Intergovernmental Risk Management Agency

Task Force Analysis

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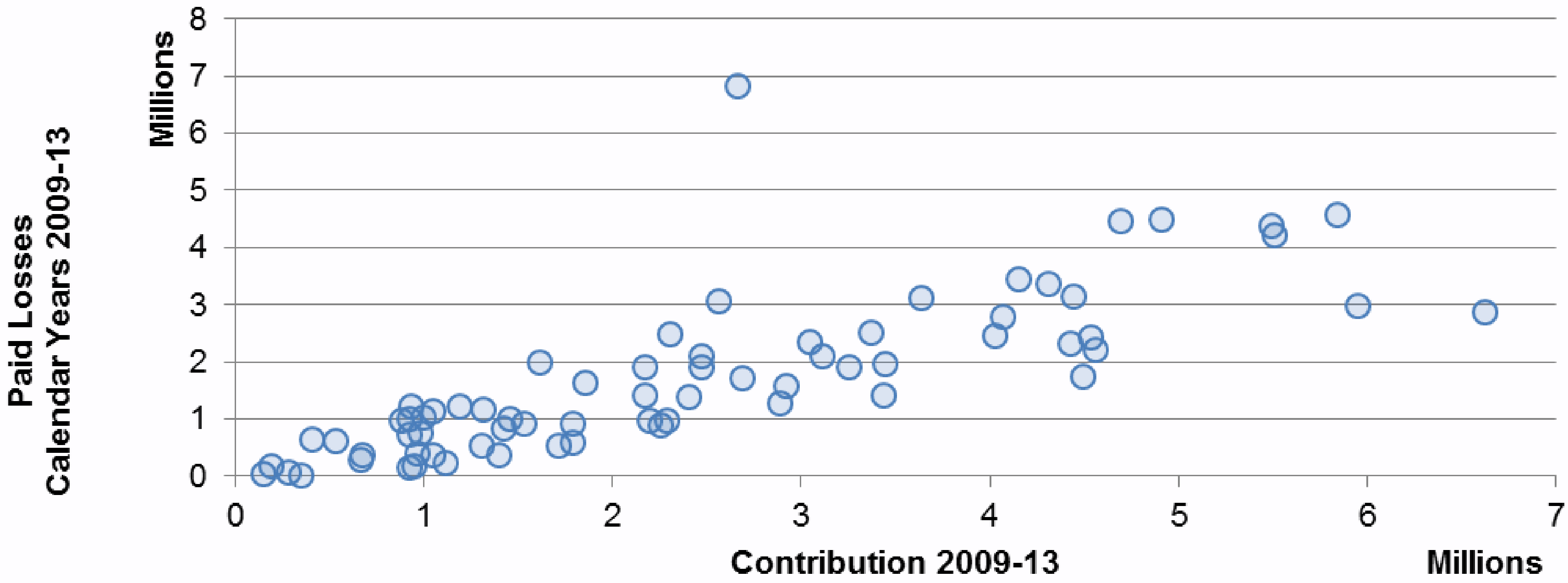
DRAFT

Scope

- Are large members subsidizing small members?
- What exposure is most correlated with losses by line?
- Would offering different deductibles by coverage be beneficial?

Are large members subsidizing small members?

Calendar Year Paid Losses vs. Contribution

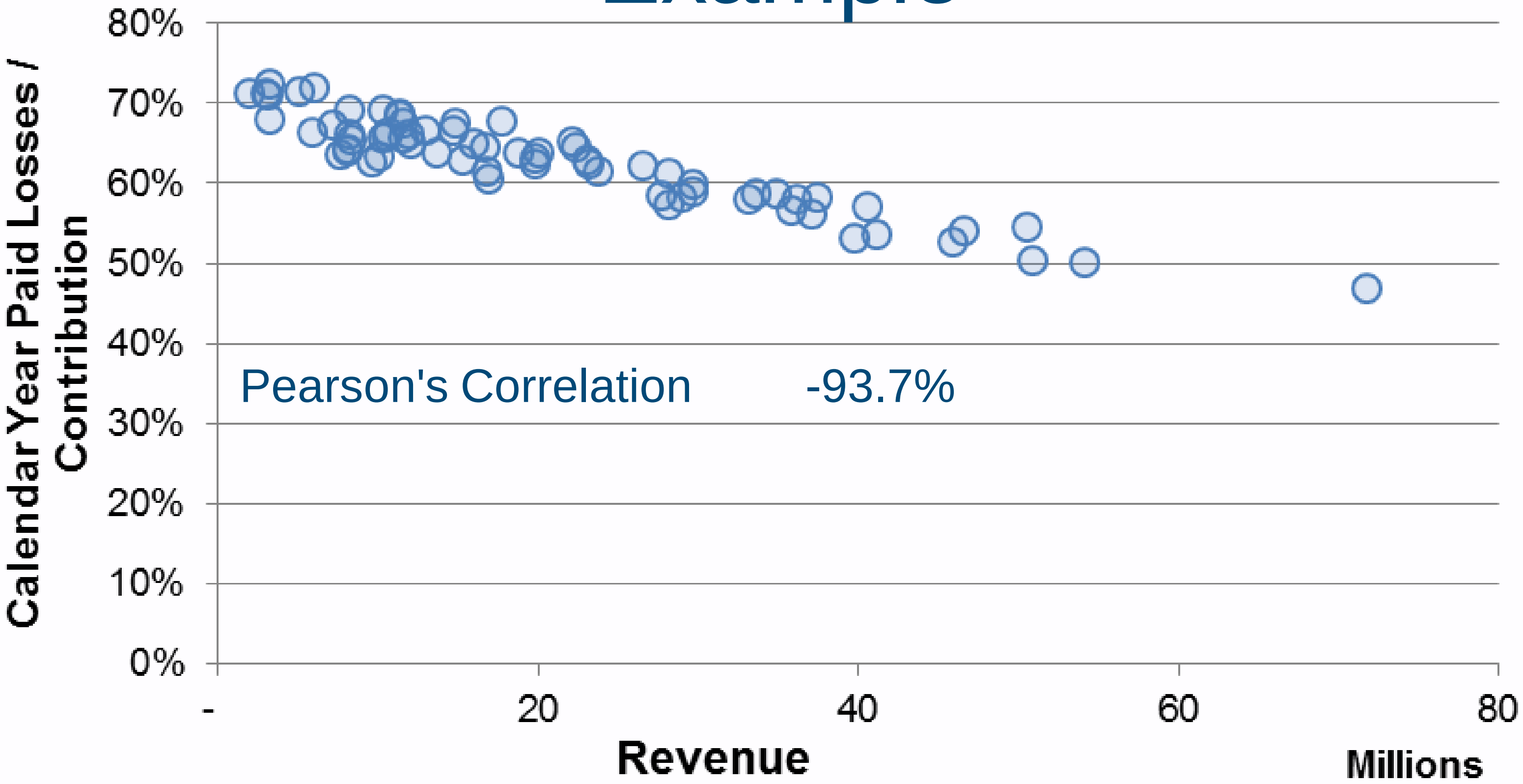


We would expect losses to be correlated with member size

Pearson's Correlation	78.6%
Kendall's Tau	68.5%
Spearman's Rho	87.5%

Calendar Year Paid Loss Ratio vs. Revenue

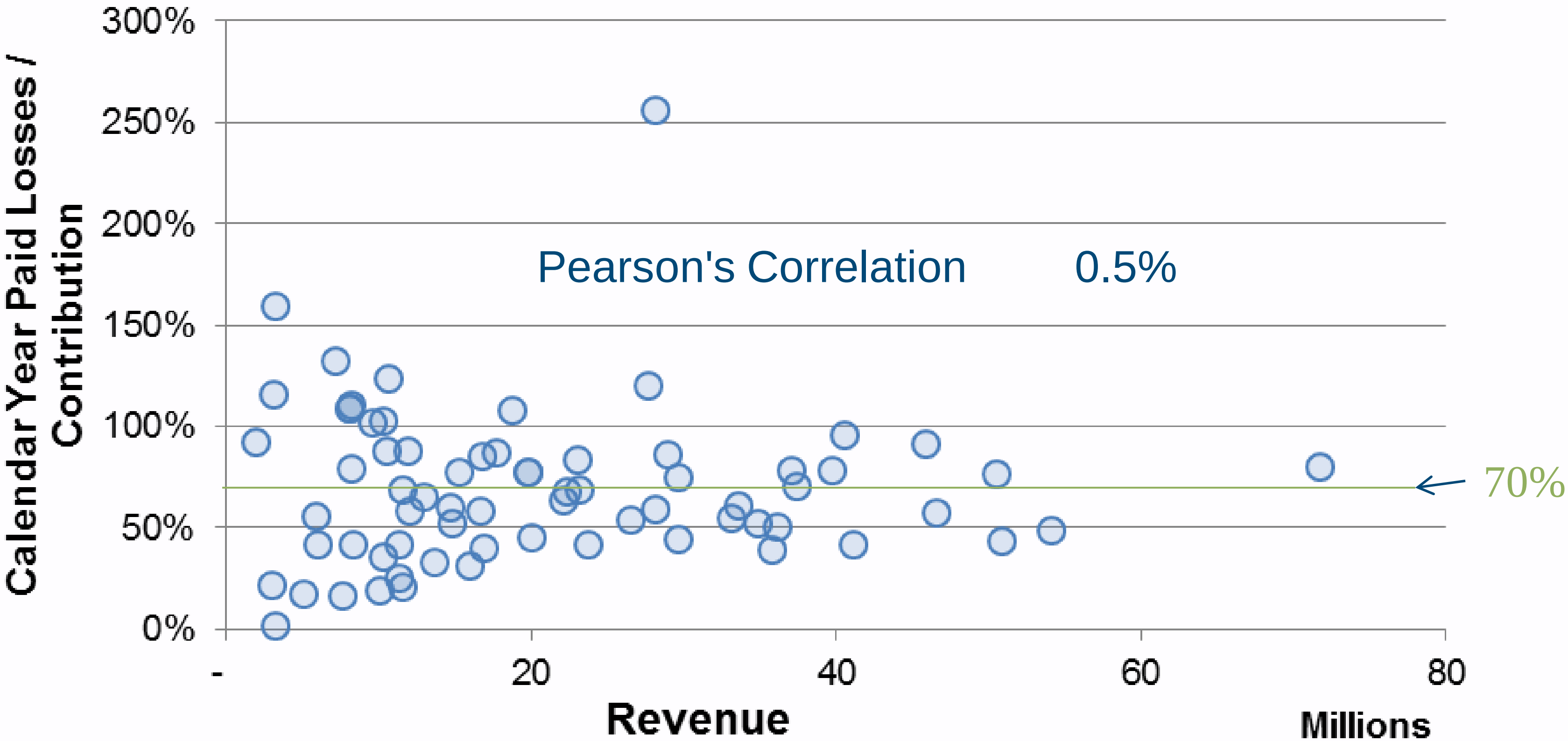
Example



Example of large members subsidizing small members

Calendar Year Paid Loss Ratio vs. Revenue

Data from 2009 to 2013



If there is no pattern in data, there is no correlation
Loss ratio is approximately the same for large and small members
Smaller members have more variability than larger members

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Loss Ratio vs. Revenue – Other tests

- We fit the following trend lines with the resulting R^2's:
  - Linear: 0.00001
  - Exponential: 0.0247
  - Logarithmic: 0.0003
  - Power: 0.0364
- No correlation using last 3yrs of losses/revenue instead of 5yrs
- No correlation when limiting losses
- No correlation between average claim severity and revenue
- Claim counts correlate strongly (87.9%) with revenue

Conclusions / Observations

- No relationship between loss ratio and revenue
- Large and small members have about the same Loss Ratio (LR)
- Small members have more variable LR than large members
- Revenue is a credible measure of exposure
- 2/3 of members loss ratios are between 40% to 100%
- Average loss ratio = 70%
  - Contribution include admin fees, excess premium, therefore loss ratio less than 100%
- Any surplus is retained by IRMA

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What exposure is most correlated with losses by line?

Correlation Matrix

	Revenue	Payroll	Autos	Property	Employees
Revenue	1.000	0.976	0.934	0.829	0.957
Payroll	0.976	1.000	0.917	0.860	0.985
Autos	0.934	0.917	1.000	0.788	0.906
Property	0.829	0.860	0.788	1.000	0.862
Employees	0.957	0.985	0.906	0.862	1.000

	Revenue	Payroll	Autos	Property	Employees
AL Losses	0.541	0.516	0.556	0.425	0.488
APD Losses	0.560	0.505	0.609	0.304	0.486
FPC Losses	0.266	0.296	0.284	0.401	0.341
GL Losses	0.500	0.509	0.480	0.291	0.485
WC Losses	0.690	0.716	0.656	0.569	0.753
Non-WC Losses	0.638	0.636	0.635	0.413	0.618

All independent variables are highly correlated

Revenue is the overall best variable for rating

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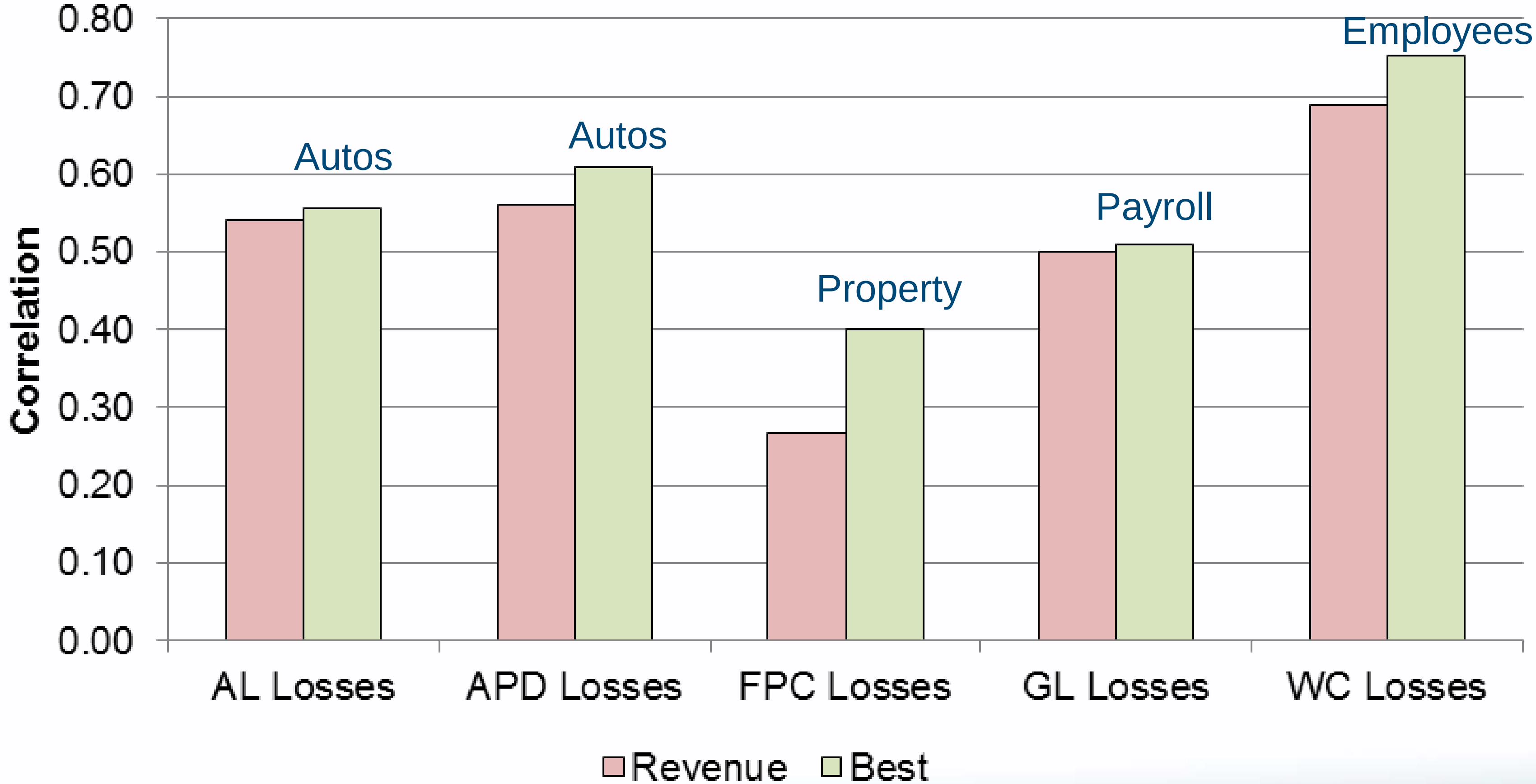
Correlation Matrix



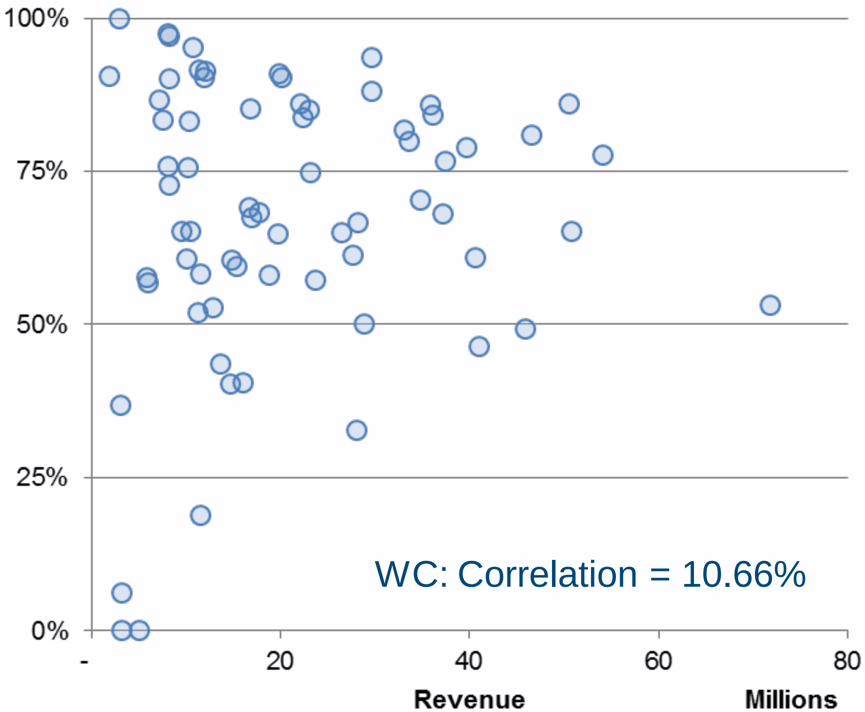
Conclusions – exposure

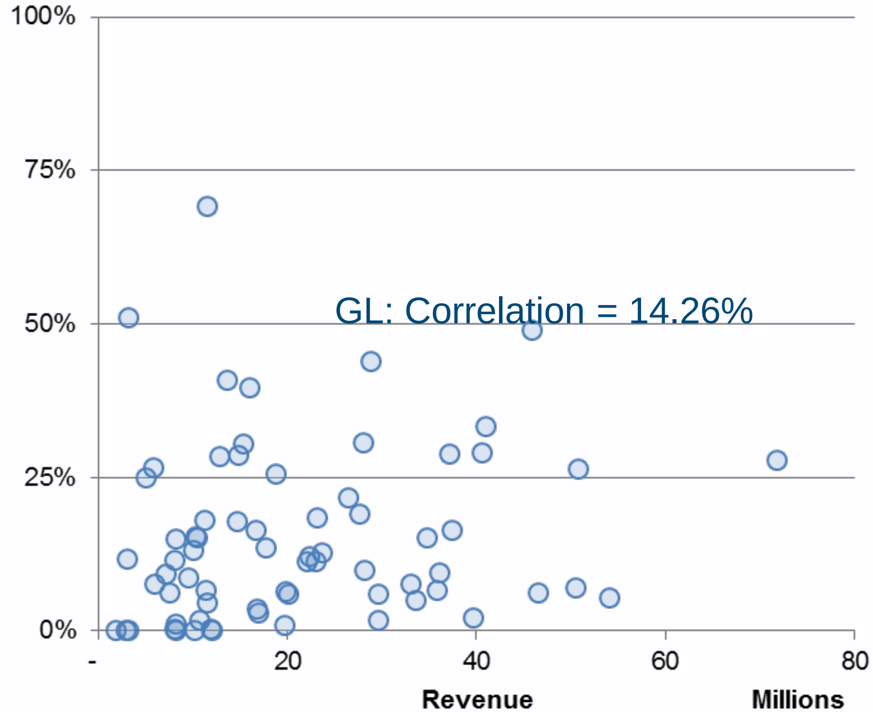
- Exposures currently used by line are reasonable
- Revenue is reasonable exposure base to develop rates
- Revenue is most consistent verifiable exposure
- Other variables may improve rating marginally
- Should we use separate variables for rating?

Would offering different deductibles by coverage be beneficial?

Percentage of Incurred Losses by Line

Accident Years 2010-2014





The majority of losses for all members are WC.
All members have about the same distribution of losses.

Conclusions – different deductibles by coverage

- WC and GL are about 90% of losses
- No correlation between losses by coverage and size
- All members have about the same loss distribution
- Selection of different deductibles can increase adverse selection
- Administrative implementation outweighs benefits

Questions?