

The epidemiology and continued monitoring of burn injury in England and Wales

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International Burn Injury Database (iBID)

www.ibidb.org

Prevention

- Define and quantify the problem
- Establish a target population
- Establish a means of measurement
- Instigate a change
- Measure the effects of change
- Measure the effective timeframe
- Revise and enact that revision

*Preventing Accidental Injury –
Priorities for Action*
*Preventing Accidental Injury –
Priorities for Action*

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Priorities for Action*

Report to the Chief Medical Officer
from
The Accidental Injury Task Force

*Preventing
Accidental Injury –
Priorities for Action*

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DCMS
DfT
DTI
DWP
ODPM


London: TSO


Nothing happening. . . .

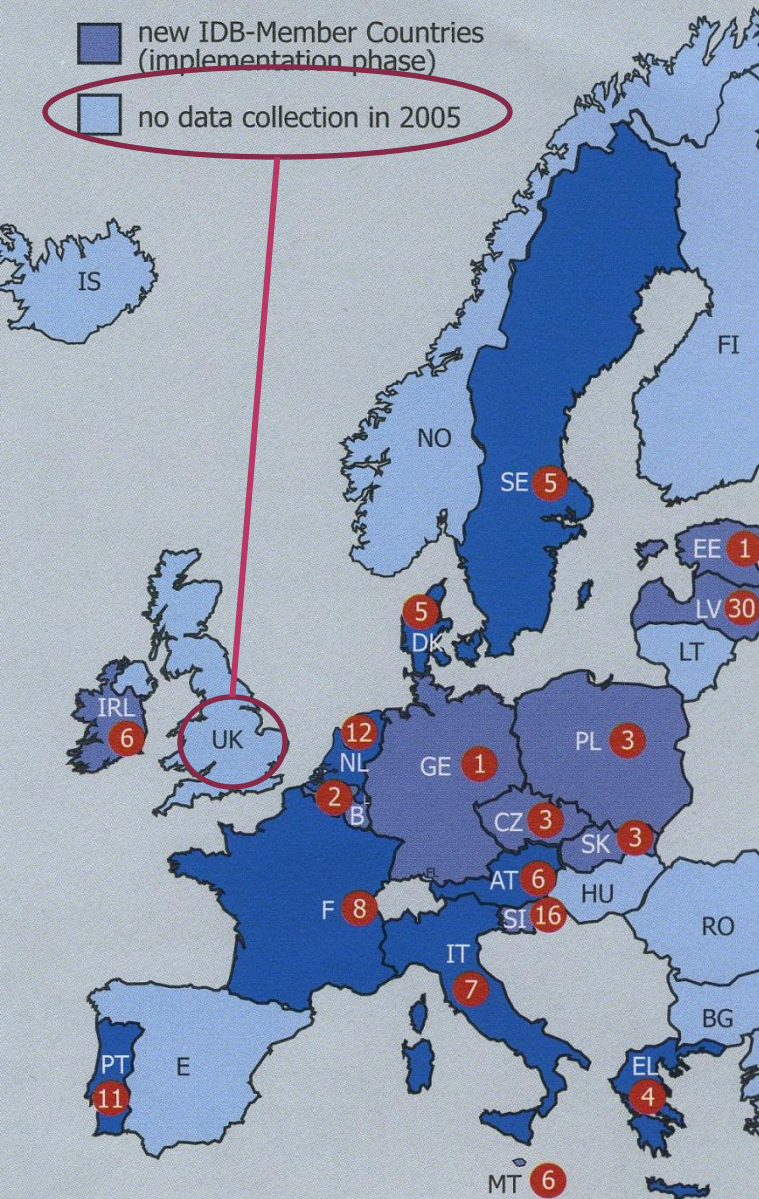
IDB Hospital Network 2005

Number of Hospitals in the IDB

 IDB-Member Countries

 new IDB-Member Countries
(implementation phase)

 no data collection in 2005



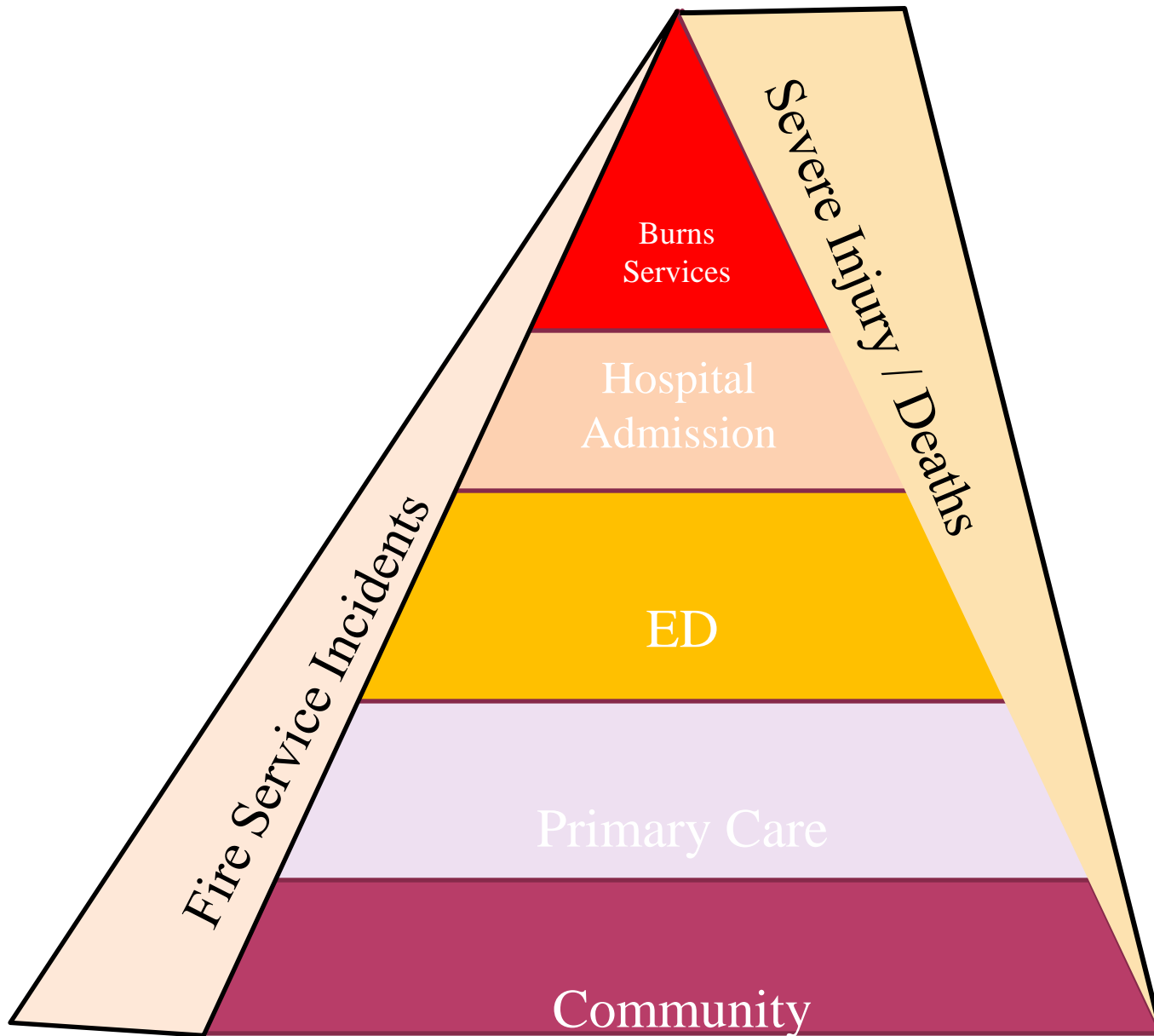
IDB Data set

- Sex
- DoB (YYYYMMDD)
- Date of Injury
- Time of Injury
- Date of Attendance
- Time of Attendance
- Date of Discharge
- Treatment and Follow-up

- Place of Occurrence
- Mechanism of Injury
- Activity
- Sports
- Type of Injury
- Part of Body Involved
- Product involved in the injury
- Product Causing the Injury
- Accident Description

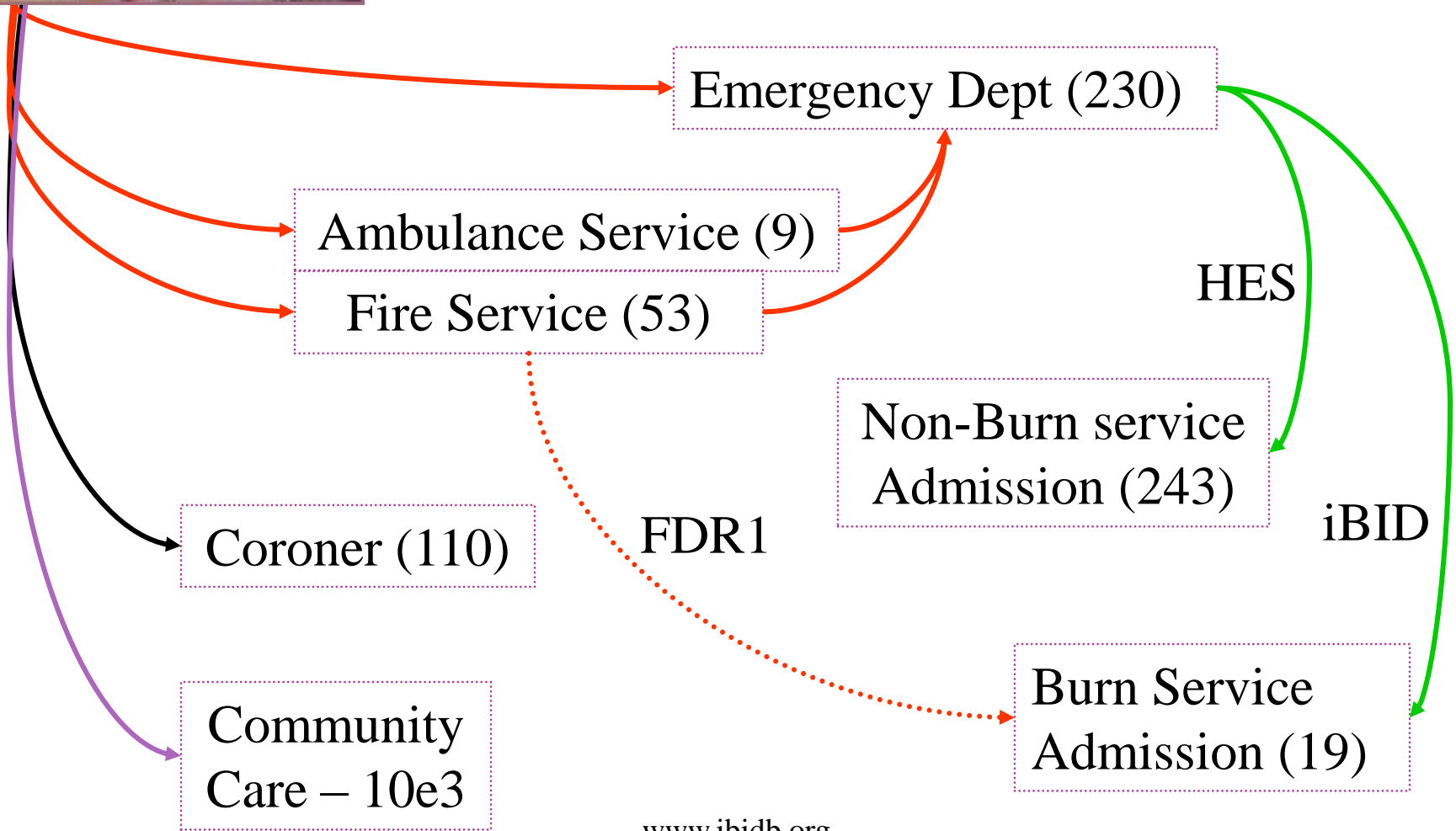
Burn Injury

- Definition
 - Fire & smoke
 - Thermal injury
 - Chemical & Electrical
- Filtering
 - All ‘acute injuries’
 - All ages
 - All causes
 - All severities
- England and Wales
- Sources of Data
 - various



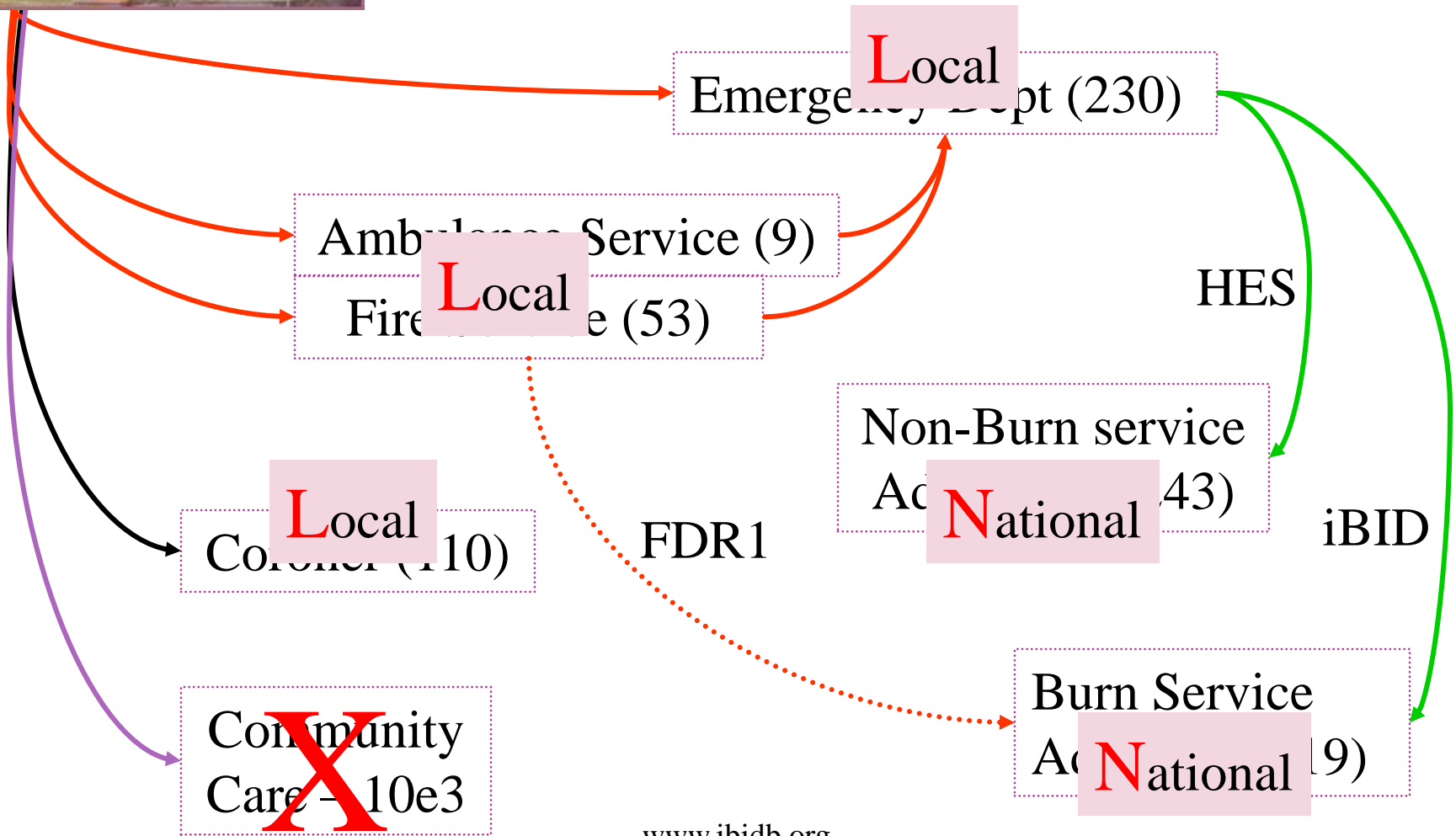


E&W Sources of Data





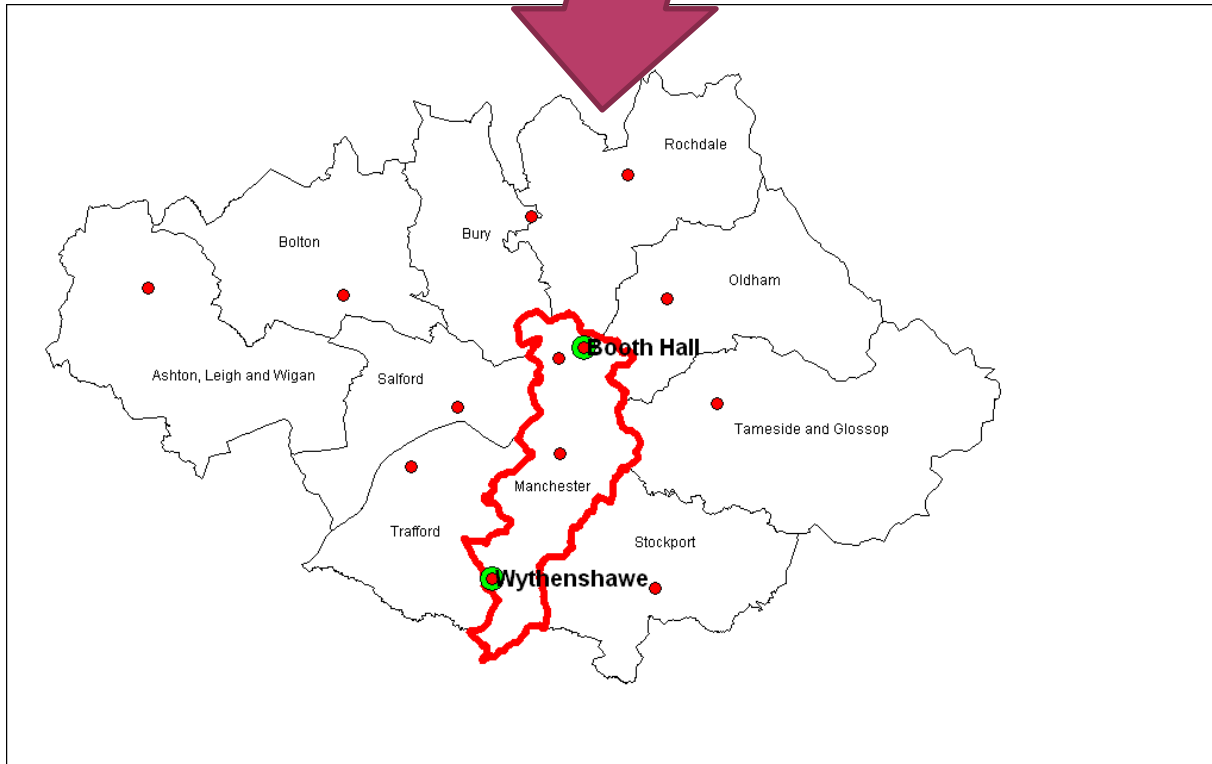
E&W Sources of Data



2 phase study

- Local
- Grt Manchester
 - All local sources of data for 6 years
 - Evaluate their importance
 - Use as a phase 1 estimate of the national problem
- National
- England & Wales
 - Use all national sources of data 4 years
 - Account for the important sources that are NOT national or not yet available

Phase 1 - Manchester



Results from a 6 year study period 2000-2005inc

	Cases of children/yr	child% of total cases	Cases of adults/yr	adult% of total cases
Fire Service 1st Aid	107	11.2	1123	45.9
ED	442	45.8	997	40.7
ED Admissions	413	42.7	294	12.0
All deaths	3	0.3	33	1.4
Total	966	100	2449	100

Greater Manchester
 Coroners Data (4 offices)
 over 6 years

	Coroner Data alone	plus FireService	plus ED	plus BurnService
Children 20	19	0	0	1 (2)
Adults 216	193	5	1	17 (48)

Greater Manchester
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Children 20	19	0	0	1 (2)
Adults 216	193	5	1	17 (48)

In global literature Burn Service figures are very often described as the burn injury picture for that region or country:

This is not a valid assumption

Phase 2:

E&W National Admissions Data

- iBID data
 - England & Wales
 - 21 burn services
 - 2003 – now
 - 75K cases
 - Very detailed
 - Completion good
 - Accuracy high
- HES data
 - England & Wales
 - All NHS hospitals
 - 1989 – 2009
 - 267K cases
 - Not detailed
 - Completion good
 - Accuracy based on coding (in ICDv9&10 and OPCSv4)

www.ibid.org

www.hesonline.nhs.uk

Amalgamation of HES and iBID data

- Avoid double counting
- Share a common analysis process as much as possible :
 - Definition of acute injury
 - Severity definition (BF,BU,BC)
 - Burn Facility
 - Burn Unit
 - Burn Centre
 - Geographical analysis – based on postcode
 - Comparison with 2001 census population data

Burn Injury admissions to the NHS per year in E&W (average over 4 years)

Admissions per Year	0-4.9yrs	5-14.9yrs	15-24.9yrs	25-34.9yrs	35-44.9yrs	45-54.9yrs	55-64.9yrs	65-74.9yrs	75-120yrs	Grand Total
BC	71	38	96	90	99	97	67	46	92	696
BU	286	94	162	149	157	117	106	90	180	1341
BF	2307	754	1080	896	920	734	534	435	1043	8703
not definable	136	70	93	63	72	51	37	17	21	560
Grand Total	2800	956	1431	1198	1248	999	744	588	1336	11300

Injury Causation Types - extrapolation of the profile from the iBID to all admission data.

	_0-4.9yrs	_5-14.9yrs	15-24.9yrs	25-34.9yrs	35-44.9yrs	45-54.9yrs	55-64.9yrs	65-74.9yrs	75-120yrs	Grand Total
01 Flame	2.22%	21.15%	30.21%	28.46%	29.93%	28.89%	29.96%	32.73%	29.05%	20.15%
02 Flash	0.53%	12.64%	18.29%	15.17%	14.37%	12.97%	9.03%	9.09%	6.69%	9.60%
03 Contact	21.87%	18.00%	16.85%	15.10%	14.13%	14.61%	16.06%	15.32%	18.50%	17.80%
04 Scald	71.99%	39.10%	19.73%	23.21%	21.72%	24.53%	29.75%	33.12%	40.54%	40.96%
05 Chemical	1.07%	2.41%	7.79%	11.32%	13.72%	12.73%	9.75%	5.58%	1.99%	6.48%
06 Electrical	0.51%	2.29%	3.40%	3.92%	3.88%	4.12%	3.58%	1.69%	0.84%	2.42%
07 Radiation	0.33%	1.64%	1.27%	0.82%	0.55%	0.28%	0.93%	0.78%	0.52%	0.73%
08 Cold	0.00%	0.04%	0.37%	0.27%	0.31%	0.33%	0.22%	0.26%	0.10%	0.18%
09 Friction	1.04%	1.92%	1.61%	1.16%	0.80%	0.61%	0.29%	0.39%	0.42%	1.07%
10 Non skin burn	0.44%	0.82%	0.48%	0.58%	0.59%	0.94%	0.43%	1.04%	1.36%	0.61%
Grand Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

4 years of data	_0-4.9yrs	_5-14.9yrs	15-24.9yrs	25-34.9yrs	35-44.9yrs	45-54.9yrs	55-64.9yrs	65-74.9yrs	75-120yrs	Grand Total
Grand Total	11204	3832	5728	4799	4997	4005	2982	2356	5347	46387

	_0-4.9yrs	_5-14.9yrs	15-24.9yrs	25-34.9yrs	35-44.9yrs	45-54.9yrs	55-64.9yrs	65-74.9yrs	75-120yrs	Grand Total
01 Flame	62	203	433	341	374	289	223	193	388	2337
02 Flash	15	121	262	182	180	130	67	54	89	1114
03 Contact	612	172	241	181	177	146	120	90	247	2065
04 Scald	2016	375	283	278	271	246	222	195	542	4750
05 Chemical	30	23	111	136	171	128	73	33	27	752
06 Electrical	14	22	49	47	48	41	27	10	11	280
07 Radiation	9	16	18	10	7	3	7	5	7	84
08 Cold	0	0	5	3	4	3	2	2	1	20
09 Friction	29	18	23	14	10	6	2	2	6	124
10 Non skin burn	12	8	7	7	7	9	3	6	18	71
Grand Total	2801	958	1432	1200	1249	1001	746	589	1337	11597

The same technique can be applied all subsets eg Burn Centre (BC) level injuries

	_0-4.9yrs	_5-14.9yrs	15-24.9yrs	25-34.9yrs	35-44.9yrs	45-54.9yrs	55-64.9yrs	65-74.9yrs	75-120yrs	Grand Total
01 Flame	8	19	57	59	67	68	47	32	57	423
02 Flash	1	6	20	18	16	13	5	4	6	97
03 Contact	4	1	2	2	3	3	1	1	4	20
04 Scald	53	6	5	3	6	8	9	5	23	110
05 Chemical	1	0	2	2	2	1	2	1	0	12
06 Electrical	0	2	5	3	3	4	2	0	0	20
07 Radiation	0	1	1	1	0	0	0	0	0	4
09 Friction	0	0	1	0	1	0	0	0	0	2
10 Non skin burn	5	4	2	2	3	1	0	1	3	22
Grand Total	71	38	96	91	100	98	67	46	93	710

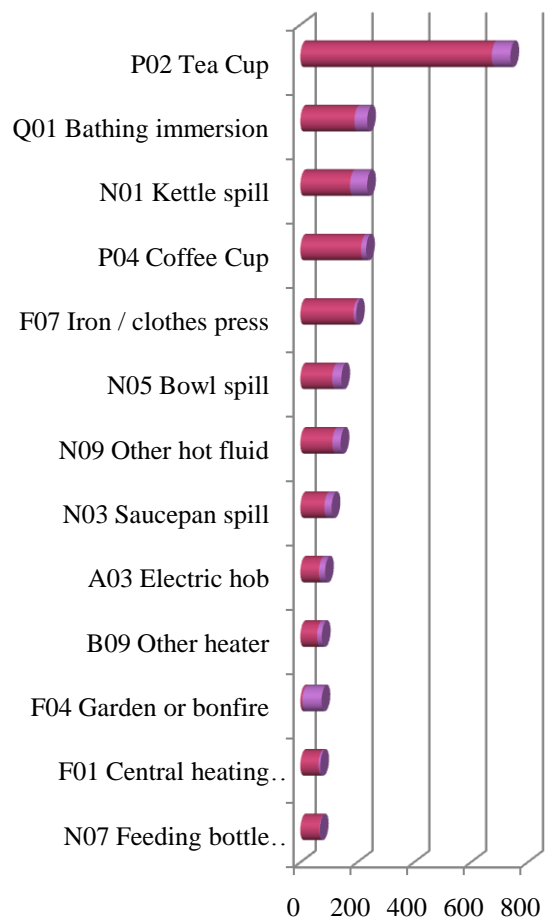
And can be applied to the more specific Sources of injury data from iBID

Source (All Severities)	_0-4.yrs	_5-14.9yrs	15-24.9yrs	25-34.9yrs	35-44.9yrs	45-54.9yrs	55-64.9yrs	65-74.9yrs	75-120yrs	Grand Total
A01 Solid Fuel cooker	0.06%	0.09%	0.06%	0.04%	0.22%	0.15%	0.15%	0.14%	0.11%	0.10%
A02 Gas hob	0.26%	0.77%	0.98%	1.25%	1.46%	2.21%	1.58%	2.34%	5.82%	1.18%
A03 Electric hob	2.34%	2.26%	0.75%	0.36%	0.77%	0.39%	0.75%	0.55%	0.77%	1.33%
A04 LPG (propane) cooker	0.00%	0.04%	0.15%	0.25%	0.22%	0.25%	0.53%	0.28%	0.22%	0.15%
A05 Oven	1.55%	0.77%	0.81%	1.14%	0.91%	1.13%	1.05%	1.10%	1.54%	1.17%
A06 Grill	0.35%	0.13%	0.42%	0.11%	0.11%	0.15%	0.23%	0.41%	0.44%	0.26%
A07 Camping stove	0.10%	0.43%	0.51%	0.68%	0.55%	0.54%	0.30%	0.41%	0.66%	0.39%
A08 Barbecue	0.49%	1.07%	1.49%	1.74%	1.39%	1.52%	0.60%	0.41%	0.11%	1.01%
A09 Other cooker	0.39%	0.55%	0.57%	0.71%	0.99%	0.49%	0.38%	0.69%	0.77%	0.57%
B01 Open coal fire	0.17%	0.60%	0.24%	0.43%	0.44%	0.74%	0.38%	0.83%	1.76%	0.42%
B02 Solid fuel heater	0.16%	0.04%	0.03%	0.07%	0.04%	0.05%	0.08%	0.28%	0.33%	0.10%
B03 Electric heater	0.65%	0.17%	0.12%	0.50%	0.37%	0.44%	1.20%	0.96%	2.41%	0.57%
B04 Coal effect fire	0.17%	0.04%	0.06%	0.11%	0.15%	0.15%	0.15%	0.00%	0.44%	0.13%
B05 Gas fire	1.44%	1.71%	0.83%	0.82%	0.88%	0.93%	1.73%	1.65%	3.84%	1.32%
B06 Paraffin heater	0.01%	0.04%	0.06%	0.00%	0.00%	0.10%	0.15%	0.28%	0.11%	0.05%
B07 LPG (propane) heater	0.01%	0.13%	0.18%	0.18%	0.18%	0.29%	0.23%	0.41%	0.00%	0.13%
B08 Camping heater	0.00%	0.09%	0.03%	0.00%	0.15%	0.05%	0.08%	0.14%	0.11%	0.05%
B09 Other heater	2.10%	1.75%	2.18%	1.53%	1.94%	1.92%	2.18%	1.79%	2.09%	1.97%
C01 Fat (Burning)	0.62%	1.36%	3.70%	4.91%	2.78%	2.90%	3.68%	3.85%	5.82%	2.53%

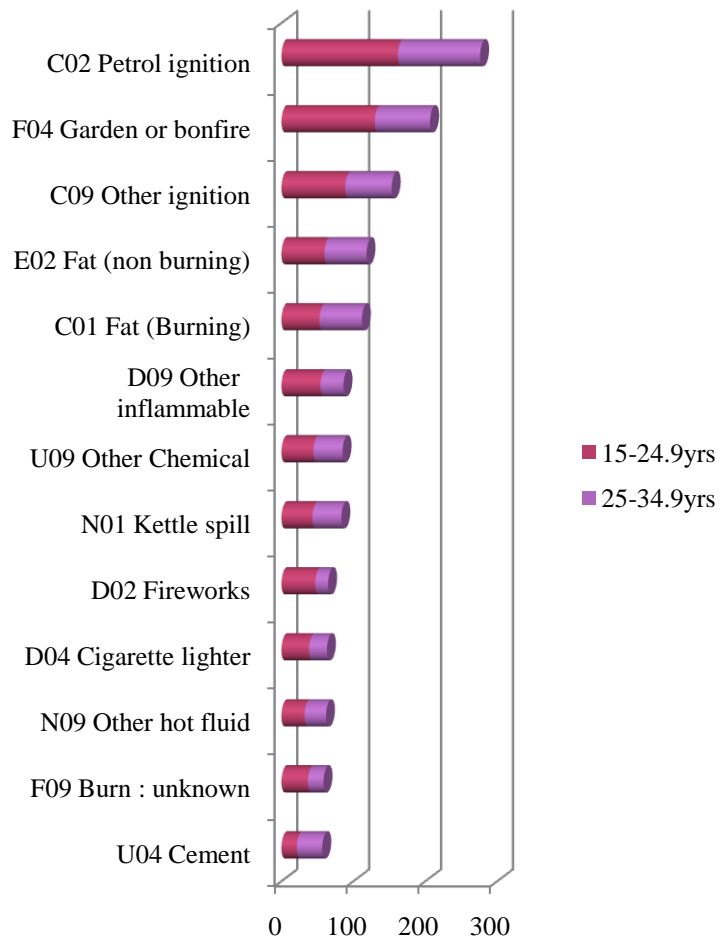


68 other subgroups

Estimates of the commonest Sources of injury all severities



■ _0-4.9yrs
■ _5-14.9yrs

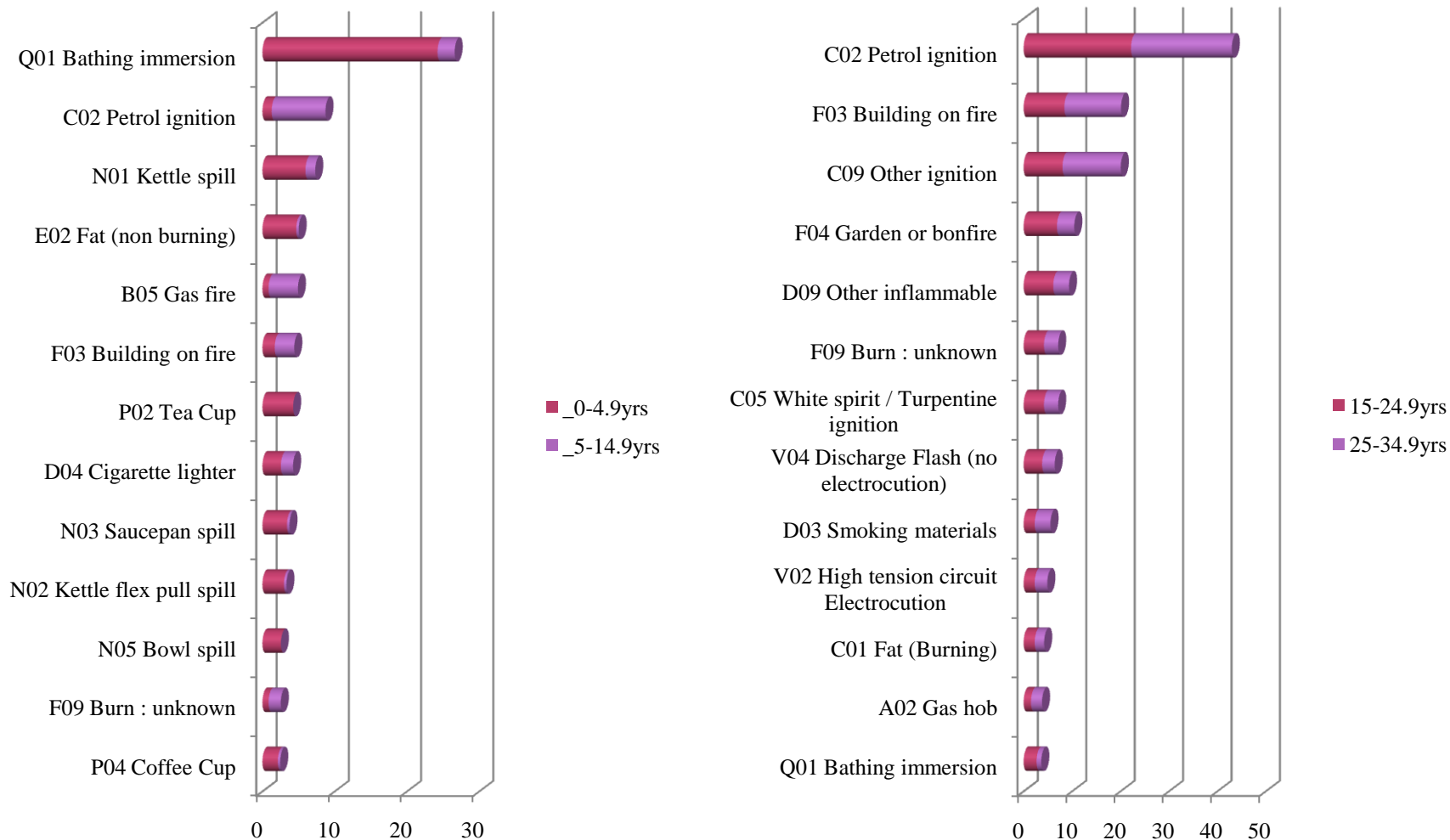


■ 15-24.9yrs
■ 25-34.9yrs

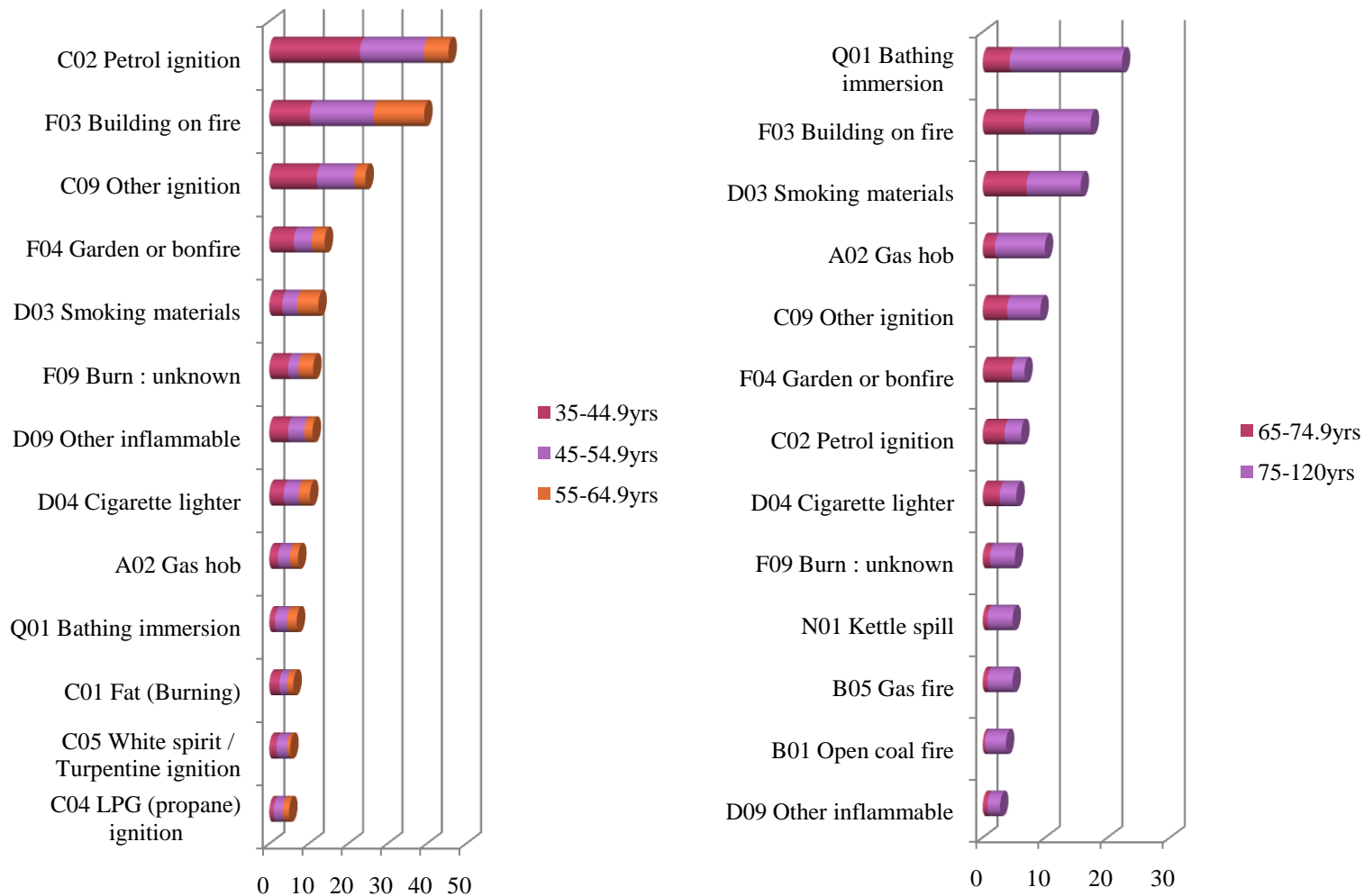
Estimates of the commonest Sources of injury all severities



Estimates of the commonest Sources of injury of Burn Centre (BC) admissions



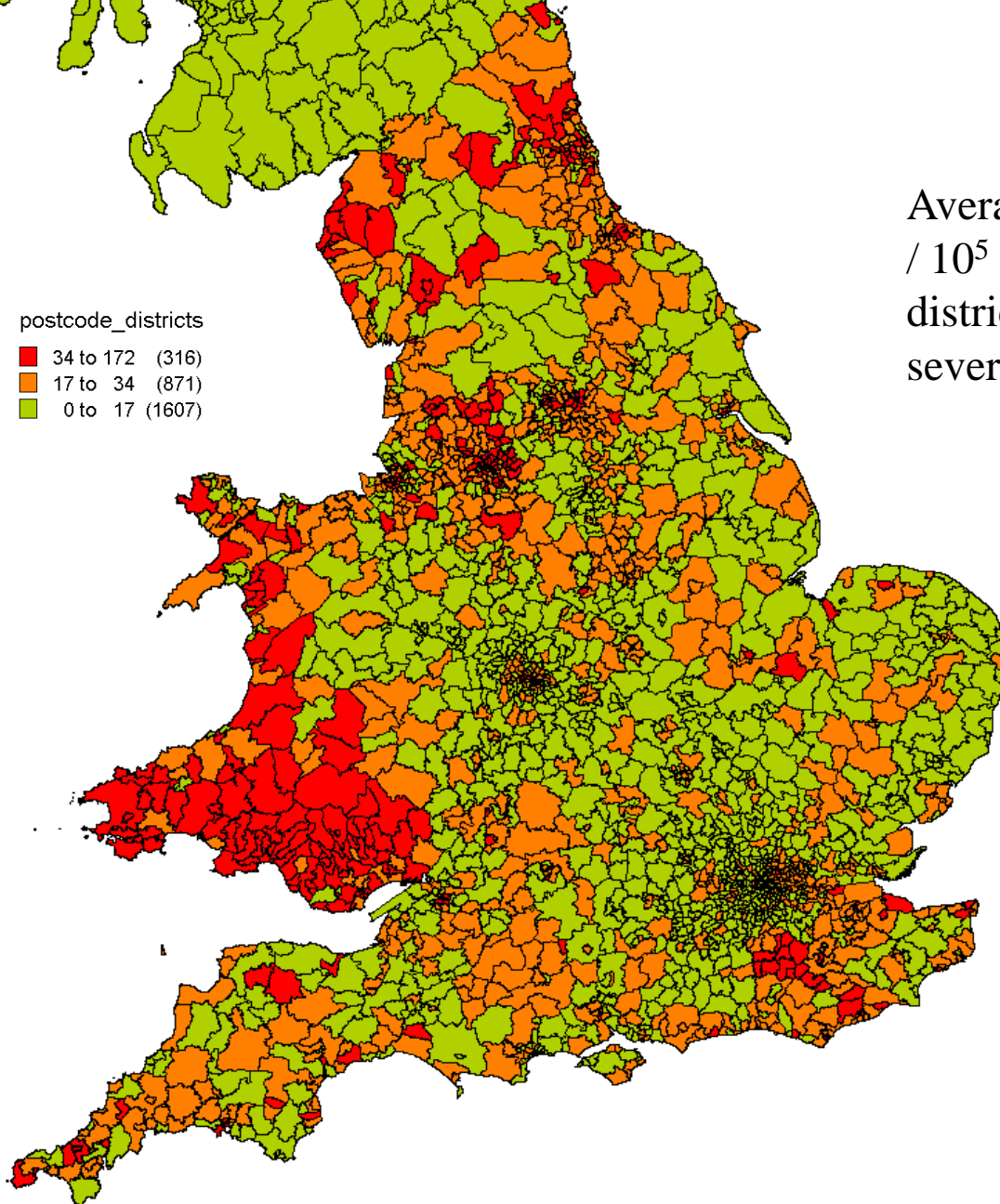
Estimates of the commonest Sources of injury of Burn Centre (BC) admissions



Data can also be Geocoded and mapped using suitable software and reference tables

Average number of burn admissions / 10⁵ / year by postcode district – all causes – all severities

PC_D	PC_D_Label	Children	Adults	Total
NP15	Usk,Newport	22.87283	54.57522	41.67201
NP16	Chepstow,Newport	50.08905	27.76641	31.59272
NP18	Caerleon West,Newport	57.67013	18.21626	25.27096
NP19	Bishopool,Newport	63.26978	44.46304	49.83017
NP20	Maes-Glas,Newport	81.08609	44.38411	52.72016
NP22	Nant-Y-Bwch,Newport	83.38893	50.19216	56.97097
NP23	Beaufort,Newport	97.46589	53.15514	64.3836
NP24	New Tredegar,Newport	22.16312	58.3809	59.13978
NP25	Maypole,Newport	92.25092	33.17221	44.41444
NP26	Magor,Newport	61.47541	33.13548	39.49982
NP44	Pontrhydyrun,Newport	59.18	34.87499	41.73446
NR1	Arnold Miller Road,Norwich	43.92387	25.0962	26.48656
NR2	Recreation Road,Norwich	14.89869	18.47148	18.20683
NR3	Upper Hellesdon,Norwich	53.95683	23.16587	29.5751
NR4	Colney,Norwich	58.02387	10.0275	16.80995
NR5	Earlham,Norwich	50.36092	15.32802	24.12941
NR6	Old Catton,Norwich	12.90656	10.6349	10.71857
NR7	Thorpe Street,Norwich	35.42958	12.6963	18.48161
NR8	Drayton,Norwich	6.90417	6.968641	6.818678

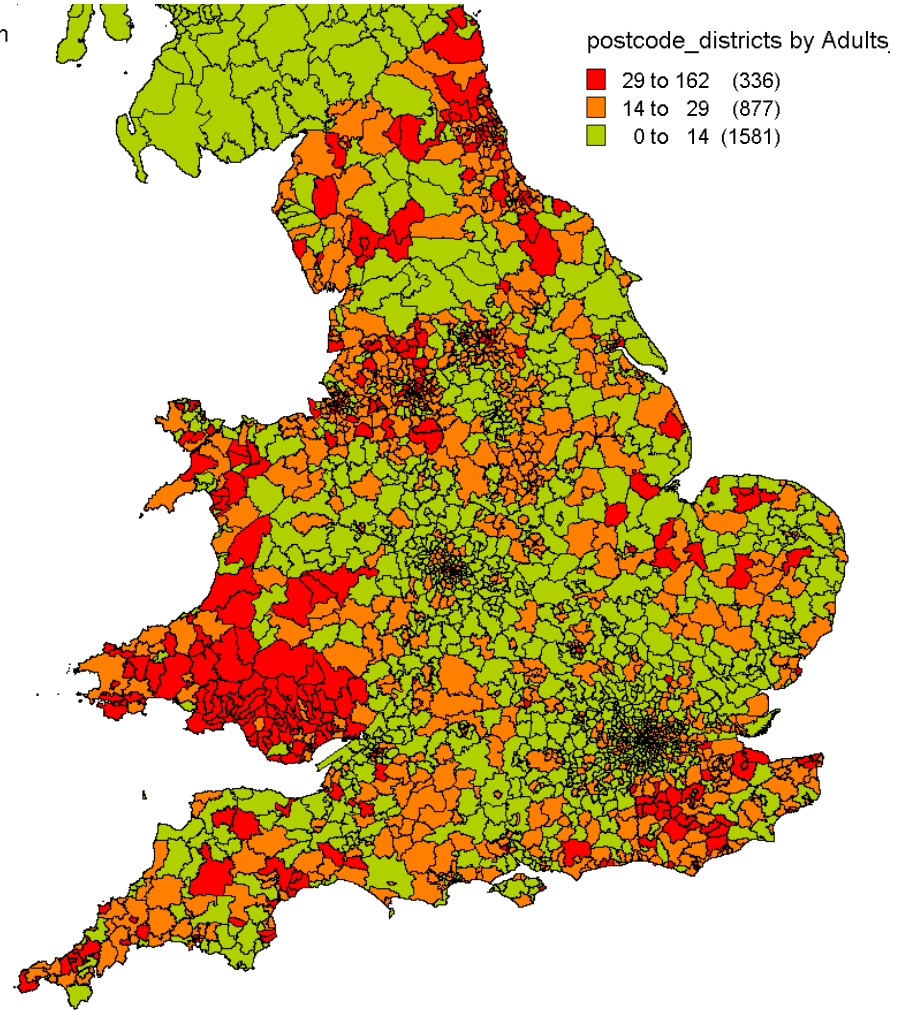
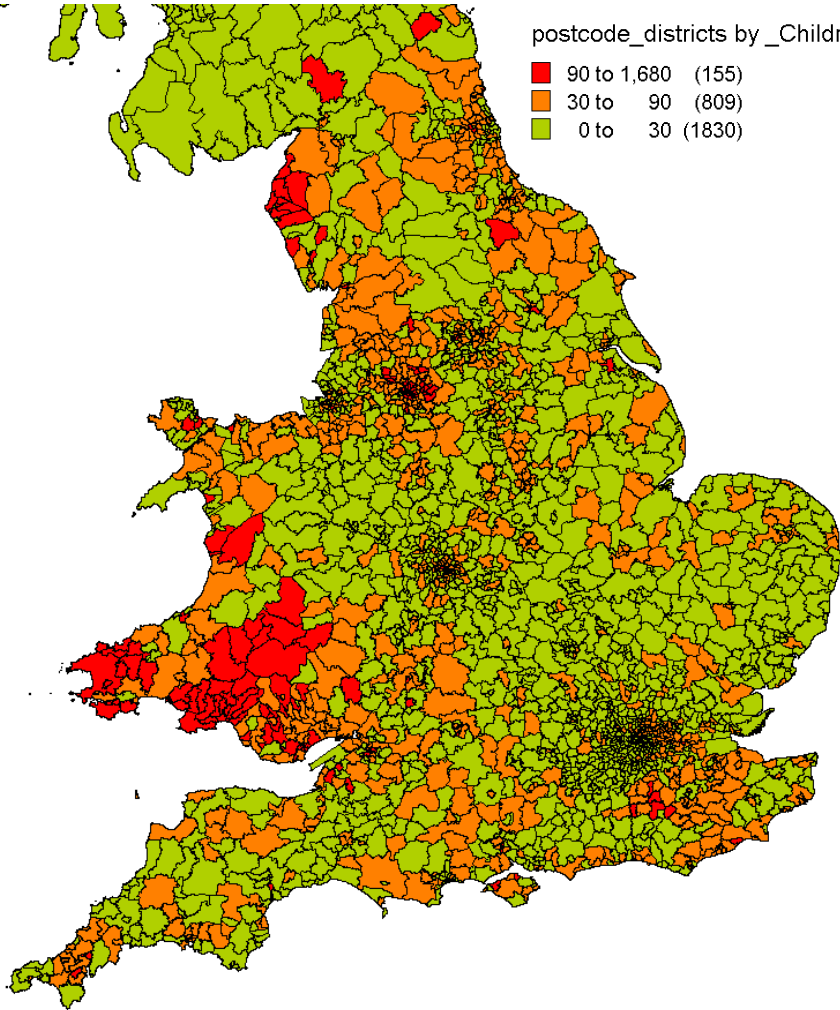


postcode_districts

- 34 to 172 (316)
- 17 to 34 (871)
- 0 to 17 (1607)

Average number of burn admissions
/ 10^5 population / year by postcode
district – all ages – all causes – all
severities

Average number of burn admissions
/ 10^5 population / year by postcode
district – all causes – all severities

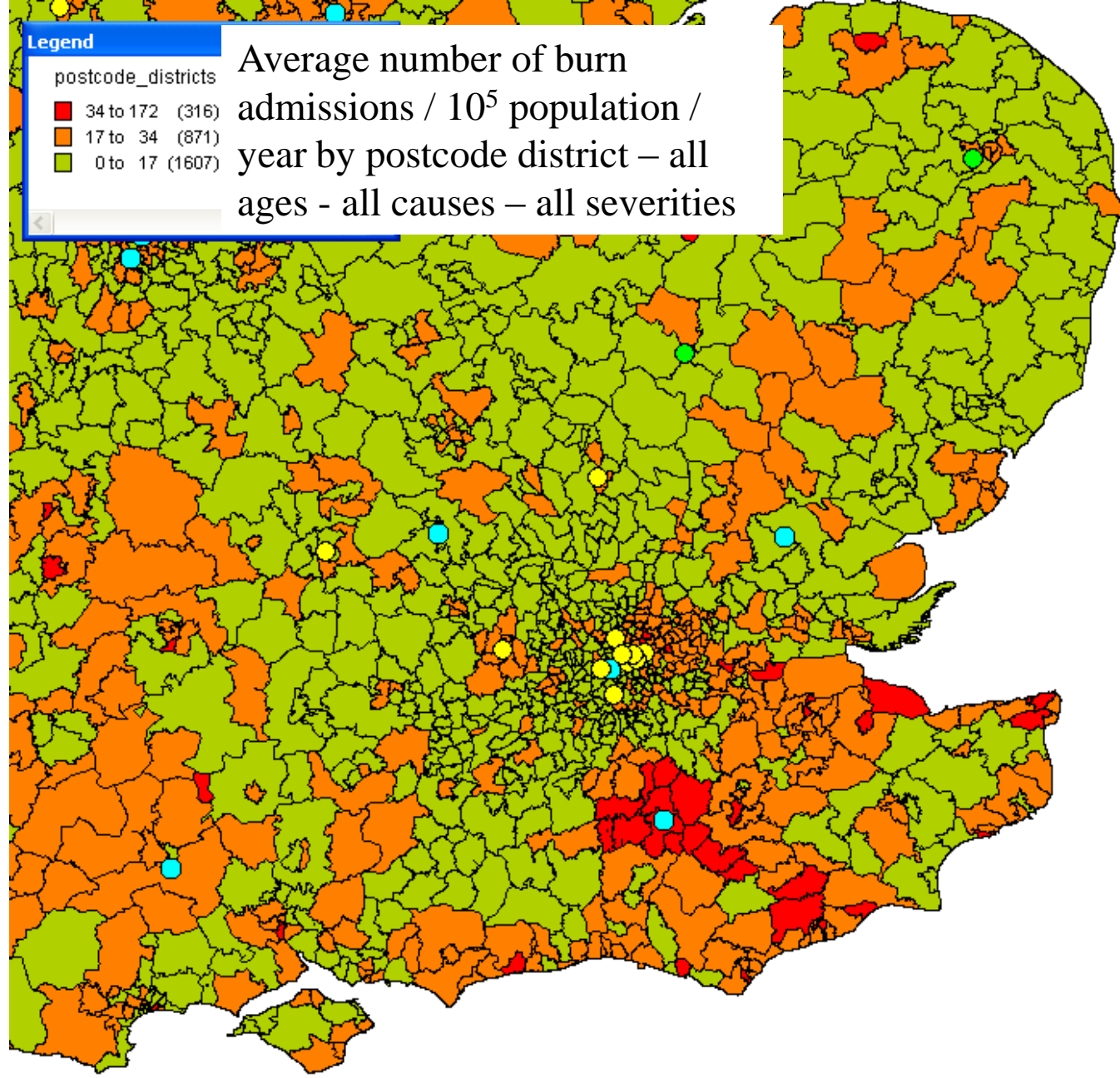


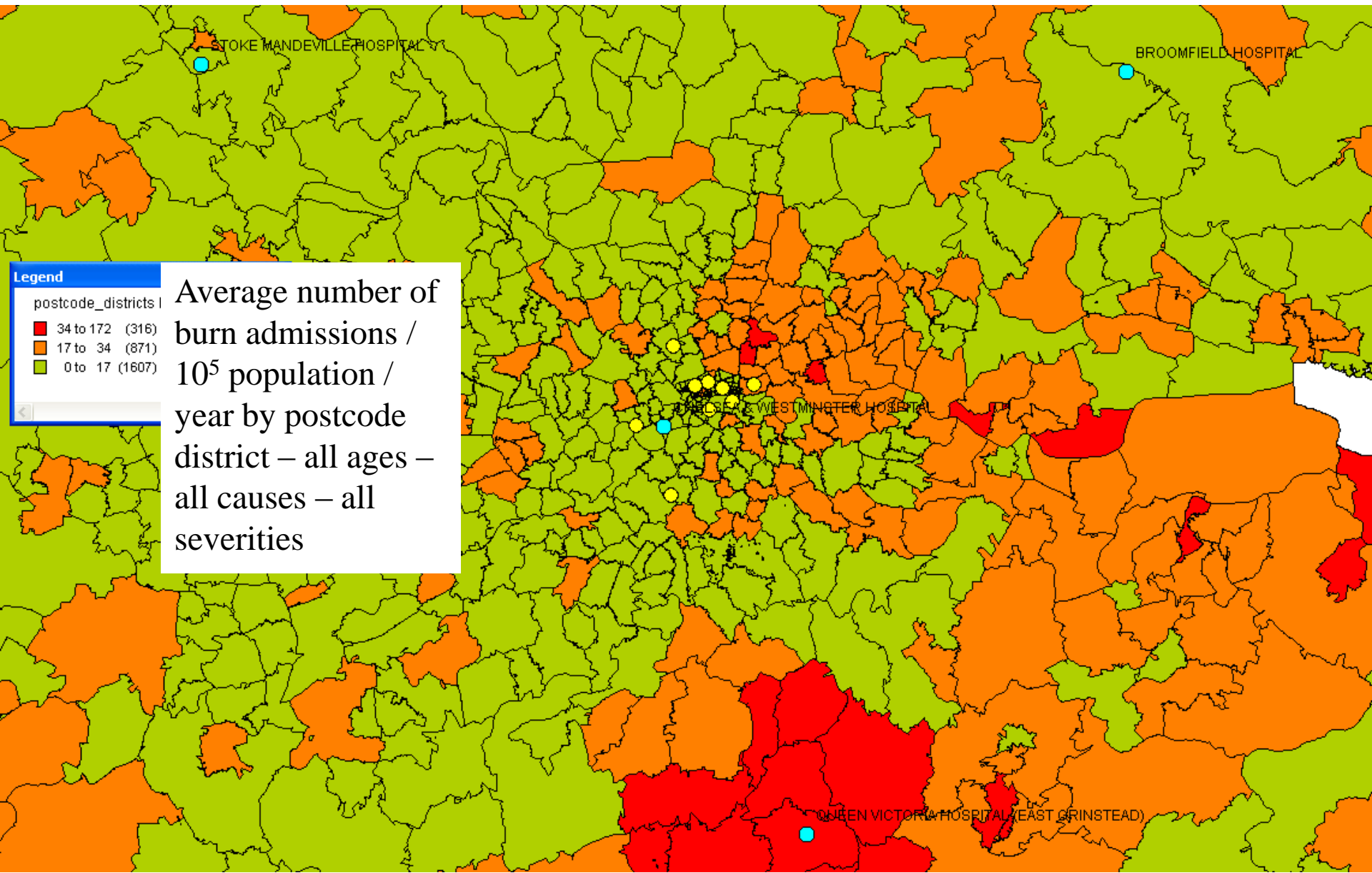
Legend

postcode_districts

- 34 to 172 (316)
- 17 to 34 (871)
- 0 to 17 (1607)

Average number of burn admissions / 10^5 population / year by postcode district – all ages - all causes – all severities





Conclusions

- We now have a means of analysing and interrogating burn injury data in England and Wales
- The methodology is transferable to all NHS areas, and abroad
- We have a means of evaluating the effectiveness of prevention programmes: be they local, regional or national

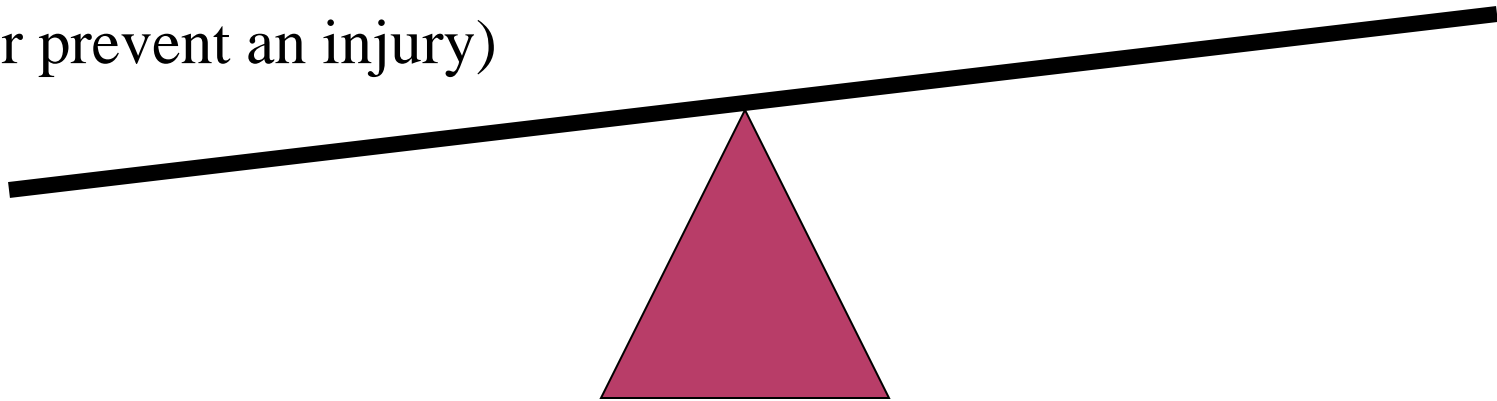
– and the future

- Variations in incidence rates and deaths are to be explored
- Methods of providing user defined web based analysis
- The method for estimating causation can also be used for cost of care

Prevention cost / life balance

Cost of Prevention to
save a life
(or prevent an injury)

Cost of a life lost
(or of a life saved)



Injury Costs

Incident costs:

- Property damage
- Emergency services
- Repair and Insurance

Health Care costs:

- Emergency
- Acute care
- Rehab

Total
1.2 M

Community Health costs:

- Recovery and rehabilitation
- Long term sickness
- Disability

Societal costs:

- Death
- Unemployment
- Redundancy
- Re-training