

User-relevant forecast verification: Some questions

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Some questions ...

- 1. What is an appropriate measure from the POV of the user?**
 - Skill? (complex relationship between skill/value)**
 - Value? (user-context specific)**
 - Utility? (public safety)**

Cost-Loss Perspective

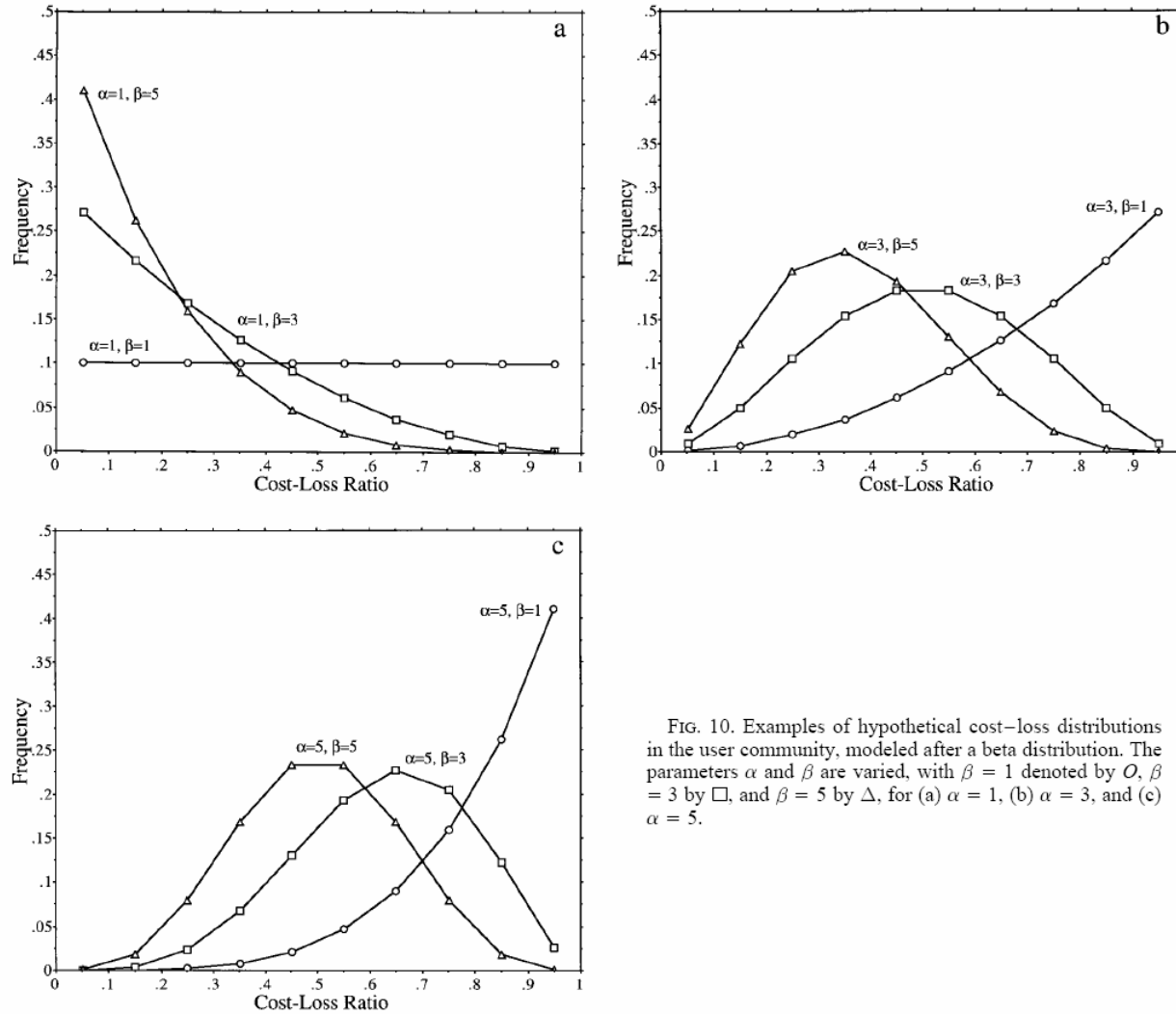
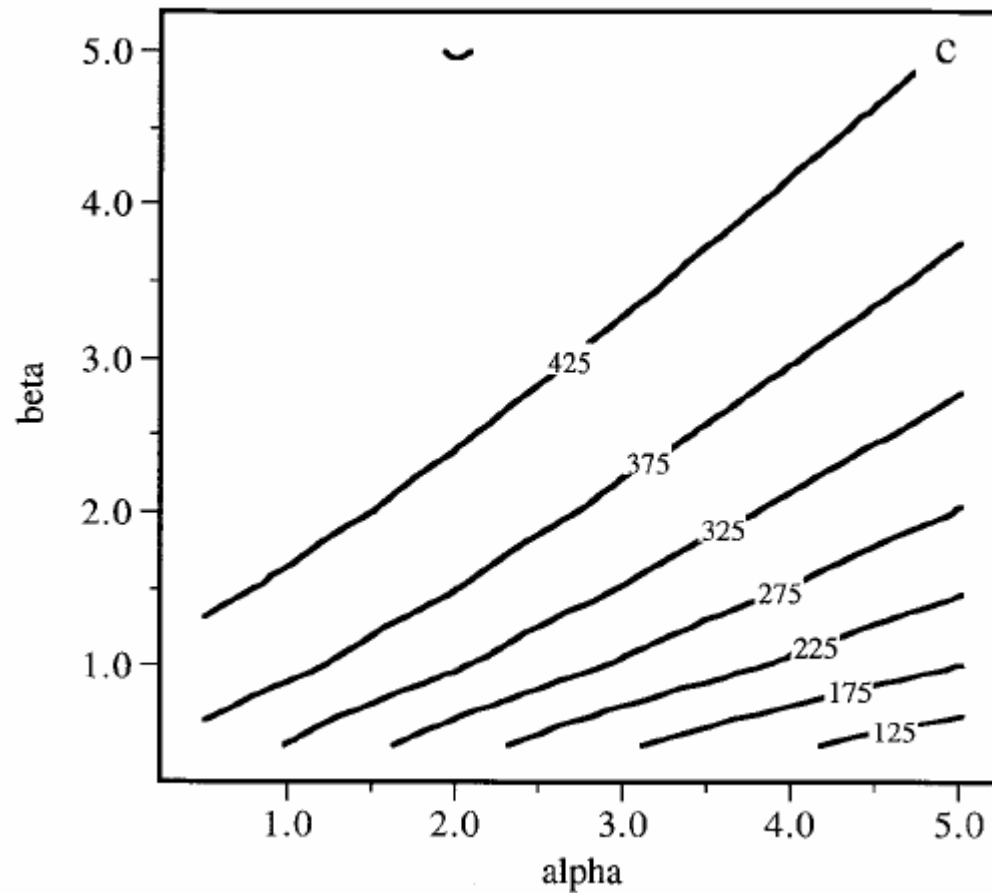


FIG. 10. Examples of hypothetical cost-loss distributions in the user community, modeled after a beta distribution. The parameters α and β are varied, with $\beta = 1$ denoted by O , $\beta = 3$ by \square , and $\beta = 5$ by Δ , for (a) $\alpha = 1$, (b) $\alpha = 3$, and (c) $\alpha = 5$.

Value relative to climatology (Perfect = \$1000)



Max value for low cost-loss ratios (better business environment)

How do we evaluate public safety (DOT 2002)?

**Table A-1
Summary of Unit Costs, 2000
2000 Dollars**

	FDO	MAIS0	MAIS1	MAIS2	MAIS3	MAIS4	MAIS5	Fatal
INJURY COMPONENTS								
Medical	\$0	\$1	\$2,380	\$15,625	\$46,495	\$131,306	\$332,457	\$22,095
Emergency Services	\$31	\$22	\$97	\$212	\$368	\$830	\$852	\$833
Market Productivity	\$0	\$0	\$1,749	\$25,017	\$71,454	\$106,439	\$438,705	\$595,358
HH Productivity	\$47	\$33	\$572	\$7,322	\$21,075	\$28,009	\$149,308	\$191,541
Insurance Admin.	\$116	\$80	\$741	\$6,909	\$18,893	\$32,335	\$68,197	\$37,120
Workplace Cost	\$51	\$34	\$252	\$1,953	\$4,266	\$4,698	\$8,191	\$8,702
Legal Costs	\$0	\$0	\$150	\$4,981	\$15,808	\$33,685	\$79,856	\$102,138
Subtotal	\$245	\$170	\$5,941	\$62,020	\$178,358	\$337,301	\$1,077,567	\$957,787
NON-INJURY COMPONENTS								
Travel Delay	\$803	\$773	\$777	\$846	\$940	\$999	\$9,148	\$9,148
Property Damage	\$1,484	\$1,019	\$3,844	\$3,954	\$6,799	\$9,833	\$9,446	\$10,273
Subtotal	\$2,287	\$1,792	\$4,621	\$4,800	\$7,739	\$10,832	\$18,594	\$19,421
Total	\$2,532	\$1,962	\$10,562	\$66,820	\$186,097	\$348,133	\$1,096,161	\$977,208
QALYs	\$0	\$0	\$4,455	\$91,137	\$128,107	\$383,446	\$1,306,836	\$2,389,179
Comprehensive	\$0	\$0	\$15,017	\$157,958	\$314,204	\$731,580	\$2,402,997	\$3,366,388
Total Comprehensive ratio/Fatal		0.45%	4.69%	9.33%	21.73%	71.38%	100.00%	
Injury Component ratio/Fatal			0.31%	4.58%	9.16%	21.53%	71.24%	100.00%

Note: Unit costs are on a per-person basis for all injury levels. PDO costs are on a per damaged vehicle basis.

Some questions ...

2. What does the user-community look like? Needs to be documented more thoroughly.

- Dutton (2002) estimates that 40% of U.S. economy (\$4 trillion) is weather-sensitive**
- Cornford (2000) suggests that the profitability of 70% of all industries is weather-dependent**

Weather-sensitive industries (Dutton 2002)

Industry	Exposed GDP (\$billion)
Retail	\$894
State and local government	\$830
Public utilities (energy, comm)	\$511
Construction	\$464
Finance, insurance, real estate	\$379
Transportation	\$275
Services (lodging, repair, rec.)	\$261
Agriculture, forestry, fishing	\$136
Mining (coal, oil and gas)	\$110

Some questions ...

- 3. How do the principals in the primary communities use forecast information?**
 - how do they behave?**
 - how do we aggregate this across all sectors?**

Some questions ...

4. Do delivery (communication) issues block value/utility?

Some questions ...

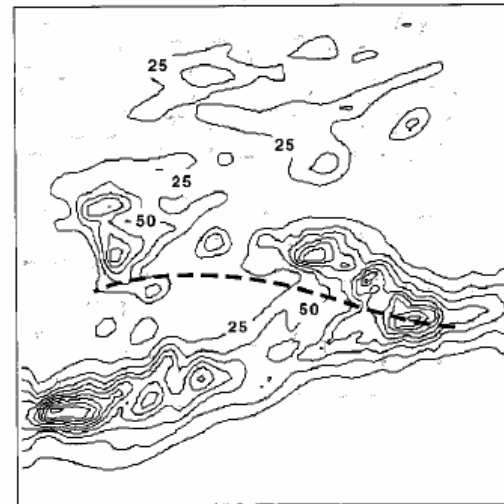
5. What are the key science issues, given this perspective?

- estimates of confidence aka uncertainty**
- information content v.s. grid point verification**
- “dry” v.s. “moist” dynamics**

Precipitation forecasts ...



Analysis



Forecast