Big Data in Specialty Classes

• Marine and Energy Pricing Working Party (Co – Chair)

• Big Events and Big Data

• We all know the **issues** with Big Events
  
  – Less Data
  
  – Bad Data (Unstructured Vs Structured)
  
  – Judgement
  
  – Limited Techniques
  
  – Outliers
  
  – The impact of that is limited today however…
Specialty

• Big events are about
  – “specialisms” (Actuarial / Underwriter Judgement / Expertise… )
  – looking for data (Can we hide behind “there is no data” or “data quality is really poor” or “there’s never been any claims” ?)
  – ….which can lead to Big Data but a long way away from full automation because…. 
Marine Example

- Lets look at a P&I Example where there is varying degrees of understanding

- P&I is protection and indemnity
  - Lets look at losses from a P&I contract....
Judgement / Specialism on Similarities and Differences

• Big events:-
  – 5th October 2011 Container Carrier.
  – 13th January 2012 Cruise Liner.

• Both losses are relevant but let's look at ….
<table>
<thead>
<tr>
<th>Topic</th>
<th>Different</th>
<th>Same</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vessel Types</td>
<td>Cruise Line Vs Container Carrier</td>
<td>“Big Vessels”</td>
</tr>
<tr>
<td>Pollution</td>
<td>Containers (Cargo) and Wreckage (Disintegrated)</td>
<td>Fuel evacuated</td>
</tr>
<tr>
<td></td>
<td>New Techniques</td>
<td>Had to clean up in the end</td>
</tr>
<tr>
<td>Regulation</td>
<td>Adversarial / Restrictive</td>
<td>Constructive / Job Done</td>
</tr>
<tr>
<td>Human Tragedy</td>
<td>Lot more lives lost by nature of vessel type</td>
<td></td>
</tr>
<tr>
<td>Damage to Nature</td>
<td>One more than the other</td>
<td>They both damaged nature</td>
</tr>
</tbody>
</table>
How Specialist?

- Underwriters and Actuaries can be “very” special indeed.
- Being a specialist might stop you from looking for similarities in data.
- Not being a specialist might bring irrelevant data.
  - Irrelevant data.
    - Tankers that become FPSO are no longer tankers. (Floating Production Storage and Offloading unit)
  - Irrelevant / Inappropriate actions.
    - E.g.
      - 350 Vessel classifications collapsed in to 150 and further collapsed in to 4…
      - Using tonnage for towing tugs and not horse power as a measure of exposure…
      - Interchanging deadweight tonnes and gross tonnes and formula driven weight…
Recent Marine Loss

- Recently (4 -5 months “ish” ago “in the press”) a large FPSO (floating production storage and offloading unit) loss $850m+

- Can't get in to specifics of any losses due to legal reasons. The more recent the more sensitive.

- The $850m+ loss has many similarities and quite a few differences.
  - Big events not all relevant, depends on the vessel.
  - Beware … or be aware.
  - “Normal vessel” converted to an FPSO so…
  - The data item is irrelevant to the contract as it is not covered?

- One event but ..... Irrelevant to P&I but historically exposed in P&I.

  - Look for data…
Looking for Data

• Then you will see patterns in the **Big Events**
  
  – Eg:- big events at the start are “big” but not “very big”.
    
    • They are usually X at the start and end up well over 3 times when they “Settle”. The X is the threshold for “Big events”
  
  – Big Data doesn't get you there but specialising and looking for data does.
  
  – Looking for Data can eventually lead to Big Data.

• You can not hide behind being a specialist or not having enough data.

• Big data is coming.. Lets look at a different example in “Marine Hull” Exposure data
Big Data…. Break through

- Vessel Tracking information… (pick one)
Big Data.....Exposure

- All vessel exposure information including past tracks...
Big Data....Loss information

• “Big” events are publicly available.
• The rest is available on “certain” subscription services.
• Also more data, if you participate on risks.
• You can make robots that “lap up” the data.

• When you do that you get to “Analysis like…….”
Vessel Chart -

- Partial Losses ($p \times DWT$) by Age Band
- Partial Losses ($p \times DWT$) by Weight Band
- Total Loss Rate by Age Band
- Total Loss Rate by Weight Band

Source: www.hullrate.com
Big Data: Specialty Classes like Marine and Energy

• Judgement / Expertise still needed.
  – Still beyond machine learning.

• look for data.
  – “Big Data” but still can be “Special”
  – Data cleaning is automated
  – Structuring data is automated

• Keep looking, join the dots, but be aware.
Q&A at the end

- Back to the chair.....