Why are Go Around Policies Ineffective?

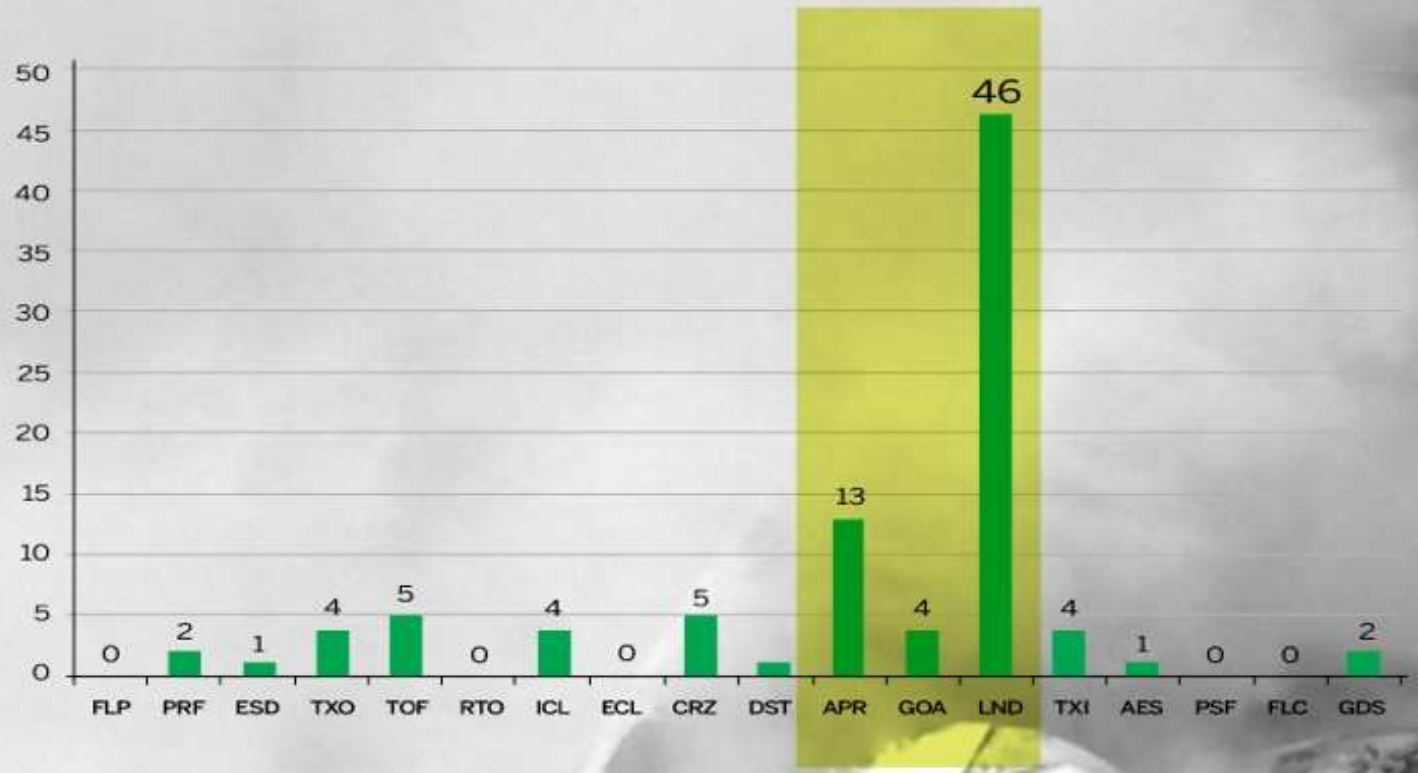
Dr. Martin Smith, Captain Bill Curtis

presage

Predictive Error Prevention


1 in
2,000,000
how do we improve?

2011 Aircraft Accidents



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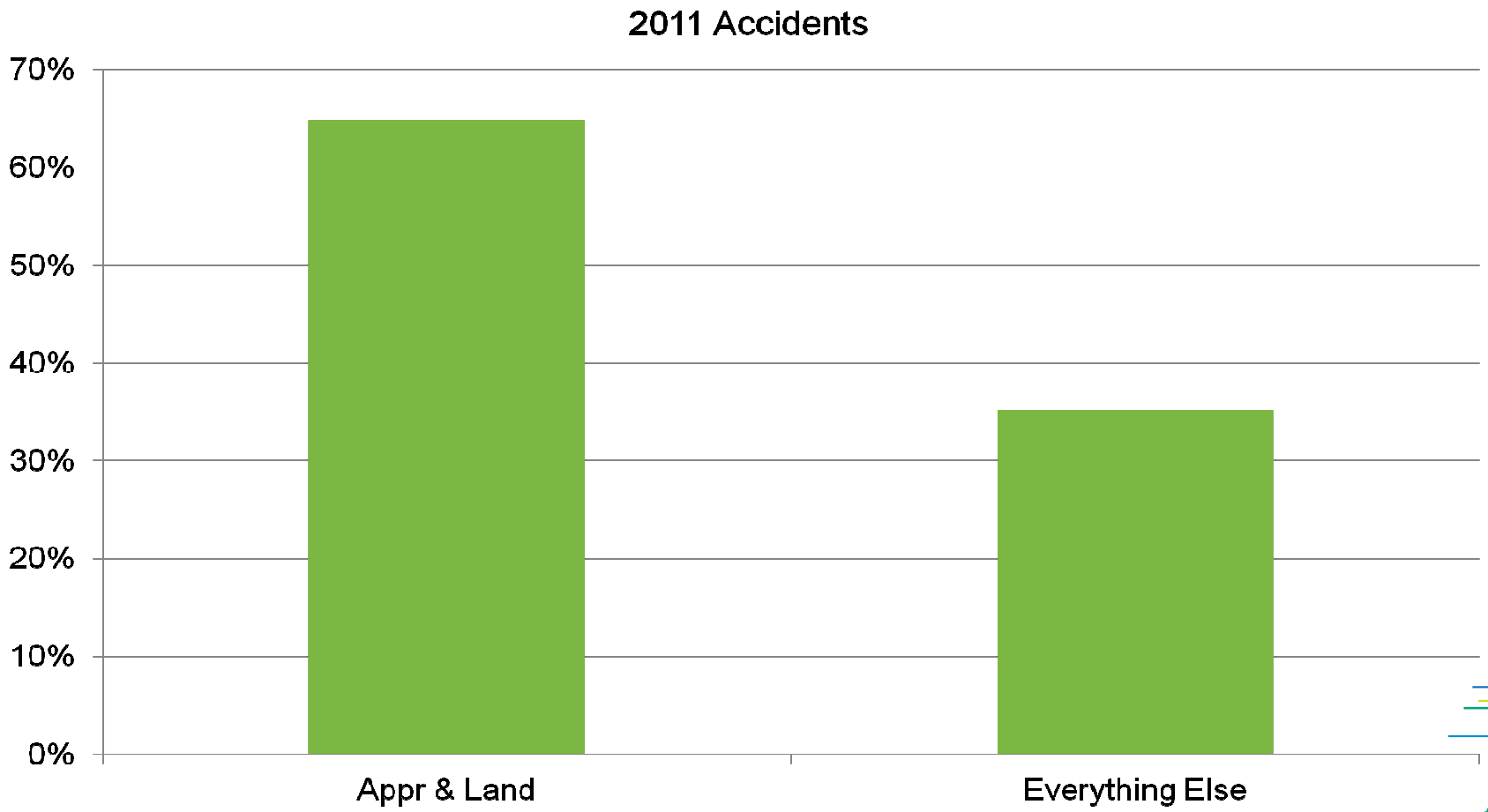
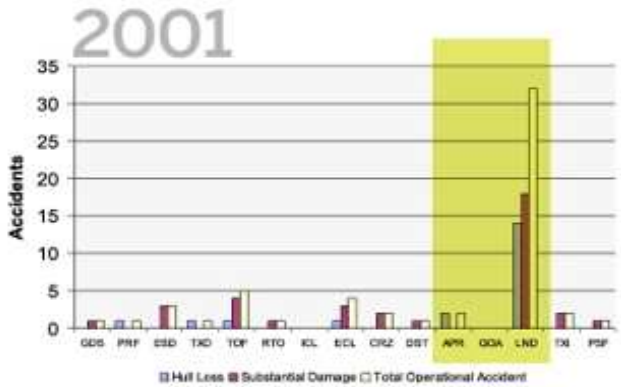
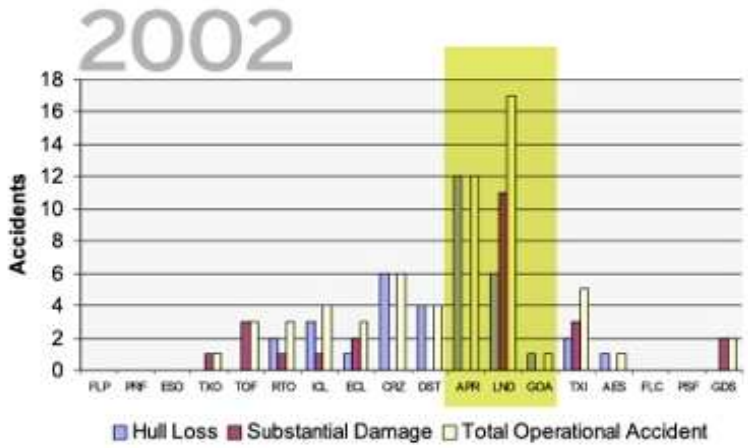
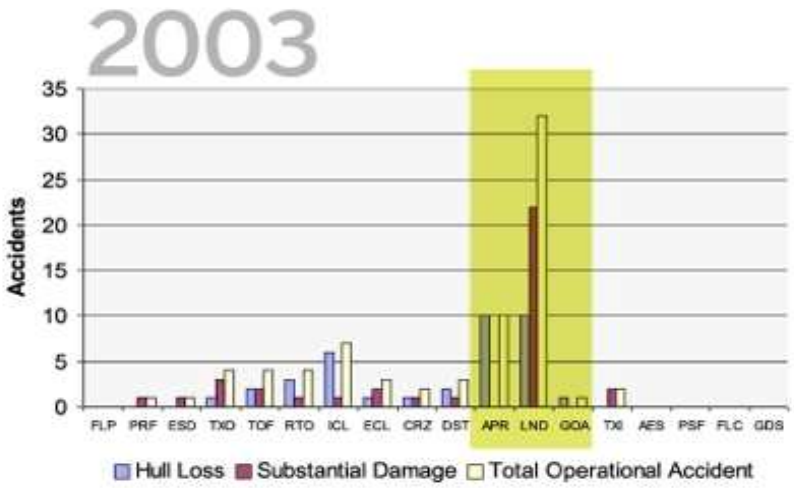
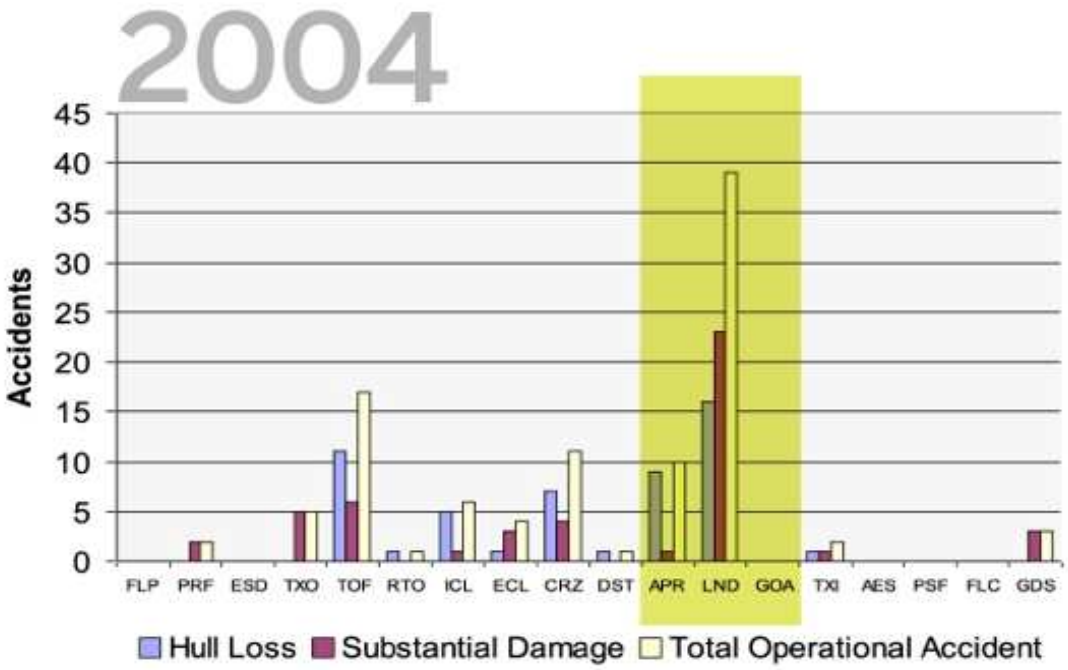


Operational Accidents by Phase of Flight 2001–2004







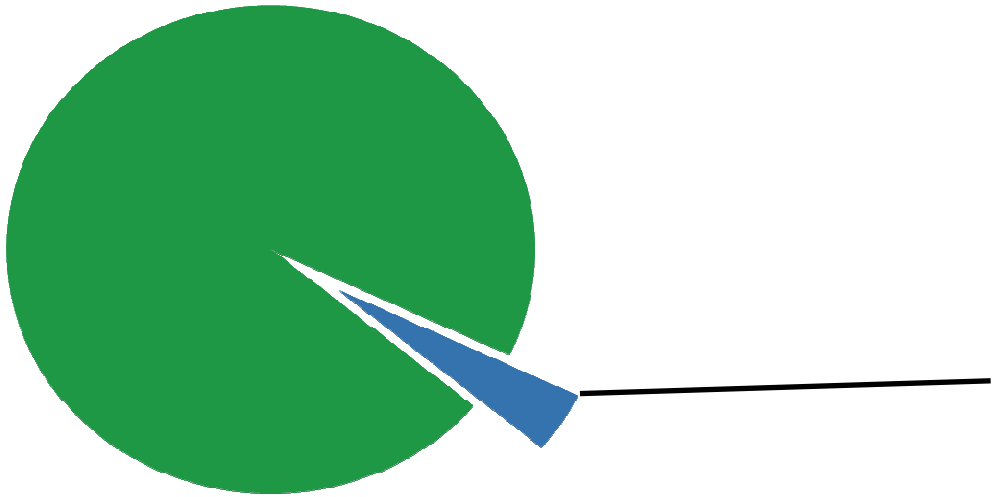


Source IATA ACWG

- Prevent unstable approaches in the first place
- When unstable – comply with company go-around policies – Go Around

How are we doing at preventing unstable approaches

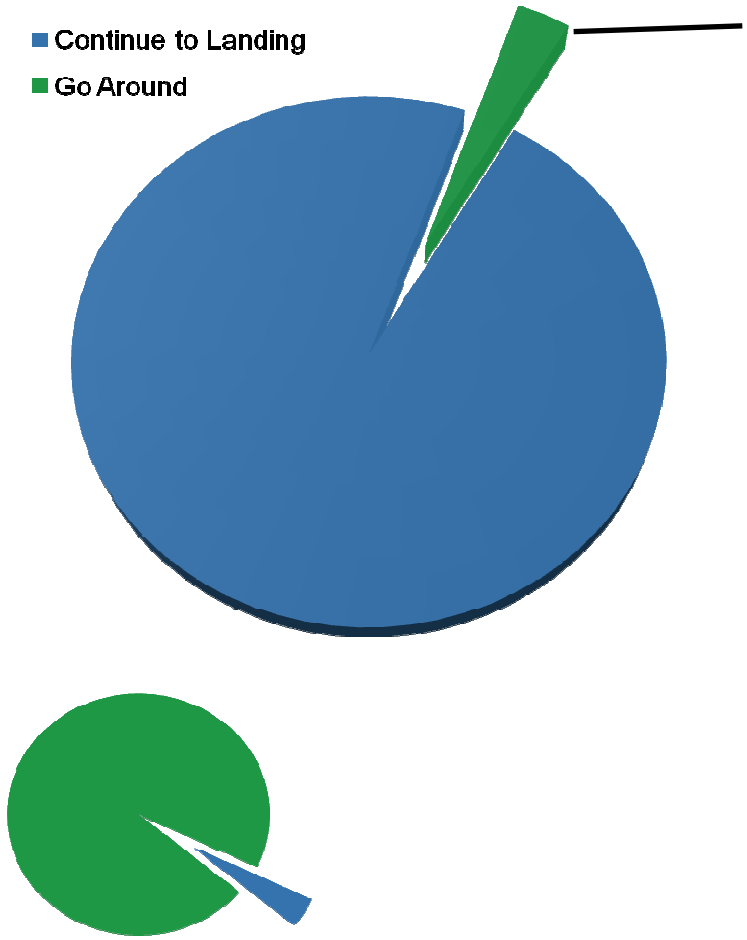
Two Unstable Approach Analysis: Airbus, LOSA



Airbus – 4% unstable
LOSA – 3.4% unstable

Very Good

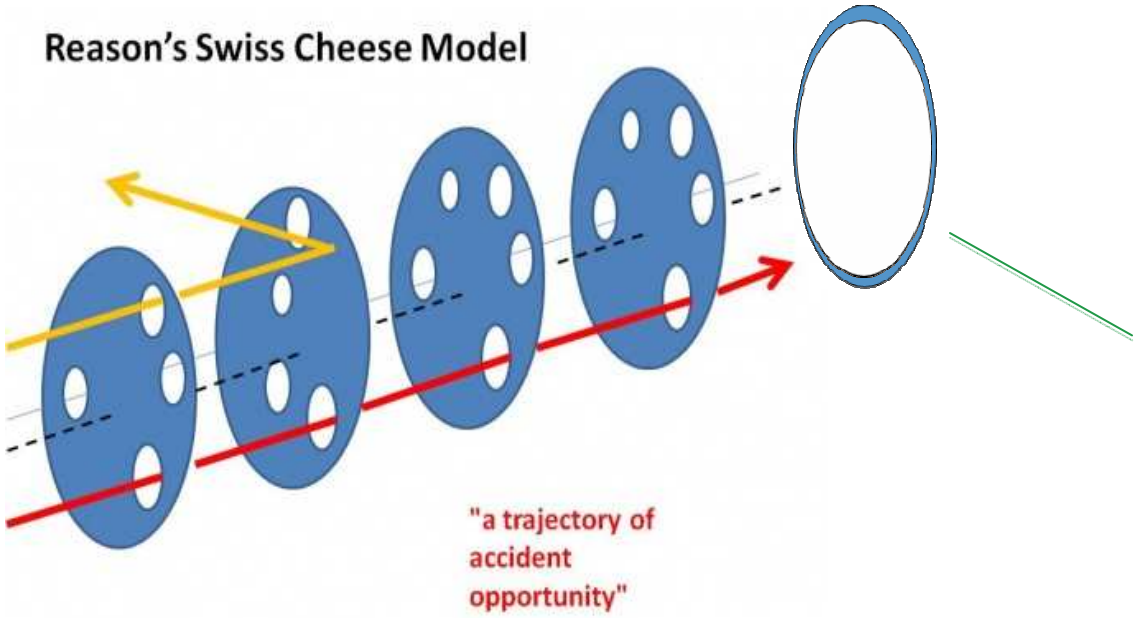
How are we doing at executing go around policies?



3% go-around [Airbus, LOSA, ASIAS]

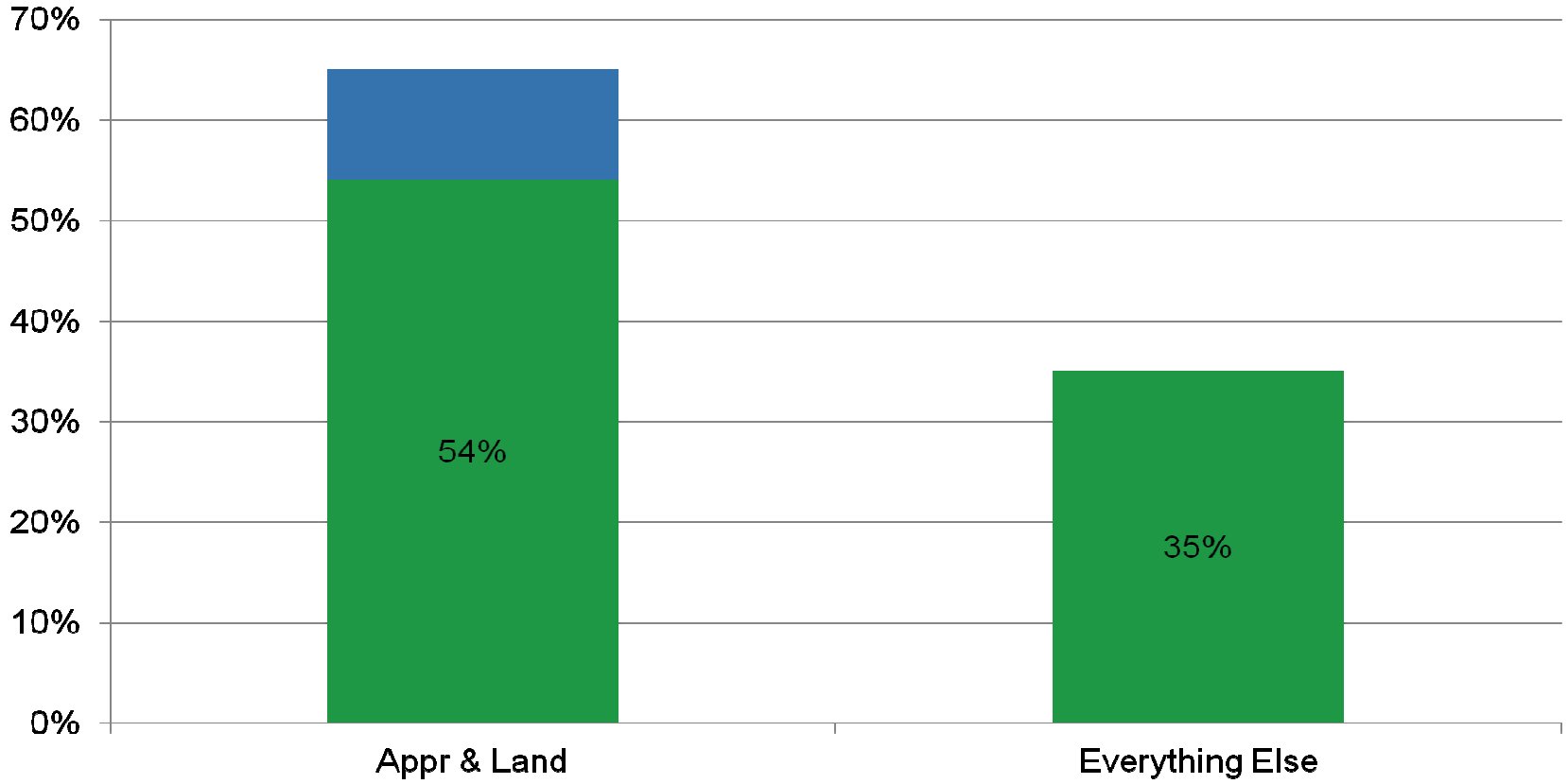
- 83% of all ALAs [Jim Burin, IASS 2011]
- 33% of all accidents are runway excursions [FSF 16 years analysis]
- this is the largest, lowest hanging piece of safety fruit
- no other single decision/maneuver can have such an impact on risk reduction

Let us look at this another way…



Go Around Policies

Distilled Down…



Why are we so poor at go-around decision making?

- When we looked in the databases on why, psychologically, crews make their decisions – the cupboards were almost bare
- Aviation industry psychological tools – little
- What we mostly had was…
  - Opinion
  - Conjecture
- We needed to understand pilot decision making through science …

FSF IAC and EAC launched in 2011

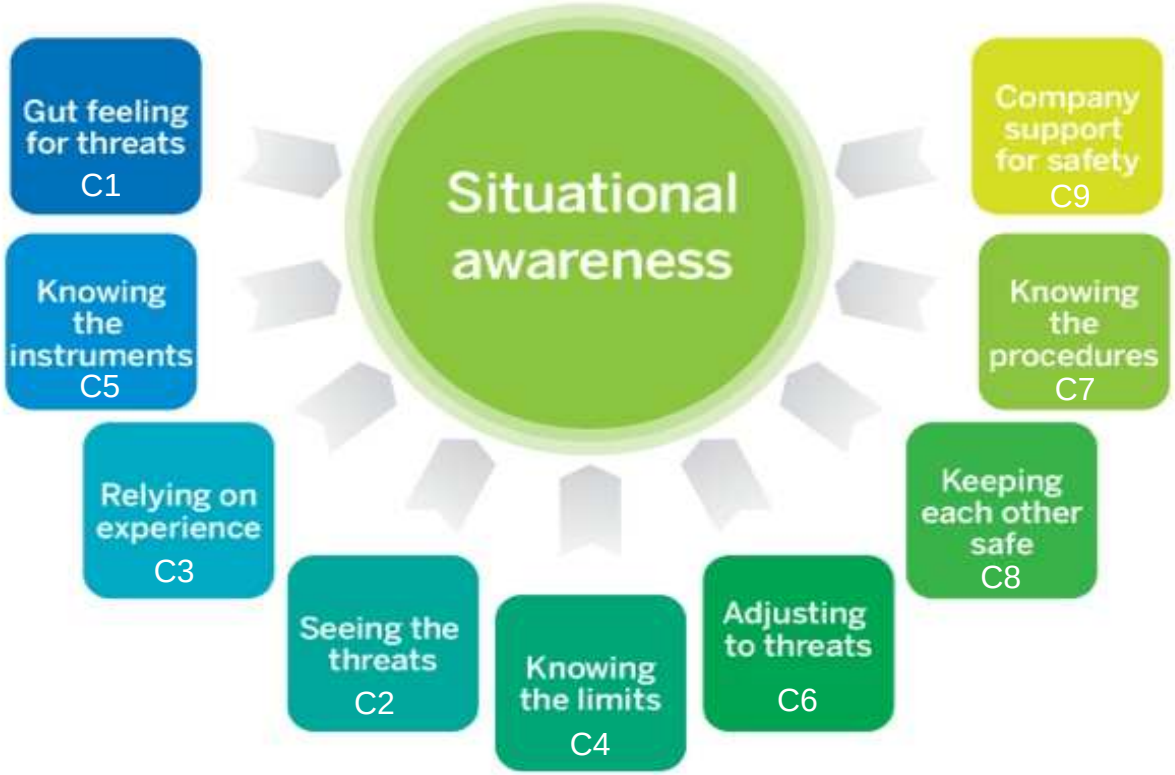
- Go Around Decision Making and Execution Project

- Phase 1 investigates the psychological reasons why current policies are ineffective
  - Conducted global survey and analysis of flight crews psychology of decision making as it relates to the GA decision
  - Conducted by the Presage Group

How situational awareness plays a role in decision making


This is your definition
of Situational Awareness

Breaking down situational awareness



Unstable approach survey

Findings from the Event Recall Section

Situational Awareness

- UA crews scored lower on all 9 dynamic SA constructs

Communication

- UA crews had significantly less discussion about potential risks

Risk Perception

- UA crews perceived lower risk associated with an unstable approach

Crew Support

- UA crews felt a lack of support for a GA, while more were influenced by the authority structure in the cockpit

Go Around Criteria

- UA crews felt company criteria for a GA was unrealistic

Crew Reprimand

- UA crews did not feel they would be reprimanded

Regret

- UA crews felt regret for performing an unstable approach

Findings from experimental section

1000'agl — Pilots' perceived threshold occurred well below 1000' agl

800'agl — Pilots felt they should be on profile

500'agl — Pilots felt they could compensate for instabilities for V_{REF+} and sink rate

Strategies for Mitigation

1. Enhance Dynamic Situational Awareness (S1)

2. Redefine the Go Around Policy (stable approach parameters and stable approach height, establish a Go Around Decision Critical Point) (S2)

3. Minimize the Subjectivity of Go Around decision making (S3)

Recommendations for Mitigation

	Recommendation	Strategy	Construct
R1	Re-define the stable approach criteria and stable approach height(s). In redefinition there is a valid argument to separate the profile (vertical and lateral) from the other stable approach criteria. Additionally, separation should be established between the desired SAH and GA Decision Critical Point. Create GA Decision Critical Point	S2	C4, C9
R2	Develop SOPs to discuss instability threat factors during approach briefings prior to descent.	S1	C1, C2, C7, C8
R3	Develop SOPs to (briefly) state critical instability factors strategically throughout the approach, for example each time the ATIS or new wind is reviewed.	S1, S3	C2, C4, C6, C7
R4	Develop 'active' communications procedures for each approach that are 'objective', 'progressive', and 'sequential', similar in concept to EGPWS or TCAS systems. E.g., at 1000 feet: "on profile/off profile"; at 500 feet: "stable/unstable"; and at SAH; "stable/unstable."	S1, S3	C2, C7, C8

Recommendations for Mitigation

	Recommendation	Strategy	Construct
R5	Separate the active 'objective' communications from the 'decision' communications. E.g., the PNF would verbalize the objective call, and the PF verbalize the decision call. This is particularly important for the case of a junior PNF first officer paired with a senior PF Captain. Avoid the junior PNF pilot having to make a directive call, e.g., "go around."	S3	C3, C8
R6	Ensure UA and GA policies are clear, concise and unambiguous, including follow up procedures for non-compliance.	S1	C3, C8, C9
R7	Develop automated stable approach monitor and alerting systems. Consider efforts to mandate their use.	S1, S3	C1, C2, C5, C9
R8	Avoid directive or suggestive calls that may compromise ongoing decision making, e.g., announcing, "Landing" at minimums.	S1, S3	C2, C3, C4, C8

Ongoing Work

Other critical questions that need to be answered are;

- How does flight management view the compliance rate?
- What does flight management believe the causal factors of the low rate are?
- What is flight management doing to solve the issue?

Similar work to the flight crew survey data collection and analysis is being done for flight operations management

- To date, much poorer response rate from management.
  - 17% flight management, compared to 33% flight crew

Website Links

Flight Management Survey Link

- http://app.presagegroup.com/fsf/uCQwLy

Flight Crew Decision Making Paper

- http://presagegroup.com/articles/

Questions?

Thank you!