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2009 Annual Flight Data Monitoring Cross-Fleet Data Comparison Summary Report

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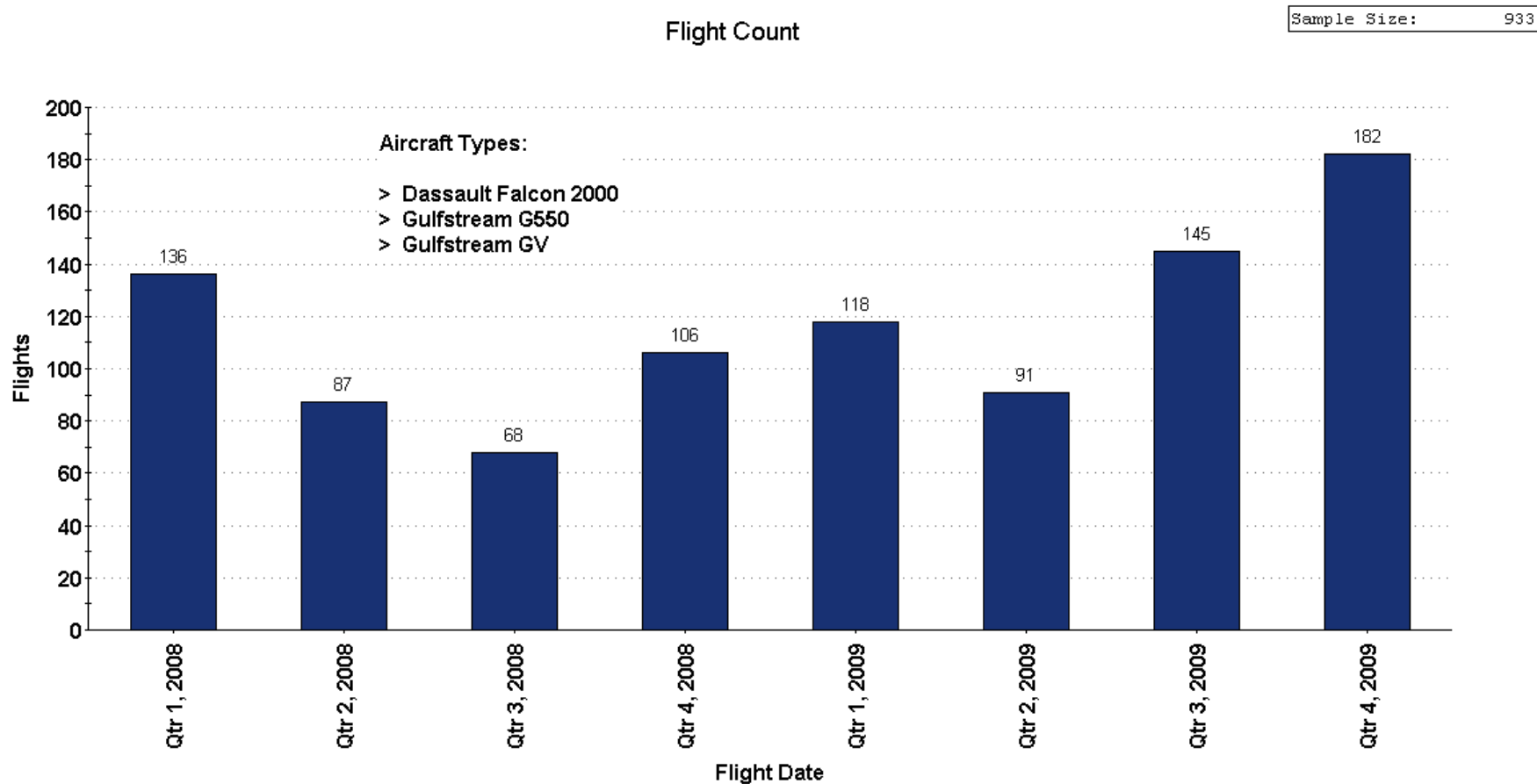
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1 Cross-Fleet Data Comparison Operational Summary

1.1 Enrollment and quarterly Flight Count

All aircraft from customers which have signed the proposed customer feedback form for the Cross-Fleet Data Comparison data release are included in the following aggregated Flight Data Monitoring data set. As of Q4 2009 the below mentioned aircraft types have contributed 934 flights and 1481 flight hours. All data is used and processed in a de-identified manner.



Analysis processed at 10:28 AM Jun 1, 2010

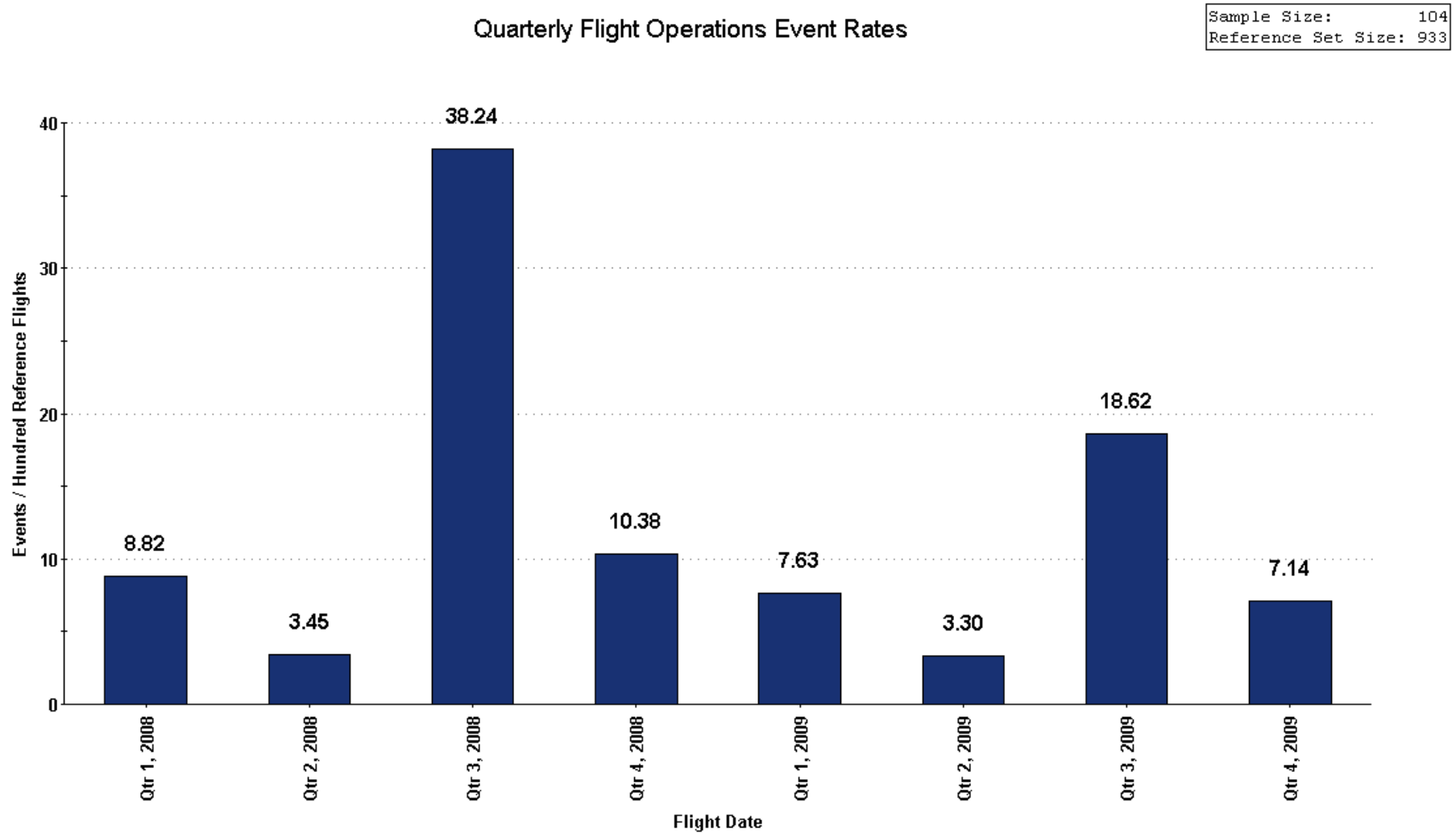
1.2 Breakdown of Aircraft Limitation Events by Type (2009)

Event Type	Caution	Warning
EGT Limit Exceedance	0	0
Airspeed Low Relative to Stall Speed	n/a	n/a
Stall Warning	0	0
Initial Climb Airspeed Low Relative to Min Control Speed	0	0
VMO Exceedance	0	0
MMO Exceedance	0	0
Flap / Slat Altitude Limit Exceedance	0	1
VFE (Flap Airspeed Limit) Exceedance	4	0
Slat Speed Limit Exceedance	n/a	n/a
VLE (Gear-Down Airspeed Limit) Exceedance	0	0
MLE (Gear-Down Mach Limit) Exceedance	0	0
VLO (Gear Retraction Airspeed Limit) Exceedance	0	0
VLO (Gear Extension Airspeed Limit) Exceedance	0	0
Takeoff Weight Limit Exceedance	n/a	n/a
Vtire (Tire Speed Limit) Exceedance	0	0
Upper Maneuvering Load Limit Exceeded (Flaps Down)	0	0
Upper Maneuvering Load Limit Exceeded (Flaps Up)	0	0
Lower Maneuvering Load Limit Exceeded (Flaps Up)	0	0
Lower Maneuvering Load Limit Exceeded (Flaps Down)	0	0
Maximum Operating Altitude Exceedance	0	0
Takeoff Altitude is Too High	0	0
Slat Mach Limit Exceedance	n/a	n/a
Taxi Weight Limit Exceedance	n/a	n/a
Landing Weight Limit Exceedance	n/a	n/a
Brake Temperature Exceeds Limit for Takeoff	n/a	n/a
Brake Temperature Exceeds Limit for Taxi In	n/a	n/a
Fuel Temperature Too Low	0	1
Fuel Temperature Too High	0	0

1.3 Breakdown of Aircraft Maintenance Events by Type (2009)

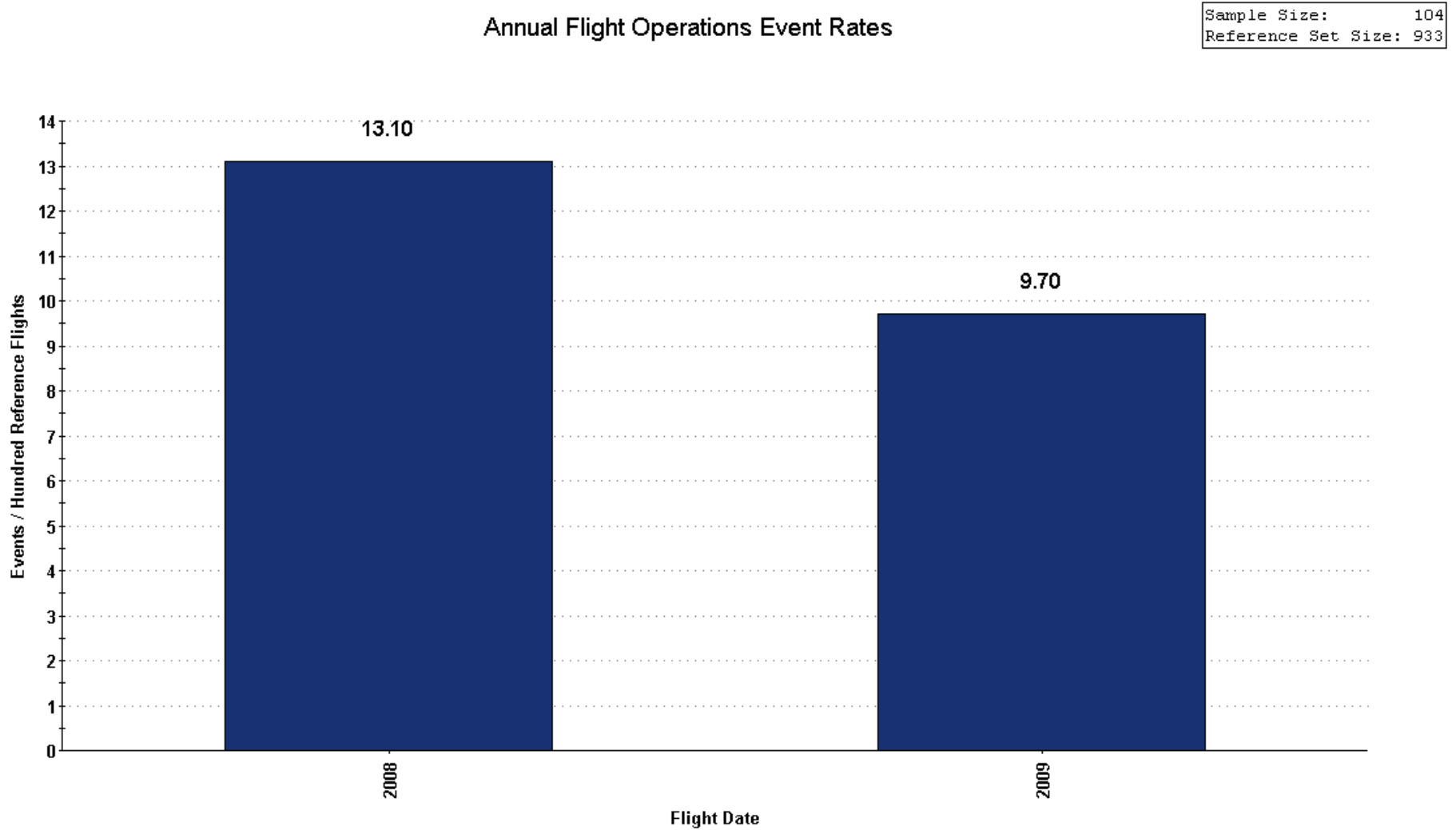
Event Type	Caution	Warning
Engine Fire	0	0
Smoke Warning	0	0
UncommandedPitch	n/a	n/a
UncommandedRoll	0	0
UncommandedYaw	0	0
Roll Attitude Disagreement	n/a	n/a
Pitch Attitude Disagreement	n/a	n/a
Thrust Reversers Not Stowed while Airborne	0	0
No Fuel Flow	0	0
Low Hydraulic Pressure	0	0
Cabin Pressure Warning	0	0
Engine Stall or Surge In-Flight	0	0
Reverse Thrust while Slow	9	0
Hard Landing (vertical speed method)	n/a	n/a

1.4 Quarterly Flight Operations Event Rates Year 2008/2009



Analysis processed at 1:50 AM Aug 30, 2010

1.5 Annual Flight Operations Event Rates Year 2008/2009

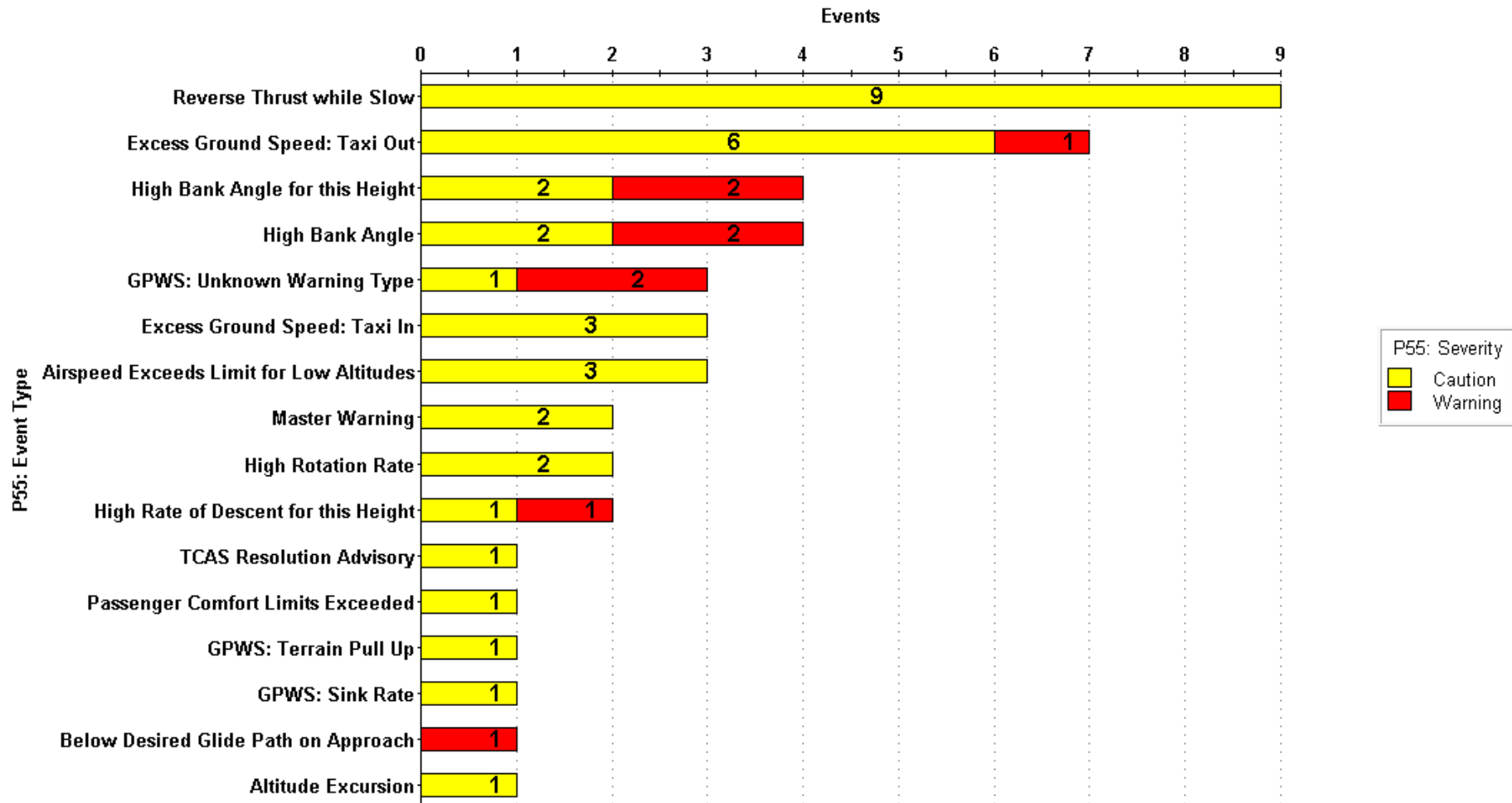


Analysis processed at 1:57 AM Aug 30, 2010

1.6 Breakdown of Flight Operation Events by Type (2009)

Breakdown of Flight Operations Events by Type (2009)

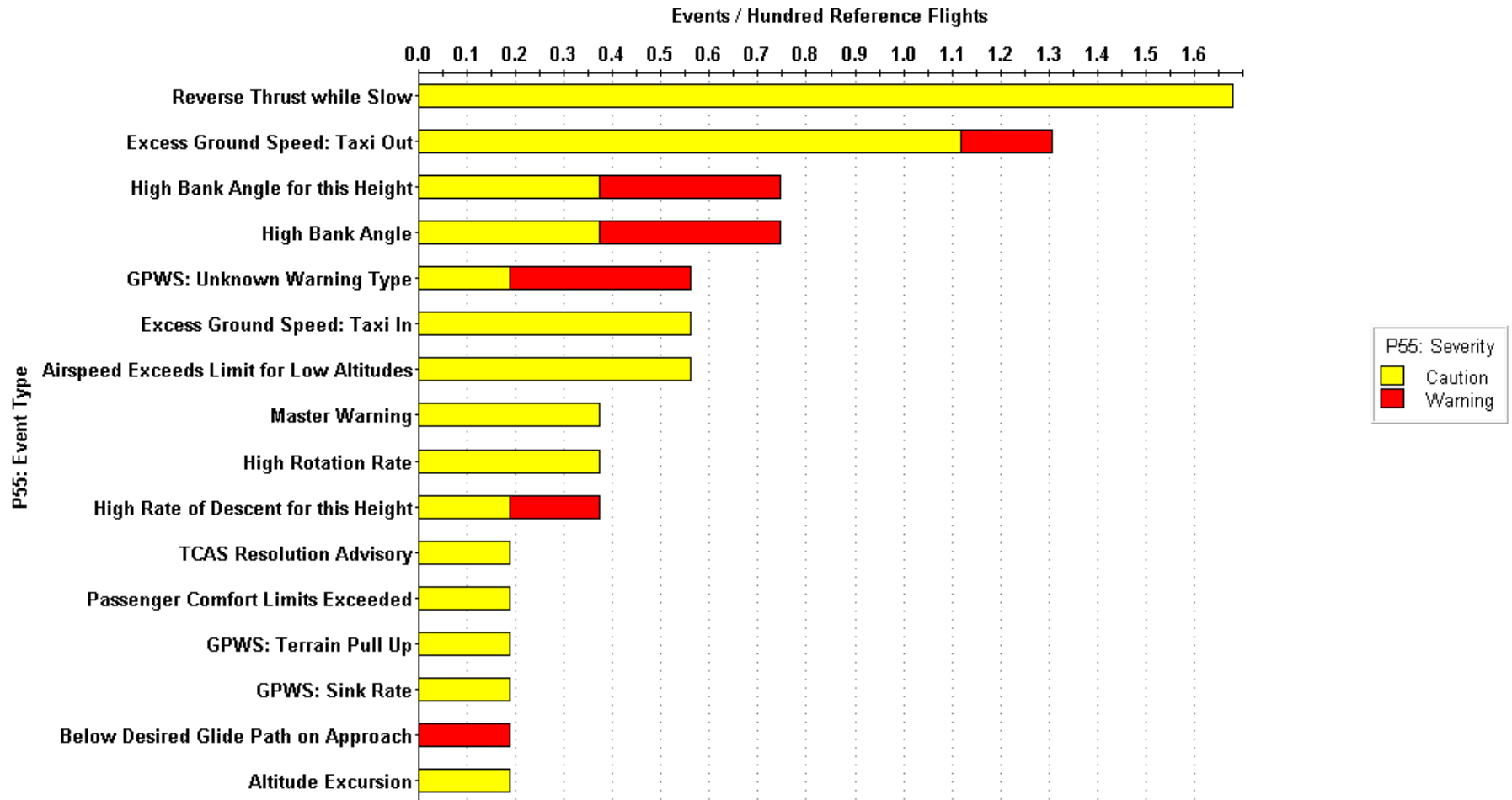
Sample Size: 45



1.7 Breakdown of Flight Operation Event Rates by Type (2009)

Breakdown of Flight Operations Events by Type (2009)

Sample Size: 45
 Reference Set Size: 536



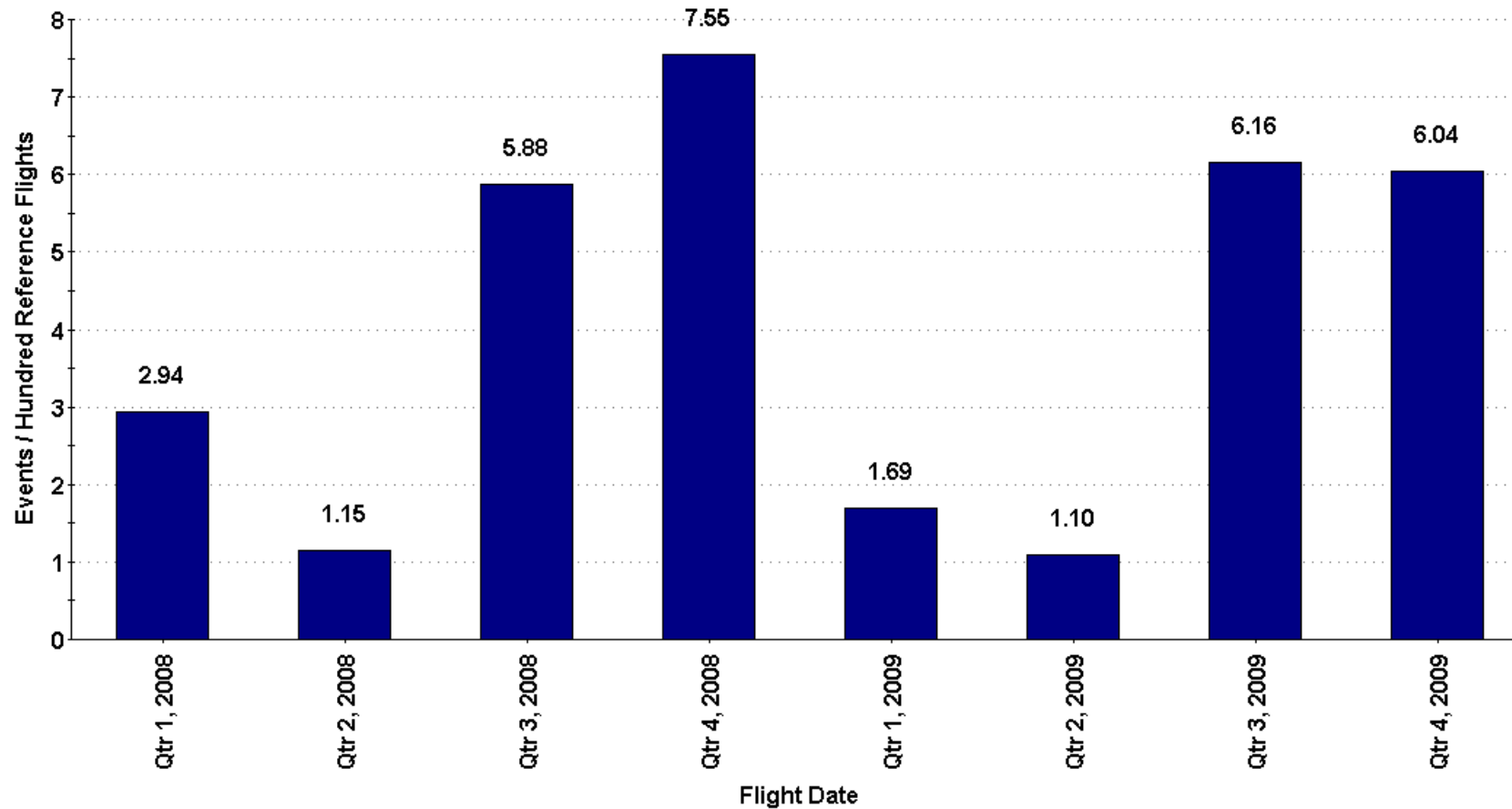
Analysis processed at 11:10 AM Aug 31, 2010

2 Cross-Fleet Comparison Approach Stability

2.1 Quarterly Unstable Approach Event Rates Year 2008/2009

Quarterly Unstable Approach Event Rates All Fleets

Sample Size: 40
Reference Set Size: 934

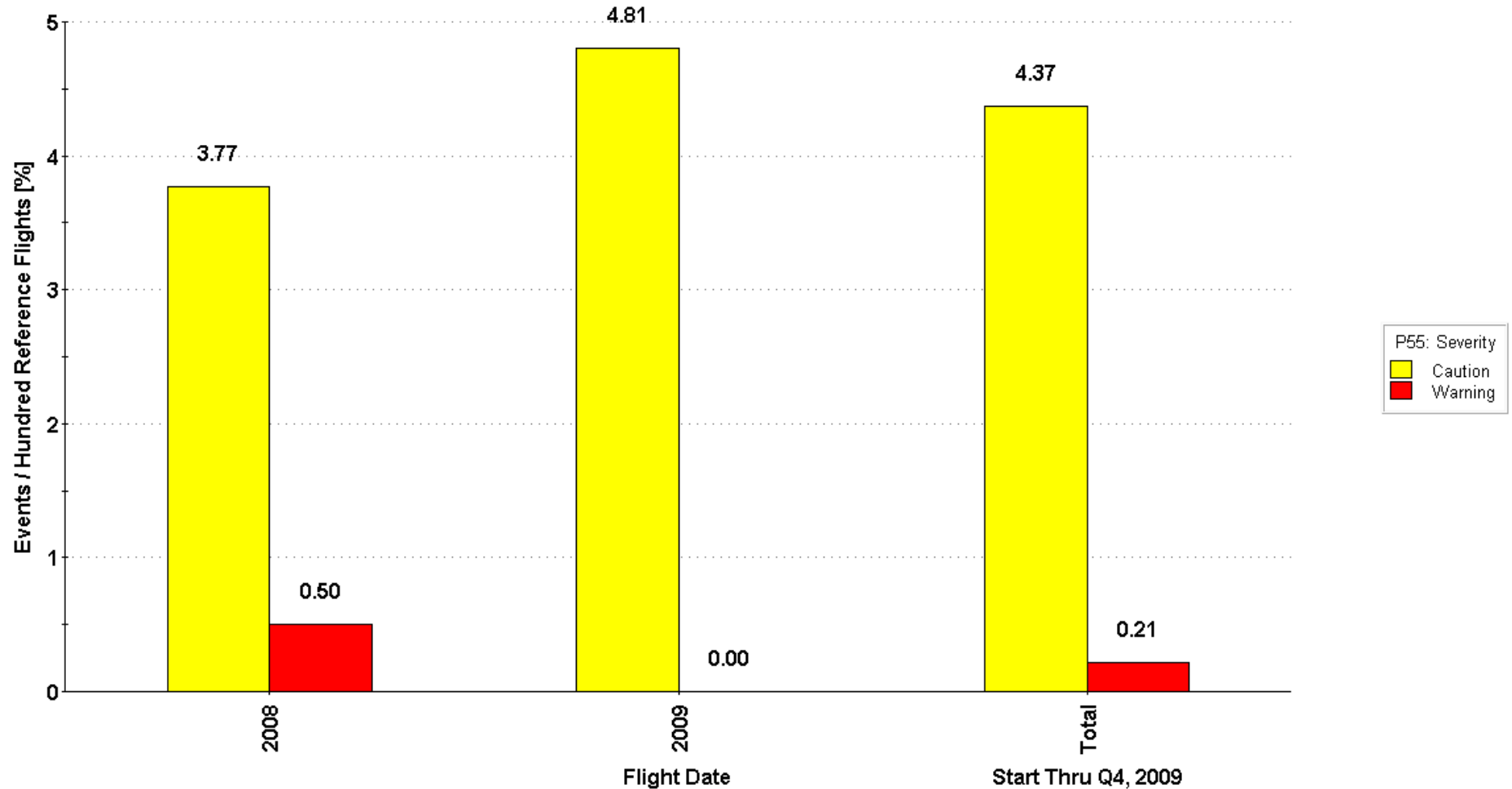


Analysis processed at 2:16 AM Aug 30, 2010

2.2 Annual Unstable Approach Event Rates Year 2008/2009

Annual Unstable Approach Event Rates and Severity All Fleets

Sample Size: 43
 Reference Set Size: 939

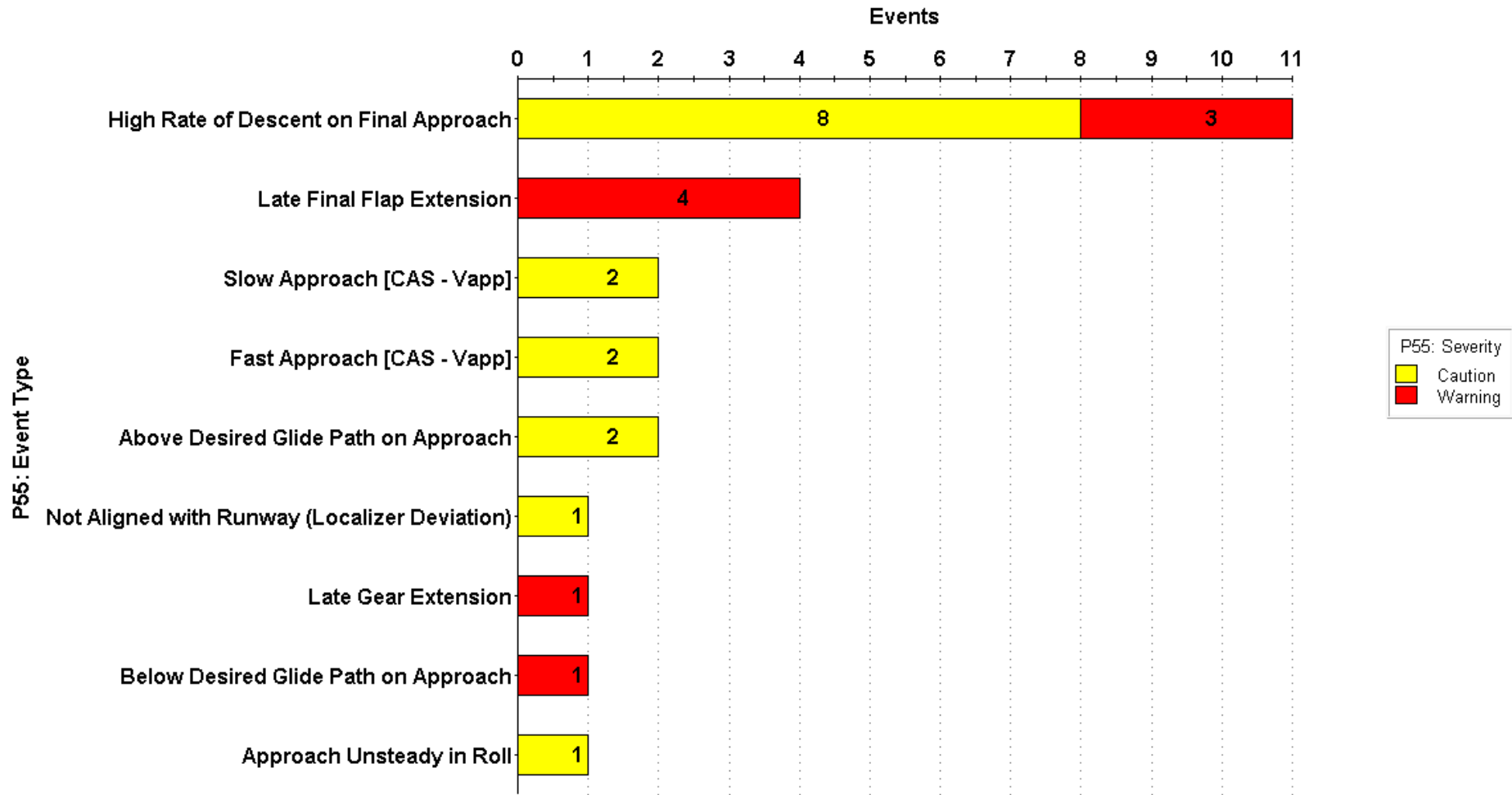


Analysis processed at 9:31 AM Aug 20, 2010

2.3 Breakdown of Unstable Approach Events by Cause Year 2009

Breakdown of Unstable Approach Events by Cause Year 2009

Sample Size: 25

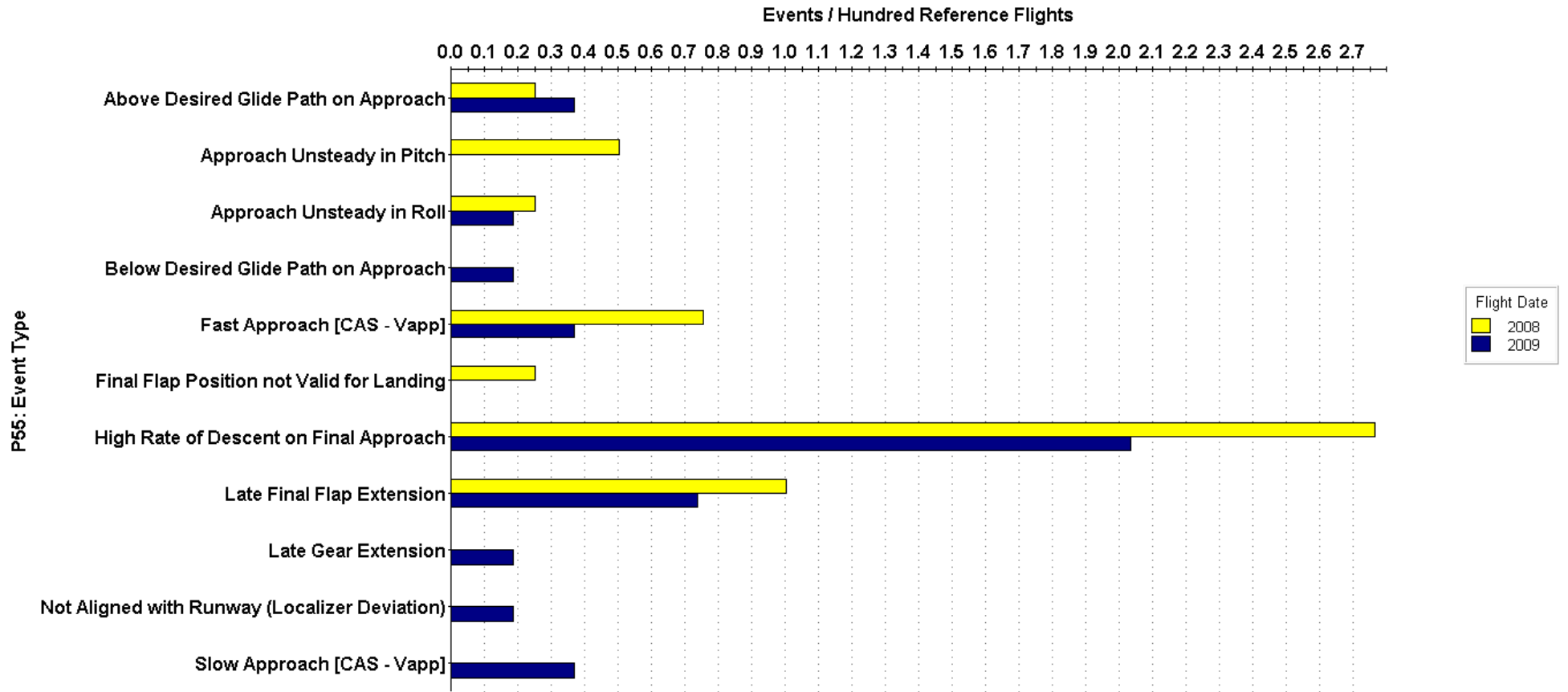


Analysis processed at 9:48 AM Aug 20, 2010

2.4 Unstable Approach Rates by Cause 2008/2009

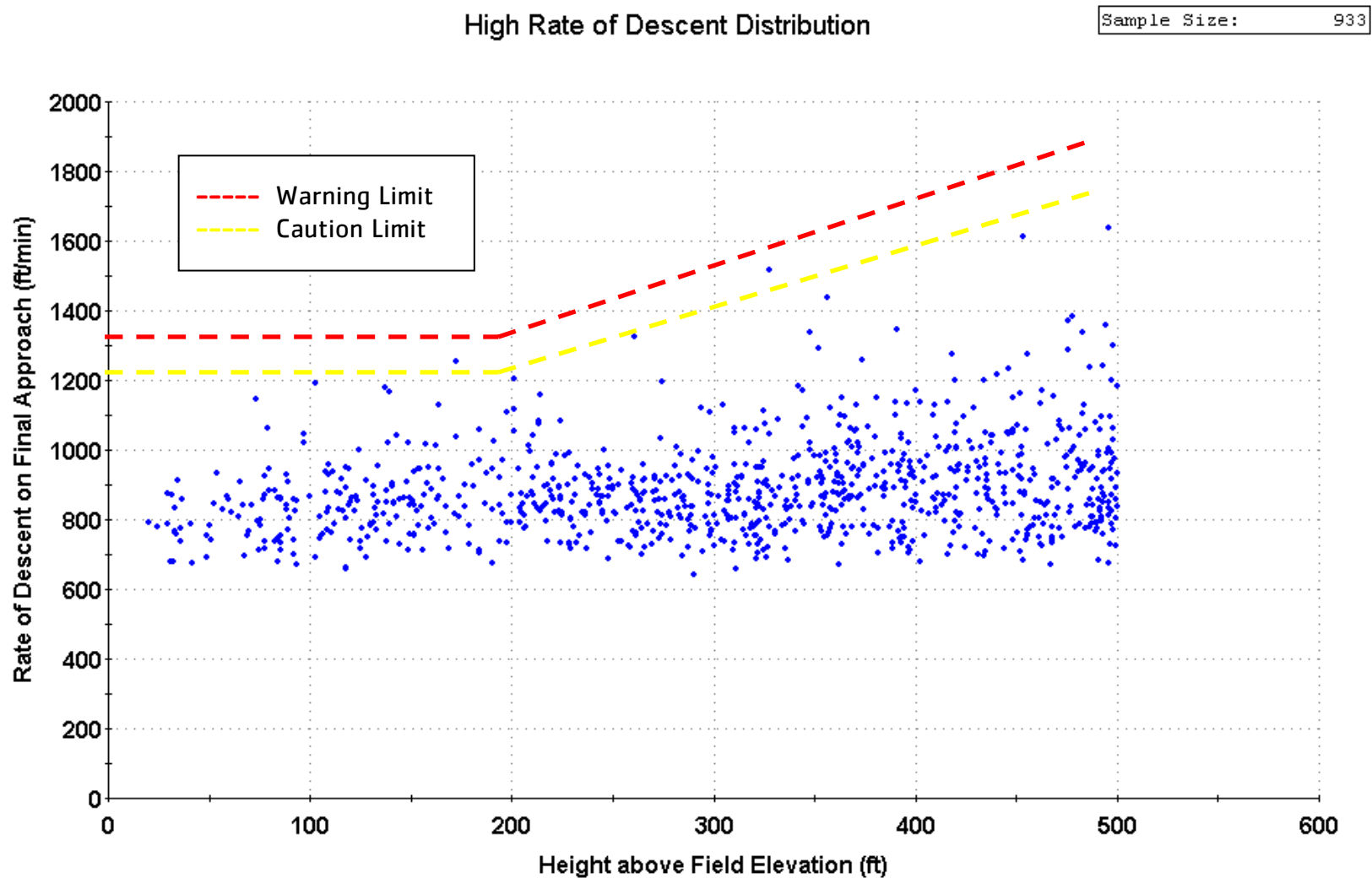
Unstable Approach Rates by Cause (2008/2009)

Sample Size: 48
 Reference Set Size: 939



Analysis processed at 9:56 AM Aug 20, 2010

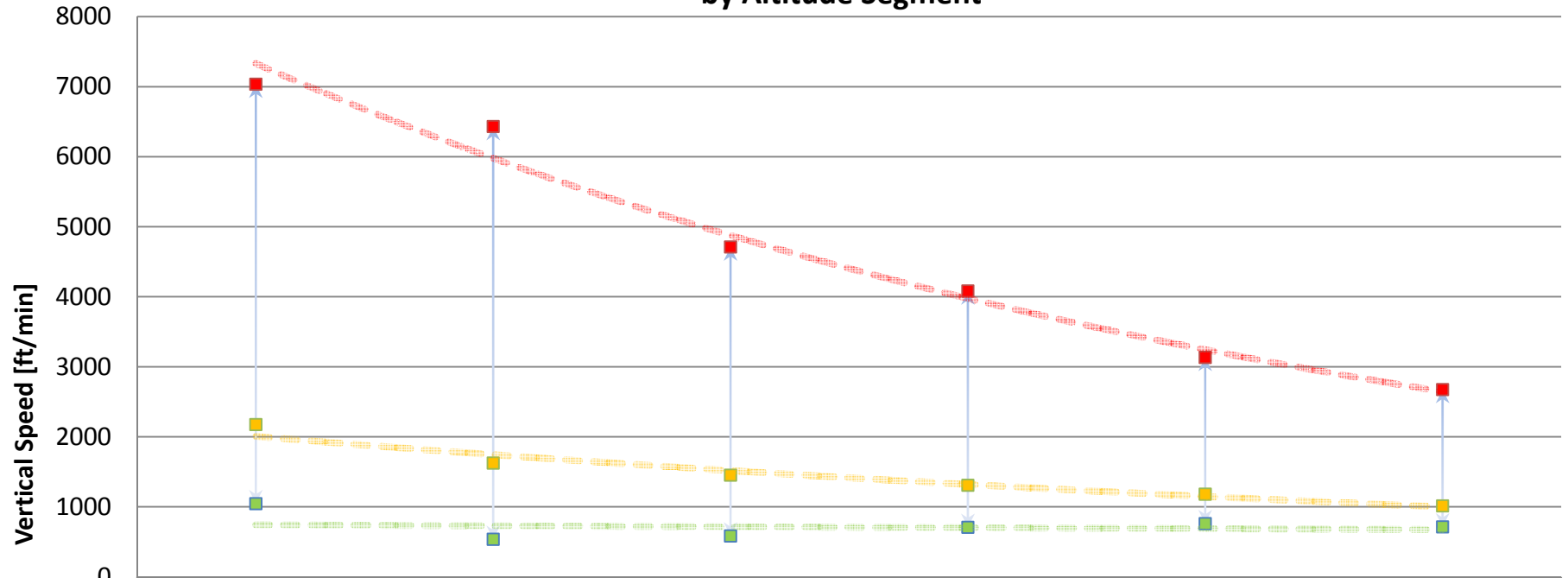
2.5 High Rate of Descent Distribution Final Approach 2008/2009



Analysis processed at 6:35 AM Jun 3, 2010

2.6 High Rate of Descent Distribution Descent/Approach 2008/2009

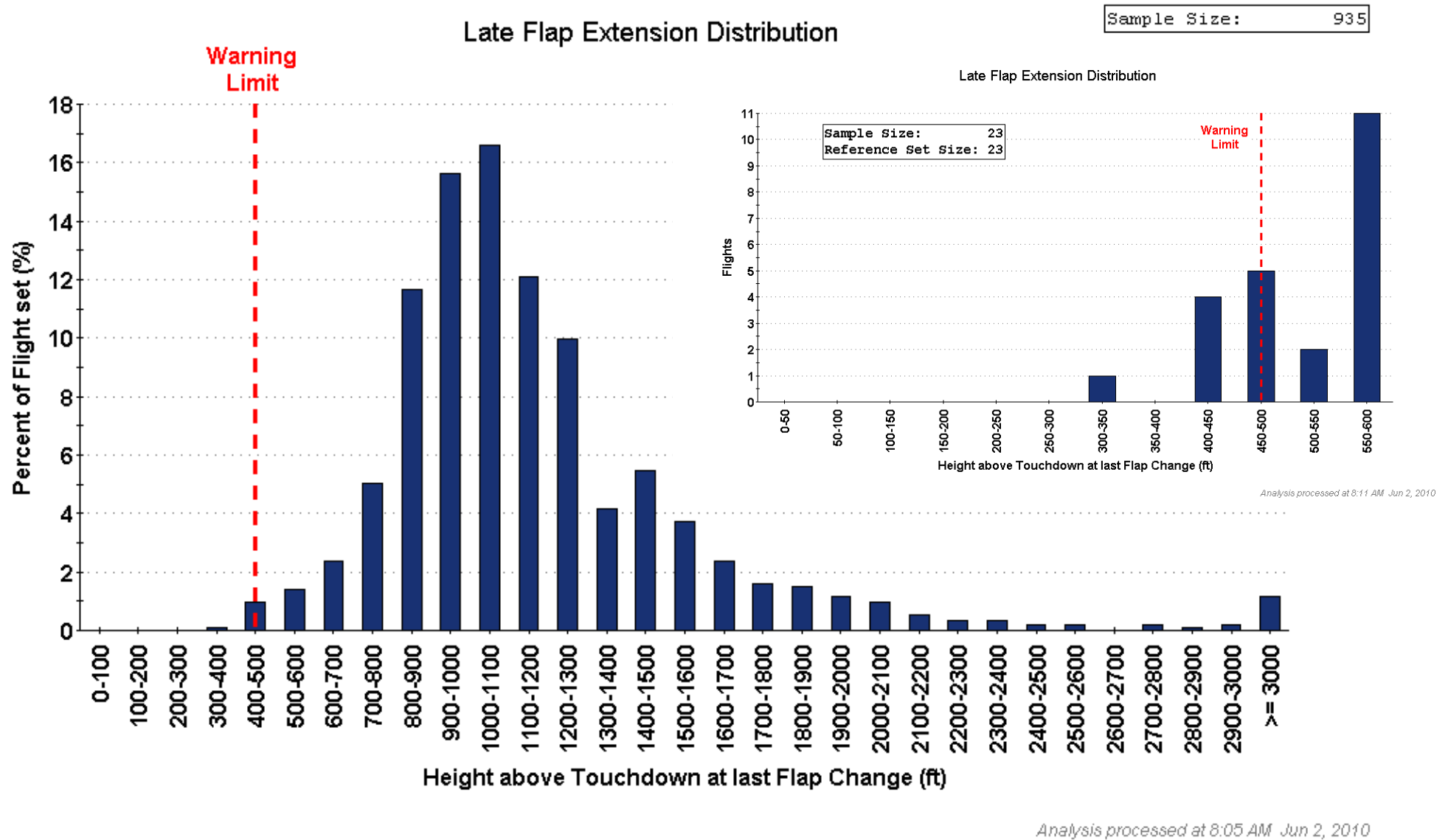
Peak Rate of Descent Distribution by Altitude Segment



	P43: Max ROD 10'000ft - 5'000 ft HAT (ft/min)	P43: Max ROD 5'000ft - 4'000 ft HAT (ft/min)	P43: Max ROD 4'000ft - 3'000 ft HAT (ft/min)	P43: Max ROD 3'000ft - 2'000 ft HAT (ft/min)	P43: Max ROD 2'000ft - 1'000 ft HAT (ft/min)	P43: Max ROD 1'000 ft HAT - Touchdown (ft/min)
■ Max Value	7036	6431	4711	4082	3134	2675
■ Average Value	2175	1625	1452	1308	1181	1014
■ Min Value	1046	537	584	708	760	714

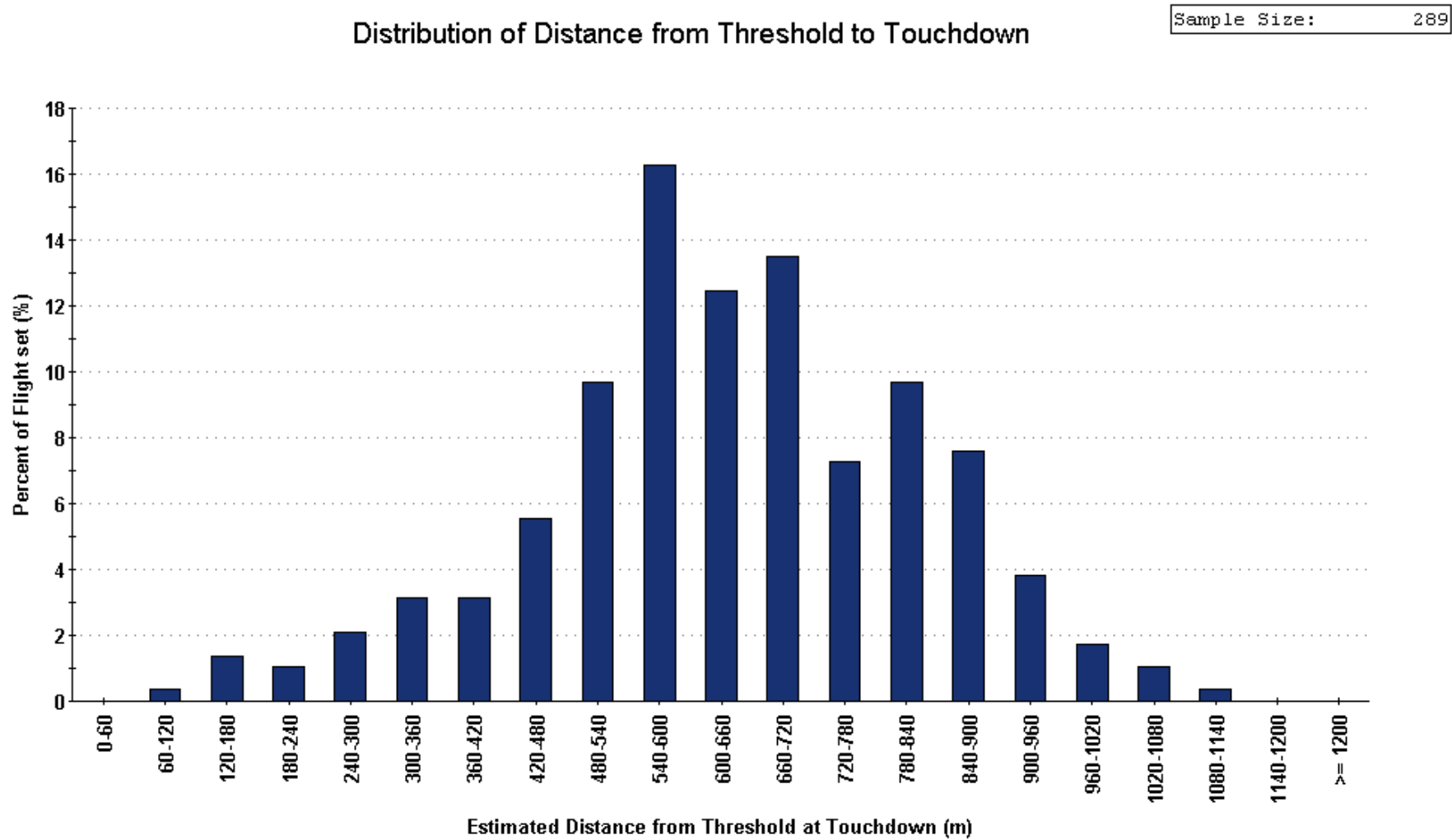
Altitude Segment [ft]

2.7 Late Flap Extension Distribution 2008/2009



3 Cross-Fleet Data Comparison Landing Performance

3.1 Distribution of Distance from Threshold at Touchdown 2008/2009

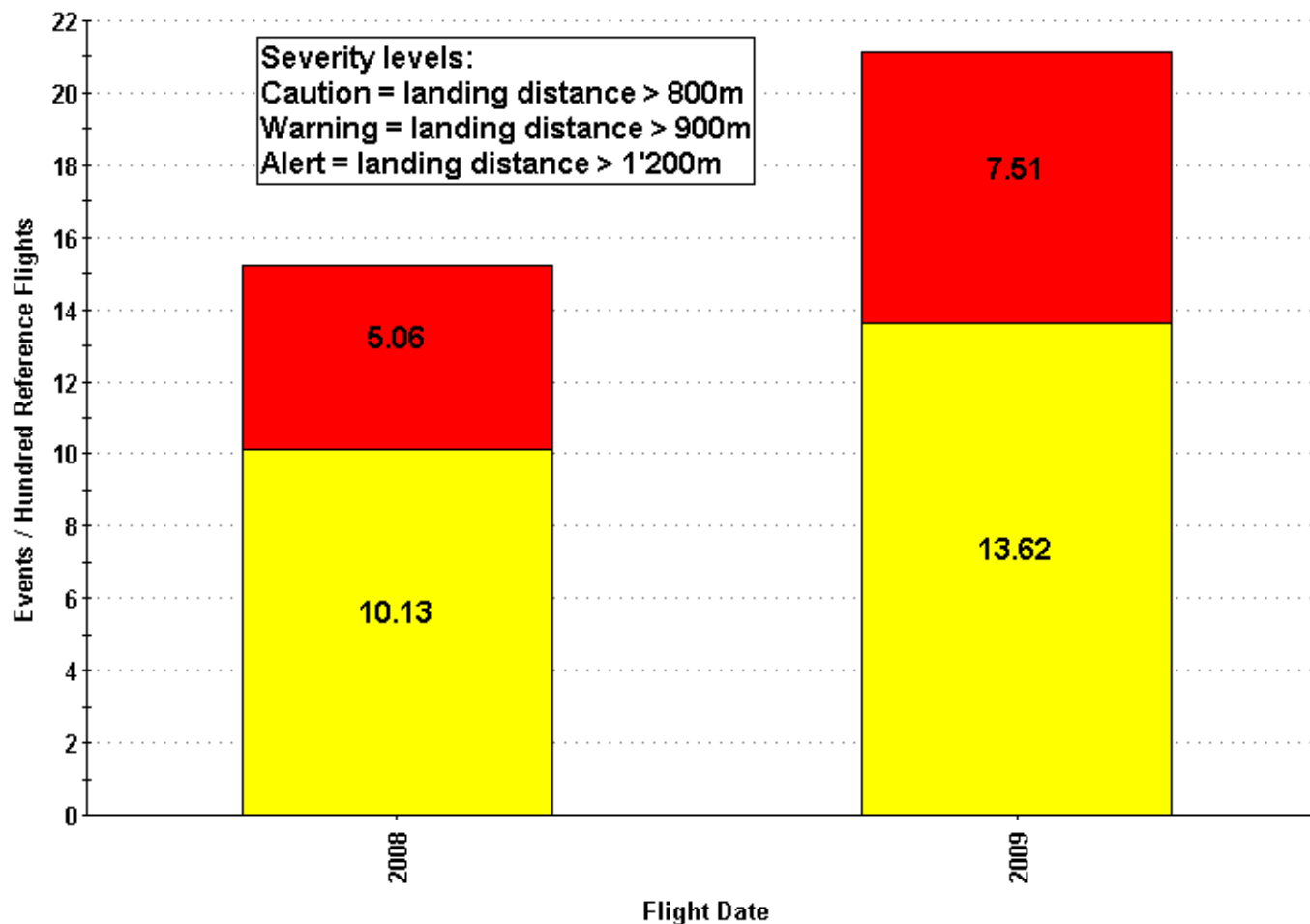


Analysis processed at 9:01 AM Jun 2, 2010

3.2 Long Landing Event Rates per Year 2008/2009

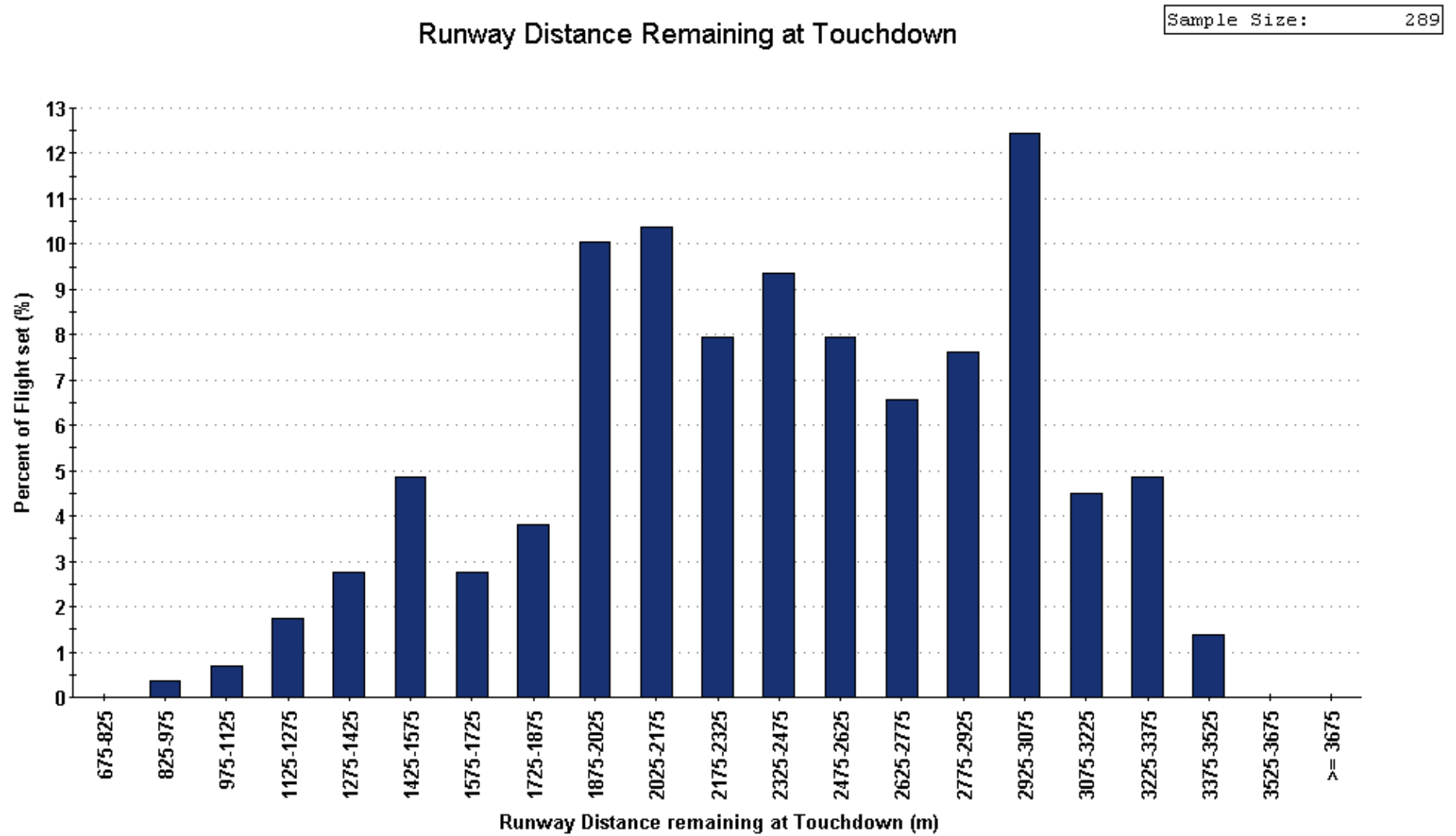
Long Landing Event Rates

Sample Size: 57
Reference Set Size: 292



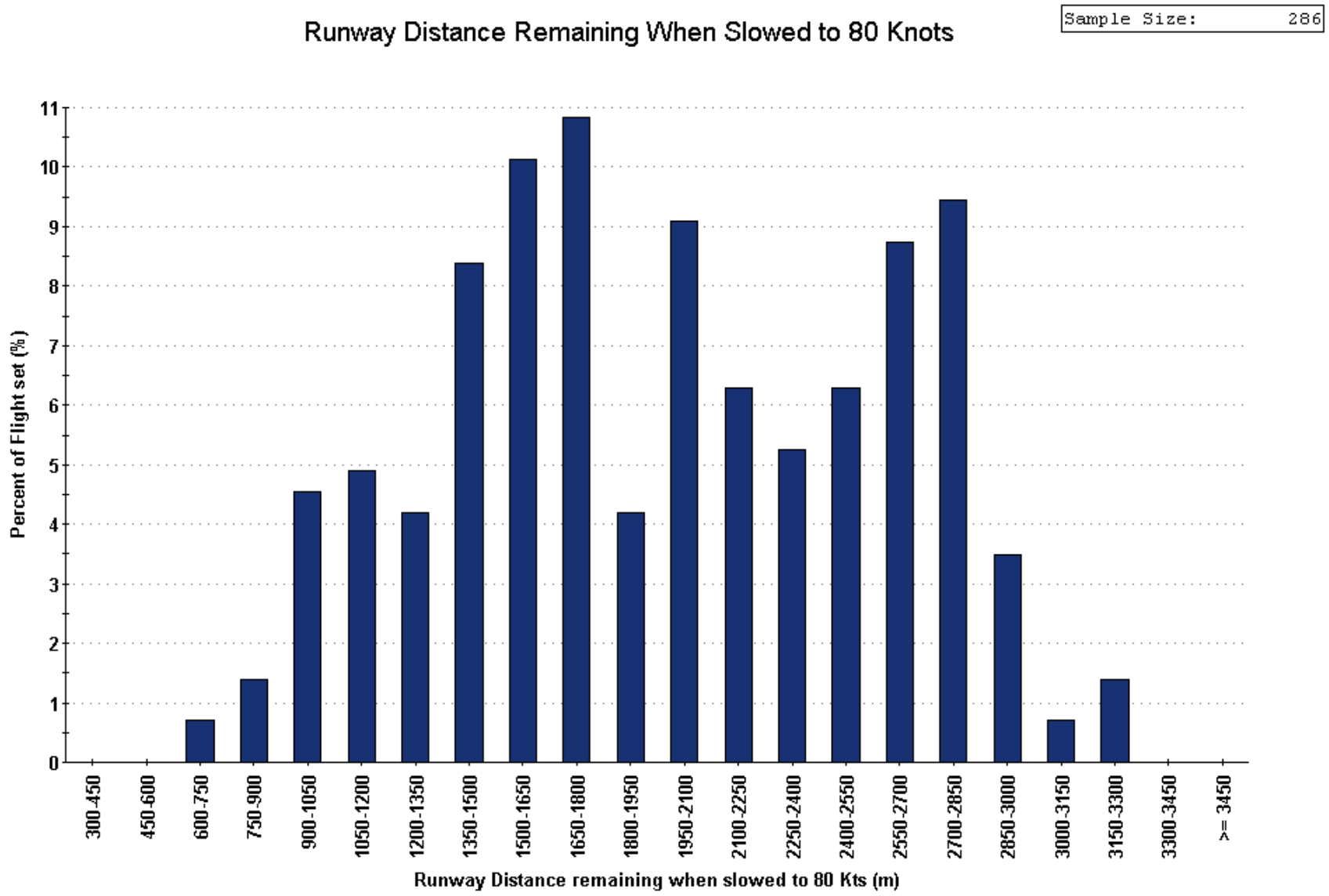
Analysis processed at 9:28 AM Jun 2, 2010

3.3 Distribution of Runway Distance Remaining at Touchdown 2008/2009



Analysis processed at 9:38 AM Jun 2, 2010

3.4 Distribution of Runway Remaining When Slowed to 80 Kts



Appendix

Unstable Approach Events -> C-FOQA Standard Event Limits

Unstable Approach Events	Phase of Flight	Measurement Criteria		C-FOQA SEL	Warning	units
Runway Alignment						
				Caution	Warning	-
1) Above Desired Glide Path	500 ft HAT - 200 ft AGL	One Standard Deviation above Average Glideslope	>	2	-	dots
2) Below Desired Glide Path	500 ft HAT - 200 ft AGL	One Standard Deviation below Average Glideslope	<	-1.3	-3	dots
3) Not Aligned with Runway (Localizer)	500 ft HAT - TD	One Standard Deviation outside Average Localizer	>	1	-	dots
Airspeed						
4) Fast Approach (Airspeed vs. Vapp)	500 ft HAT - 50 ft AGL	One Standard Deviation above Avg (Airspeed - Vapp)	>	20	25	knots
7) Slow Approach (Airspeed vs. Vapp)	500 ft HAT - 50 ft AGL	One Standard Deviation below Avg (Airspeed - Vapp)	<	-10	-	knots
Rate of Descent (ROD)						
9) High Rate of Descent	500 ft HAT - TD	ROD ÷ ROD Limit*	>	0	10	%
Configuration						
11) Final Flap Change is Late	Descent & Approach	HAT at Last Flap Change	<	-	500	feet
12) Final Flaps Not Valid for Landing	Descent & Approach	Final Flap Setting	<	Landing Flaps	-	degrees
13) Gear Extension is Late	Descent & Approach	HAT at Gear Extension	<	1000	500	feet
Aircraft Body Rates						
14) Unsteady in Pitch	500 ft HAT - 100 ft AGL	Standard Deviation of Pitch Rate	>	1.5	-	deg/sec
15) Unsteady in Roll	500 ft HAT - 50 ft AGL	Standard Deviation of Roll Rate	>	4	-	deg/sec
16) Unsteady in Yaw	500 ft HAT - 100 ft AGL	Standard Deviation of Yaw Rate	>	3	-	deg/sec

*Rate of Descent Limit Changes with Altitude and Glide Path Angle and has a Lower Limit of 1200 ft/min