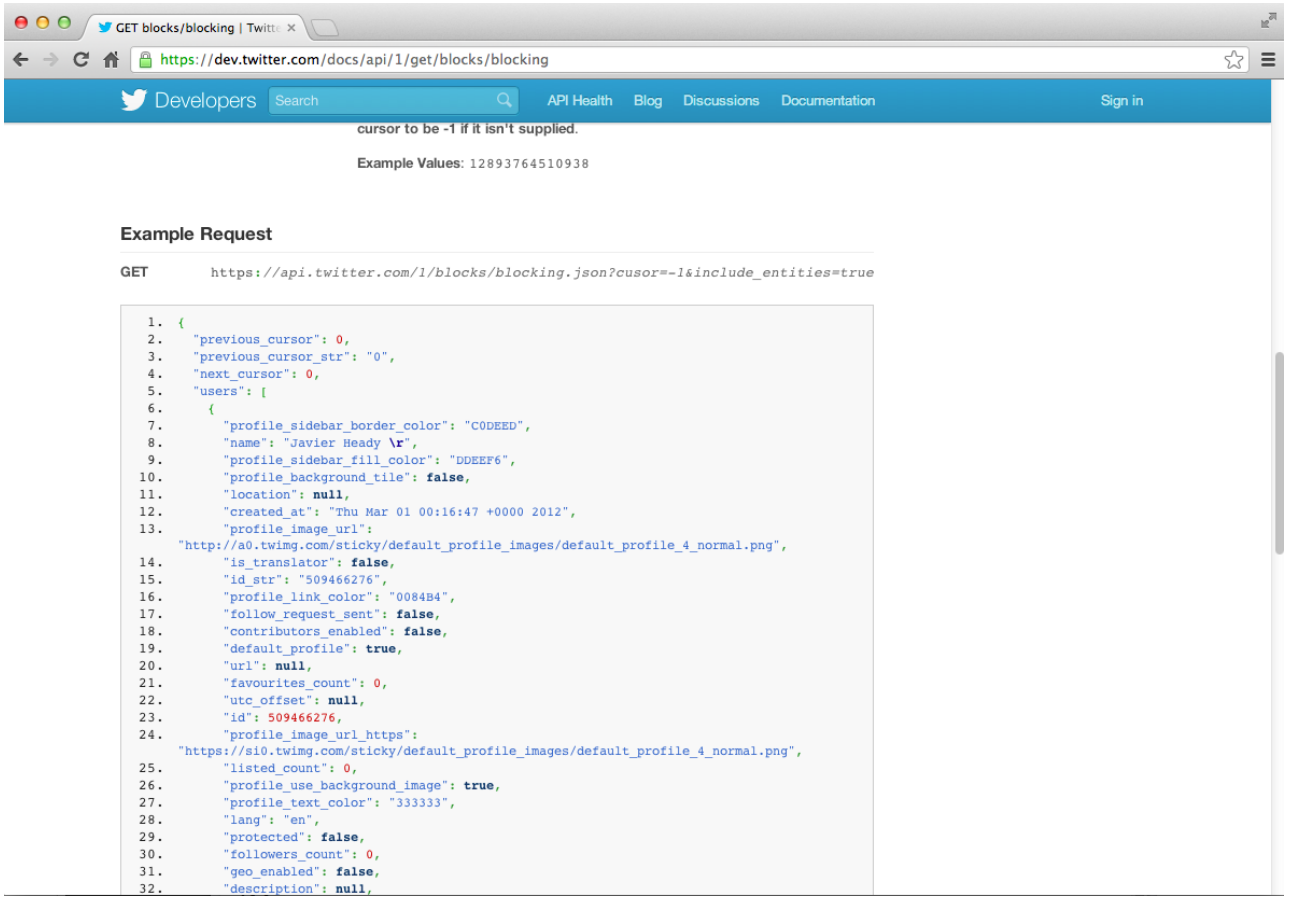
http://blue-button.github.com/challenge/

Where is data?



http://rickosborne.org/blog/2010/02/infographic-migrating-from-sql-to-mapreduce-with-mongodb/

Where is data?



https://dev.twitter.com/docs/api/1/get/blocks/blocking

Where is data?

https://data.baltimorecity.gov/

The goal of this course

Raw data -> Processing script -> tidy data -> data analysis -> data communication