Mortality Surveillance

Zoë Turner @AppliedInfoNott @Letxuga007

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Background

6 days work by 1 analyst

Only completed 3x in a year

9 clinical databases on 2 systems (Rio and S1)

2 non clinical datasets (incidents and Coroners Verdict)

Excel copying, checking, pasting and ultimately: VLOOKUPS

`=IFERROR(VLOOKUP($A4,Lookup2!E:F,2,0),"NO")`

	B	C	D	E	F	G	H	
	Ulysses	Health Partnerships	RiO Local	IAPT	Offender Health	Service/Team Ulysses	Service/Team Health Partnership	
	YES	YES	YES	NO	NO	MHSOP	4 HP Mansfield & Ashfield	MI
	YES	YES	YES	NO	NO	MHSOP	5 HP Newark & Sherwood	MI
	YES	NO	YES	NO	NO	MHSOP		MI
	YES	YES	YES	NO	NO	MHSOP	5 HP Newark & Sherwood	MI
	YES	YES	YES	NO	NO	MHSOP	9 HP Specialist Services	MI
	YES	YES	YES	NO	NO	MHSOP	8 HP Rushcliffe	MI
	YES	NO	YES	NO	NO	MHSOP		MI
	YES	NO	YES	NO	NO	AMH		Ac
	YES	NO	YES	NO	NO	MHSOP		MI
	YES	NO	YES	NO	NO	MHSOP		MI
	YES	YES	YES	NO	NO	MHSOP	7 HP Nottm West	MI
	YES	NO	YES	NO	NO	MHSOP		MI
	YES	NO	YES	NO	NO	MHSOP		MI

How?....

What about patients who access multiple services?

Do deaths by ethnicity and gender reflect the same Public Health patterns?

But…

SQL solution v1.0

First attempt is wide data.

PatientID	SystmOne	Rio instance1	Rio instance2	Rio instance3
Patient A	1	1	0	0

Wide and long form data

id	Ward	Referrals
Patient A	Ward 1	Team A
Patient B	Ward 2	Team B

Long table (in R uses gather function in dplyr)

id	Activity	Detail
Patient A	Ward	Ward 1
Patient A	Referrals	Team A
Patient B	Ward	Ward 2
Patient B	Referrals	Team B

Further reading

Journal of Statistical Software, Tidy Data, Hadley Wickham

https://vita.had.co.nz/papers/tidy-data.pdf
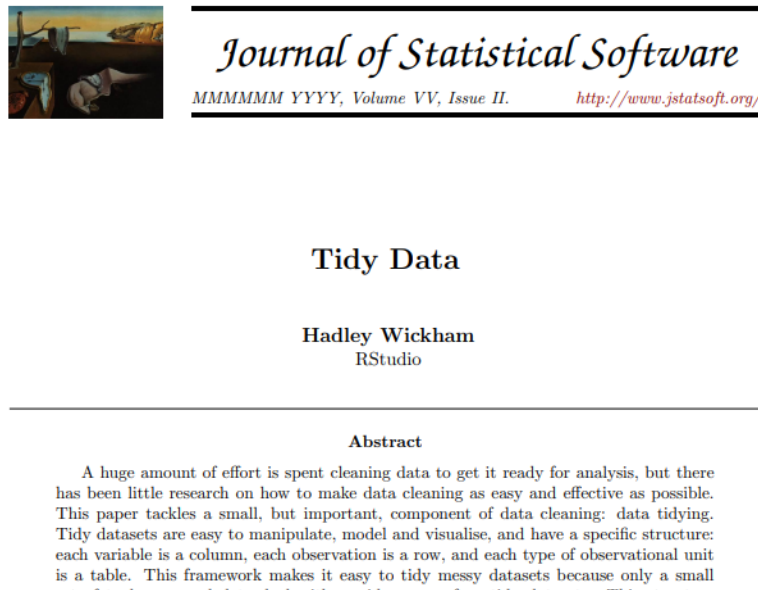
SQL solution v2.0

PatientID	System	DOB	DOD
Patient A	SystmOne	01/01/1900	02/02/1910
Patient A	Rio instance1		02/02/2010
Patient A	Rio instance2	01/01/2000	

Data warehouse rights

New server = BORIS (no rights to update/delete/drop table)

Old server = Temp_tables (full rights)

```sql
-- In BORIS newServer

INSERT OPENQUERY([oldServer],'
SELECT *
  FROM [oldServer].[ZT].[PatientIndex]')
SELECT *
 FROM #tmp
```

SQL solution v2.1

Originally for all patients:

- 1 script to build
- OPENQUERY to OldServer
- 1 script to amend (merged DOD, DOB, Ethnicity, Gender…)

SQL solution v2.2

Now:

- 1 script to build and amend
- OPENQUERY only those who have died since 2015

SQL solution v2.3

Now:

- 1 script to build an amend

- OPENQUERY only those who have died since 2015

- AND who are not already in the existing table

Things I learned

- Back up tables before running any code that makes changes

- Add an id to any table you create

- Write notes to your future self

- Number the chunks of SQL code

- I probably haven't finished at v2.3 …

That's the data created

Now for the data feed to R...

Data feed before analysis

Back to wide data!

PatientID	SystmOIne	Rio Instance1	Rio Instance2
Patient A	1	1	0
Patient B	0	1	0
Patient C	1	1	0

SQL MAX(CASE....)

```
SELECT
p.MergedID
,p.DateOfBirth_skMerge
,SystmOne = MAX(CASE WHEN p.System = 'S1' THEN 1 ELSE 0 END)
,RioLOCAL = MAX(CASE WHEN p.System = 'LOCAL' THEN 1 ELSE 0 END)
FROM #pat                          AS p
GROUP BY  p.MergedID
,p.DateOfBirth_skMerge
```

Output

MergedID	SystmOIne	Rio Instance1	EthnicityMerged	DateofDeath_skMerged
123	1	1	White	20190101
124	0	1	Mixed	20190807
125	1	1	Unknown	20180101

Then back to long data!

MergedID	System	Description	Active	LoadedDate_sk
123	S1	NA	1	20190513
123	Rio Referrals	AMH	0	20190513
123	Rio Inpatients	Ward A	0	20190513
126	S1	NA	1	20190513

This was presented originally to R-Ladies

Now to the analysis in R…