



Vision: Data Driven Decision-Making

Sherry Reid - Manager, Aviation Safety Research and Analysis

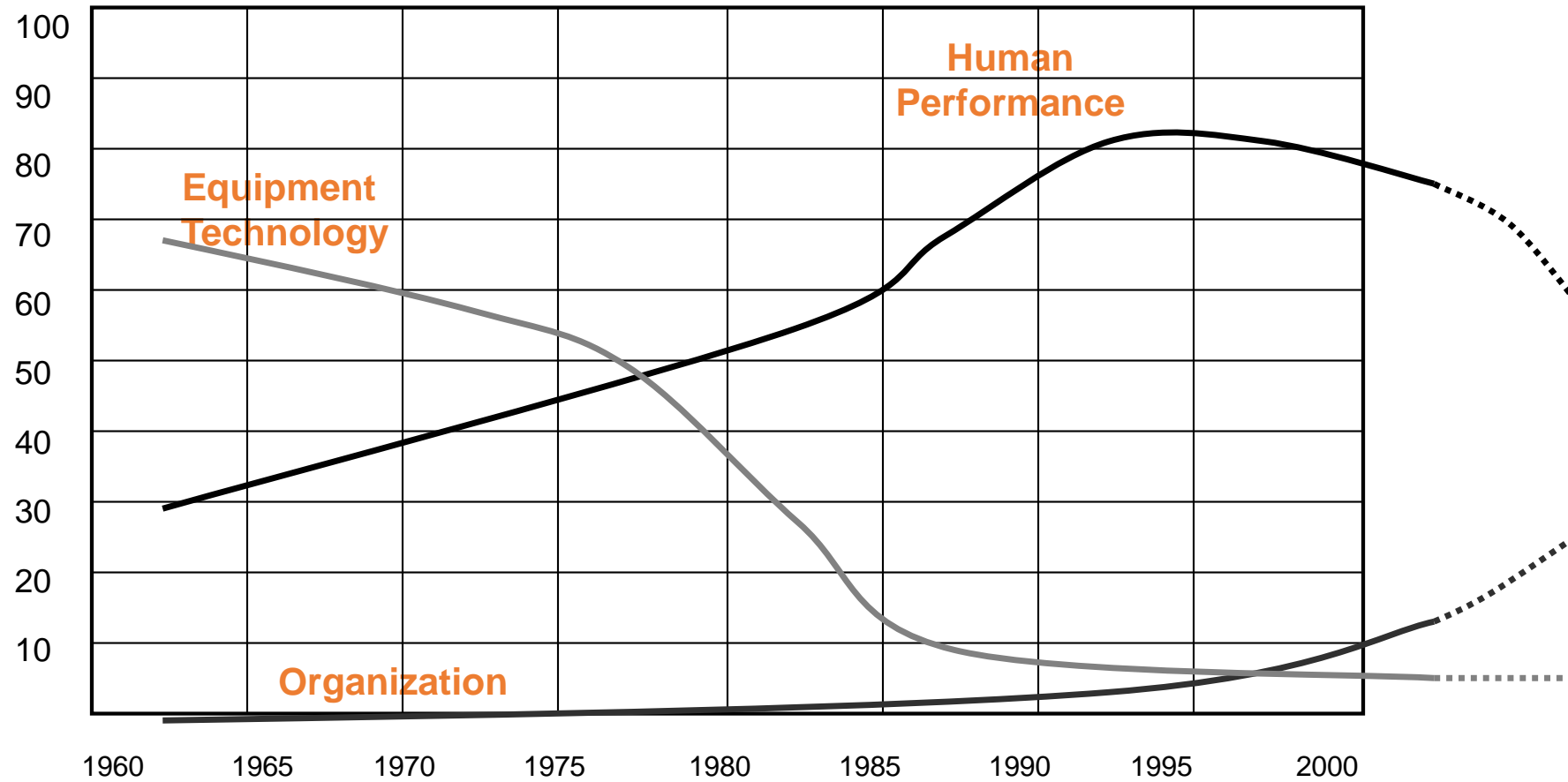




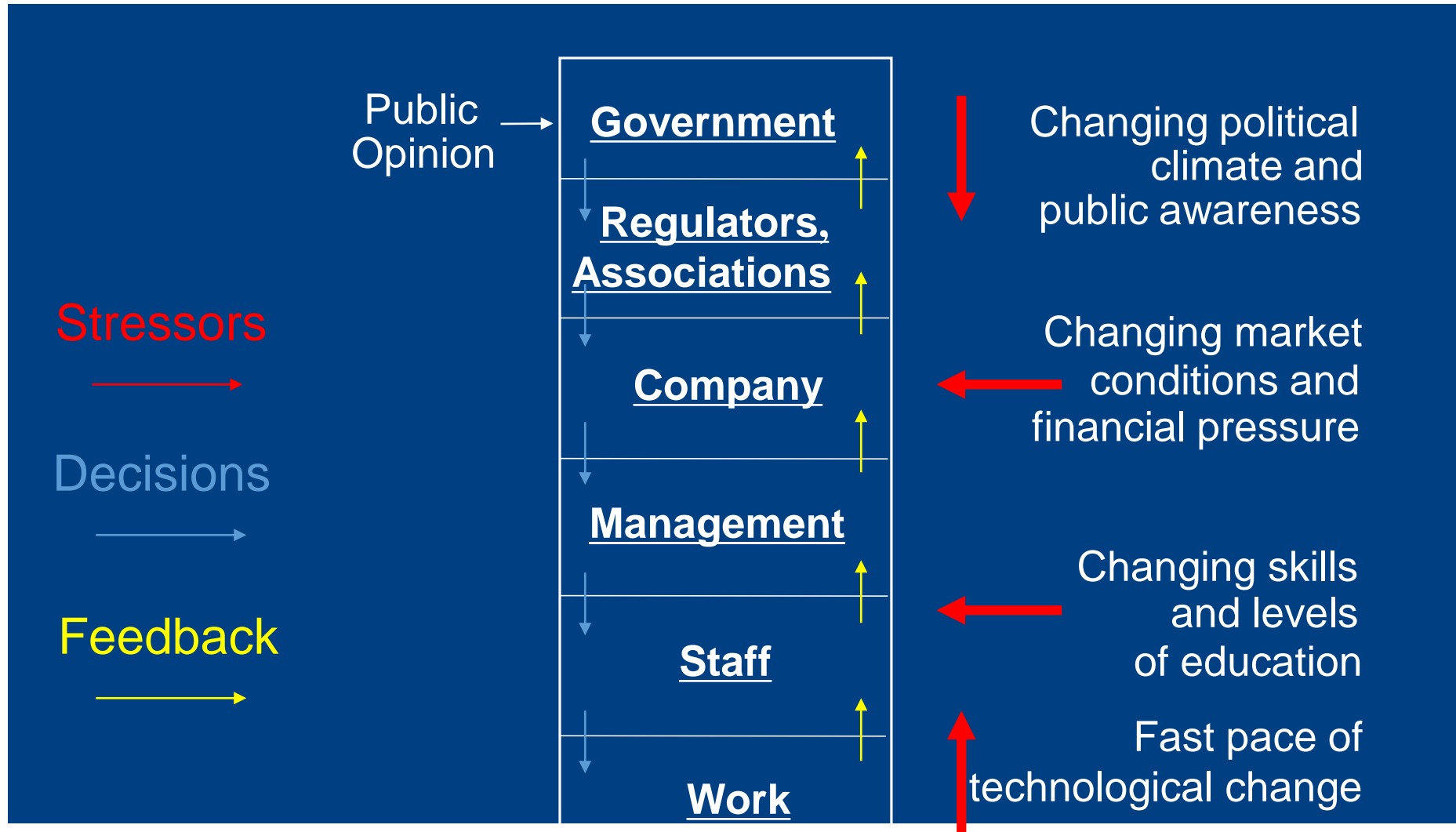
To prevent accidents...

You must understand them.

ACCIDENT CAUSES



RASMUSSEN'S STRUCTURAL HIERARCHY



SAFETY DATA SOURCES

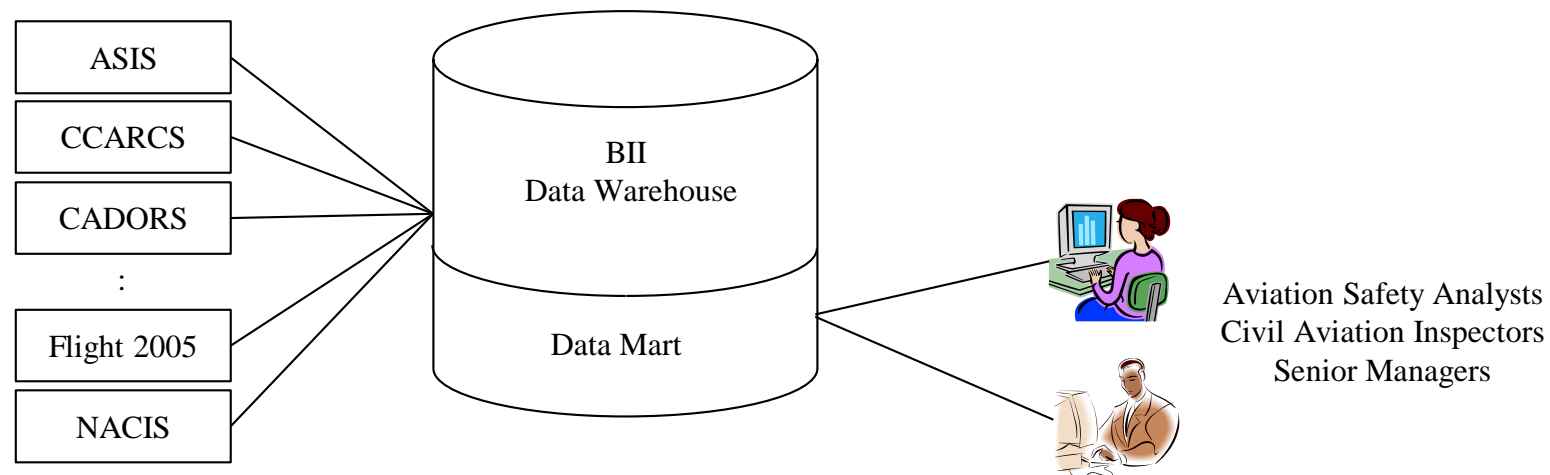
- TSB Aviation Safety Information System (ASIS)
- Civil Aviation Daily Occurrence Reporting System (CADORS)
- Continuing Airworthiness Web Information System (CAWIS)
- National Aviation Company Information System (NACIS)
- Canadian Civil Aircraft Computer Registry (CCARCS)
- National Aerodrome Safety Database (NASD)
- Activity Data (hours flown, movements)
- etc.

AUDITOR GENERAL DIRECTION

- Capture all information relevant to oversight of Civil Aviation safety in an integrated manner;
- To allow the Department to develop and track safety profiles for aviation companies and industry sectors; and
- To assess the relative level of risk.

BII – BUSINESS DRIVERS

- The objective of the BII project is to put in place a means to capture all information relevant to the oversight of civil aviation safety in an integrated manner.
- This will allow Civil Aviation to develop and track safety profiles for aviation companies and industry sectors and to assess the relative level of risk.
- BII will provide a consistent approach to data integration, analysis and reporting and the dissemination of this information.

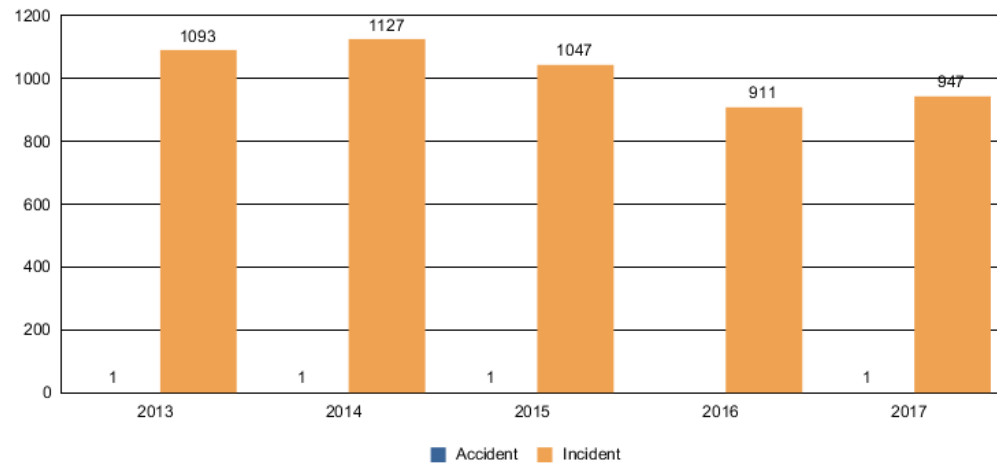




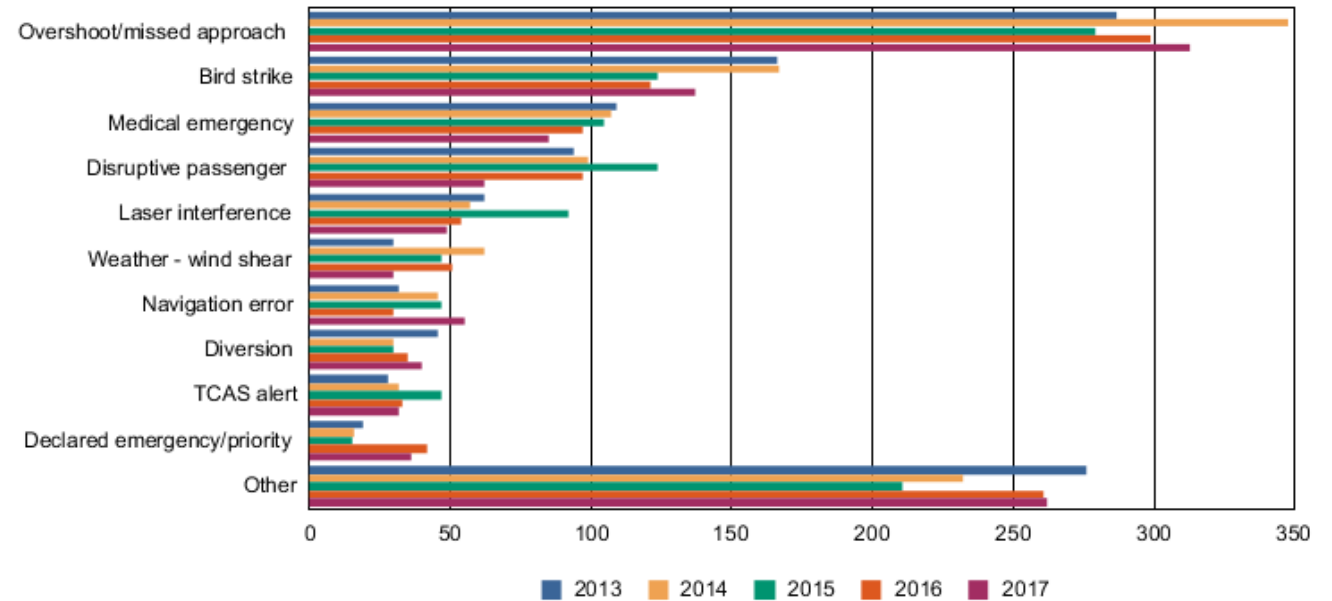
OPERATOR REPORT

Number of Occurrences by Occurrence Type

	2013	2014	2015	2016	2017	Total
Accident	1	1	1	0	1	4
Incident	1093	1127	1047	911	947	5125
Total	1094	1128	1048	911	948	5129



Top 10 Aircraft Events by Year



Number of Occurrences by Occurrence Category

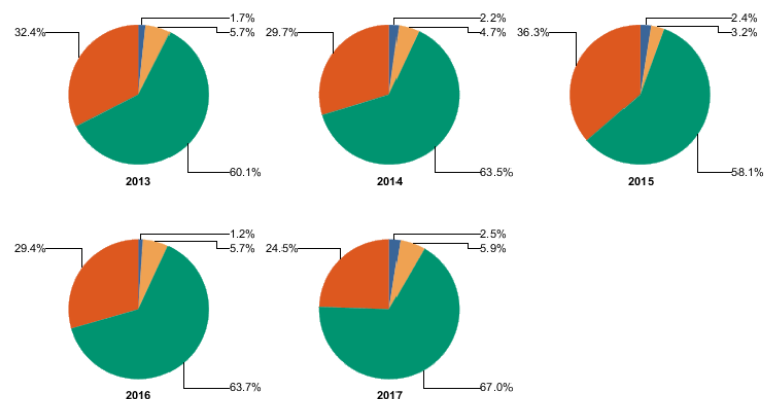
	2013	2014	2015	2016	2017	Total
Undershoot/overshoot	364	391	315	314	336	1720
Security related	167	162	228	162	111	830
Bird	176	171	130	126	142	745
Other	126	115	93	147	127	608
Medical	126	122	122	110	102	582
Aerodrome	139	120	100	86	92	537
Airprox/TCAS alert/loss of separation/(near) midair collisions	67	53	70	77	60	327
Navigation Errors	57	59	65	39	64	284
Wind shear or thunderstorm	37	66	46	52	31	232
System/component failure or malfunction [non-powerplant]	55	45	35	49	43	227
Turbulence encounter	44	44	51	27	41	207
ATM/CNS	36	23	22	23	26	130
Abrupt manoeuvre	16	14	10	18	12	70
Wildlife	2	25	19	9	15	70
Fire/smoke (non-impact)	6	7	2	8	12	35
Fuel related	5	7	10	5	8	35
Runway Incursion	4	13	5	4	6	32
Runway incursion - animal	19	0	0	0	0	19
System/component failure or malfunction [powerplant]	7	4	2	2	3	18
Cabin safety events	5	2	3	3	2	15
Ground handling	1	3	0	3	2	9
Runway incursion - vehicle, aircraft or person	9	0	0	0	0	9
Unknown or undetermined	0	0	2	4	1	7
Ground collision	1	1	1	1	2	6
Loss of control - inflight	0	0	1	1	2	4
Runway excursion	1	0	1	0	2	4
Collision with obstacle(s) during take-off or landing whilst airborne.	3	0	0	0	0	3
Loss of control - ground	0	0	0	2	1	3
Evacuation	0	0	1	1	0	2
Icing	1	0	1	0	0	2
Abnormal runway contact	0	0	0	0	1	1
Total	1474	1447	1335	1273	1244	6773

Number of Aircraft Events by Year

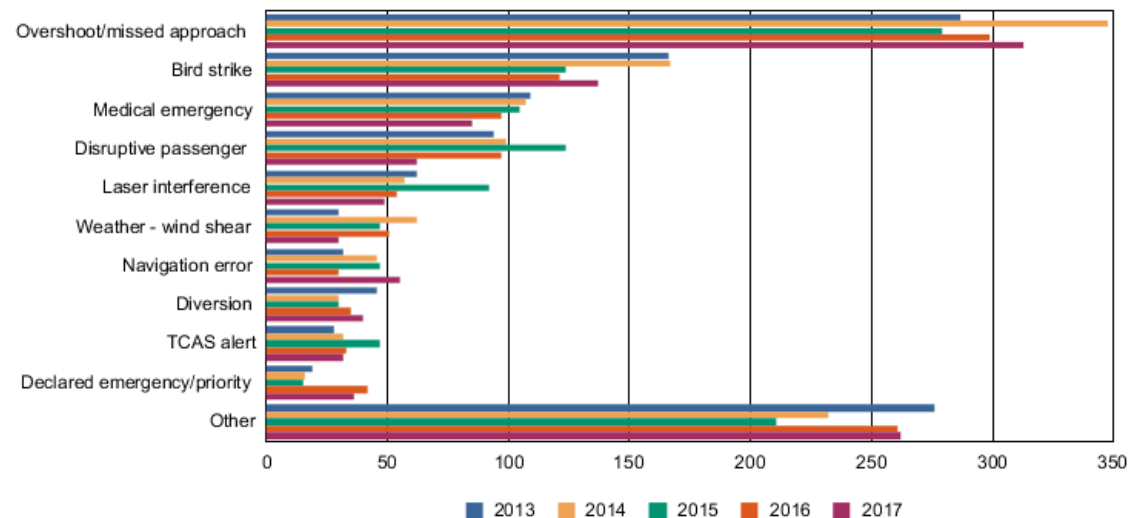
	2013	2014	2015	2016	2017	Total
Overshoot/missed approach	287	348	279	299	313	1526
Bird strike	166	167	124	121	137	715
Medical emergency	109	107	105	97	85	503
Disruptive passenger	94	99	124	97	62	476
Laser interference	62	57	92	54	49	314
Weather - wind shear	30	62	47	51	30	220
Navigation error	32	46	47	30	55	210
Diversion	46	30	30	35	40	181
TCAS alert	28	32	47	33	32	172
Declared emergency/priority	19	16	15	42	36	128
Weather - wind	23	21	14	16	26	100
Crew incapacitation	21	17	20	18	19	95
Incursion - manoeuvring area	9	20	25	12	23	89
Conflict - potential	20	15	7	41	4	87
Conflict - loss of separation	11	10	19	19	23	82
Wake turbulence/vortices	11	20	21	10	19	81
Rejected take-off	10	8	7	17	11	53
Mechanical/technical malfunction of aircraft - other	12	6	7	13	11	49
Flight control systems (ailerons, rudder, rotors, flaps, main, tail)	10	9	5	10	10	44
Smoke/fumes - aircraft	5	9	3	11	14	42
Communication error	5	6	7	8	9	35
Weather - clear air turbulence (CAT)/turbulence	16	3	8	2	5	34
Aircraft navigation/communication equipment	7	7	4	10	4	32
Animal strike (or risk of collision with animal)	6	7	5	6	8	32
Conflict - IFR & VFR	2	4	6	9	6	27
Other operational incident	6	3	4	4	10	27
Security acts	9	2	9	6	0	26
IFR operations below minimum	3	19	0	0	1	23
Landing gear	6	2	4	3	4	19
Incursion - runway - aircraft	7	4	2	0	5	18
Electrical problem	3	4	0	5	5	17
Blown tire/wheel failure	3	3	4	3	3	16
Weather - other	7	1	2	2	4	16
Weather - visibility	10	0	0	2	1	13
Brakes - other	3	1	2	4	2	12
Fuel - leak	3	4	2	1	2	12

Number of Aircraft Events by Event Category

	2013	2014	2015	2016	2017	Total
Operations	691	759	651	714	738	3553
Other	372	355	407	329	270	1733
Maintenance	66	56	36	64	65	287
Aerodrome	20	26	27	13	28	114
Total	1149	1196	1121	1120	1101	5687

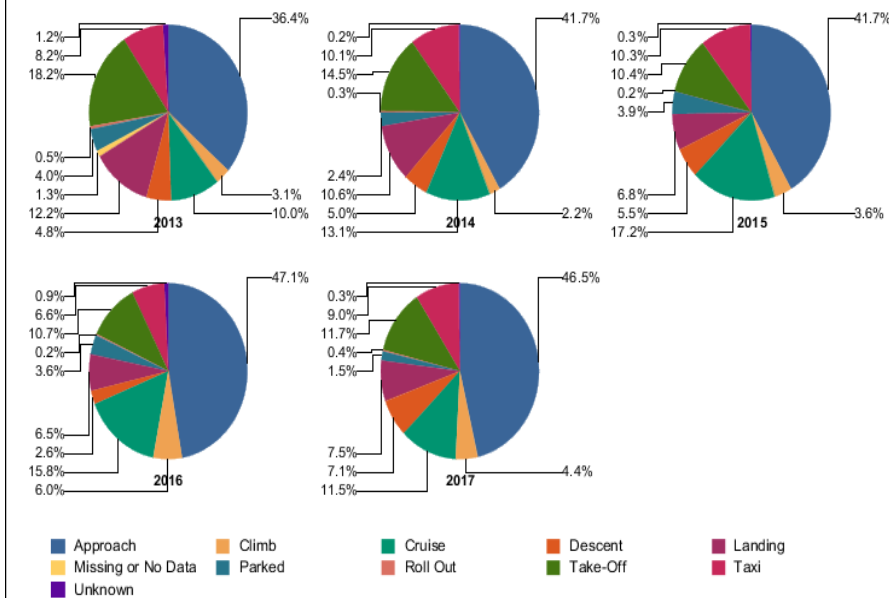


Top 10 Aircraft Events by Year



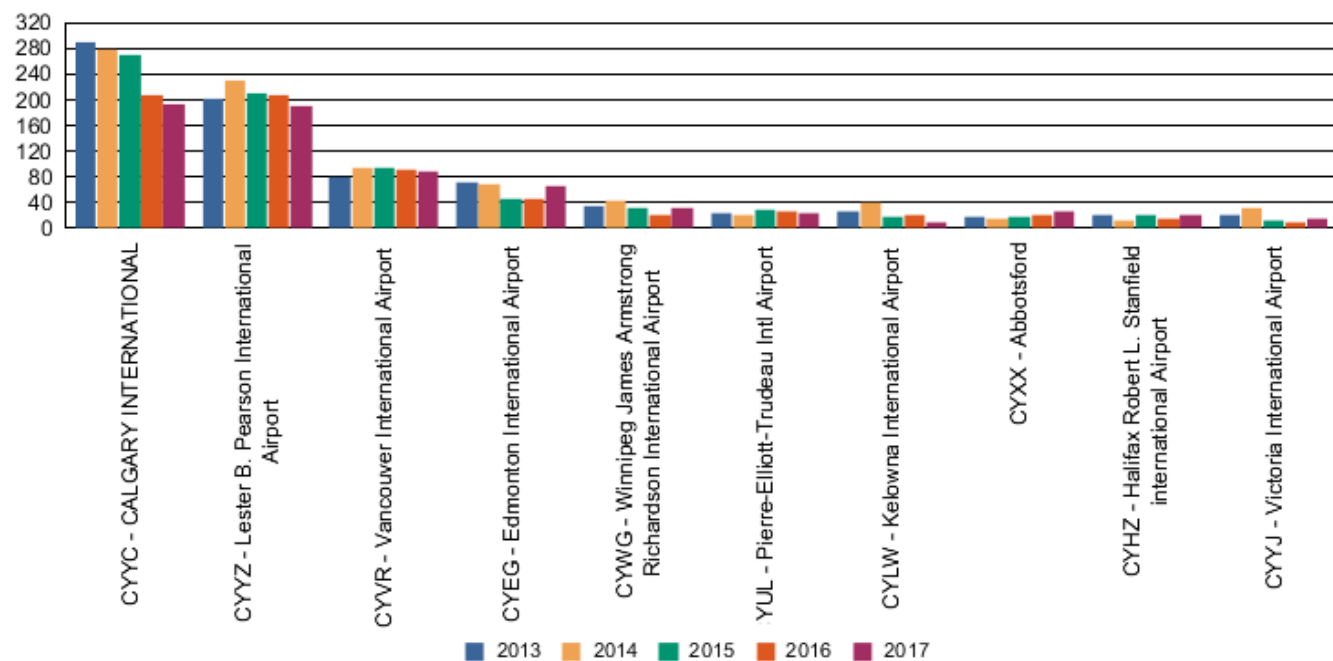
Number of Aircraft Involved by Phase Category

	2013	2014	2015	2016	2017	Total
Approach	400	479	447	433	450	2209
Cruise	110	150	185	145	111	701
Take-Off	200	167	112	98	113	690
Taxi	90	116	111	61	87	465
Landing	134	122	73	60	73	462
Descent	53	57	59	24	69	262
Climb	34	25	39	55	43	196
Parked	44	28	42	33	15	162
Unknown	13	2	3	8	3	29
Roll Out	6	3	2	2	4	17
Missing or No Data	14	0	0	0	0	14
Total	1098	1149	1073	919	968	5207



Top 10 Occurrence Locations (Aerodromes)

	2013	2014	2015	2016	2017	Total
CYYC - CALGARY INTERNATIONAL	291	279	270	208	193	1241
CYYZ - Lester B. Pearson International Airport	201	231	212	209	192	1045
CYVR - Vancouver International Airport	79	95	94	92	89	449
CYEG - Edmonton International Airport	71	69	47	46	65	298
CYWG - Winnipeg James Armstrong Richardson International Airport	35	44	31	21	33	164
CYUL - Pierre-Elliott-Trudeau Intl Airport	24	20	29	25	23	121
CYLW - Kelowna International Airport	26	41	19	21	9	116
CYXX - Abbotsford	17	15	18	20	26	96
CYHZ - Halifax Robert L. Stanfield international Airport	21	12	20	14	22	89
CYYJ - Victoria International Airport	20	31	12	9	14	86
Total	785	837	752	665	666	3705

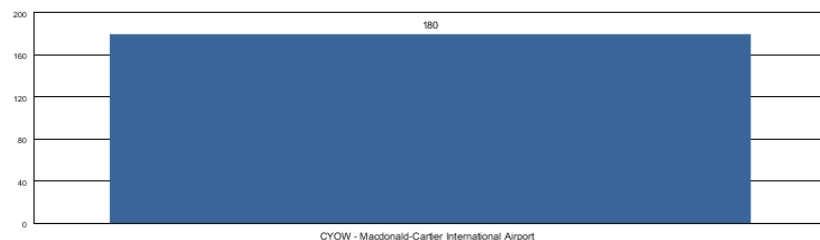


Aerodrome Detail Report - TC 2016

CYOW - Macdonald-Cartier International Airport

Legal Name: Macdonald-Cartier International Airport
Name: OTTAWA / MACDONALD-CARTIER INTL ON (CYOW)
Type: Land
Status: Certified
Owner: TRANSPORT CANADA
Operator: OTTAWA MACDONALD-CARTIER INTERNATIONAL AIRPORT AUTHORITY
City: OTTAWA, Ontario, Canada
Longitude: 75°40'02"W
Latitude: 45°19'21"N
of Runways: 3

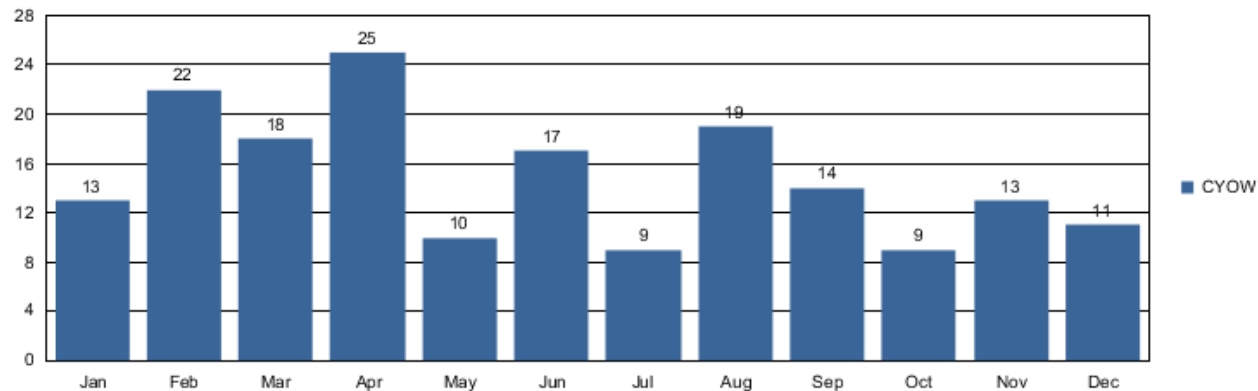
Number of Occurrences



Aerodrome Detail Report - TC 2016

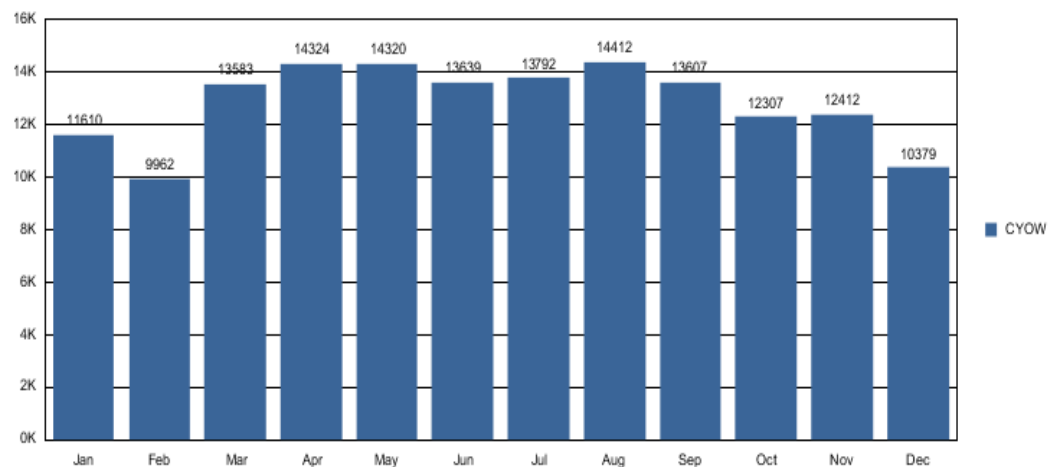
2016 CYOW - Macdonald-Cartier International Airport

Number of Incidents



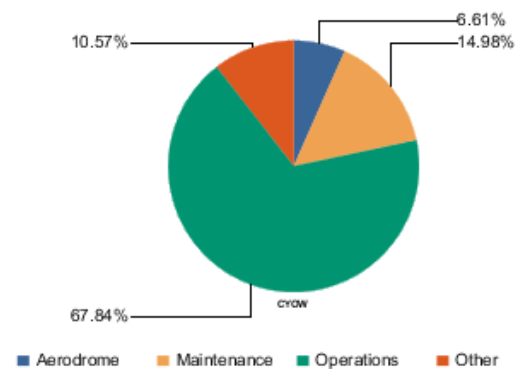
2016 CYOW - Macdonald-Cartier International Airport

Number of Movements



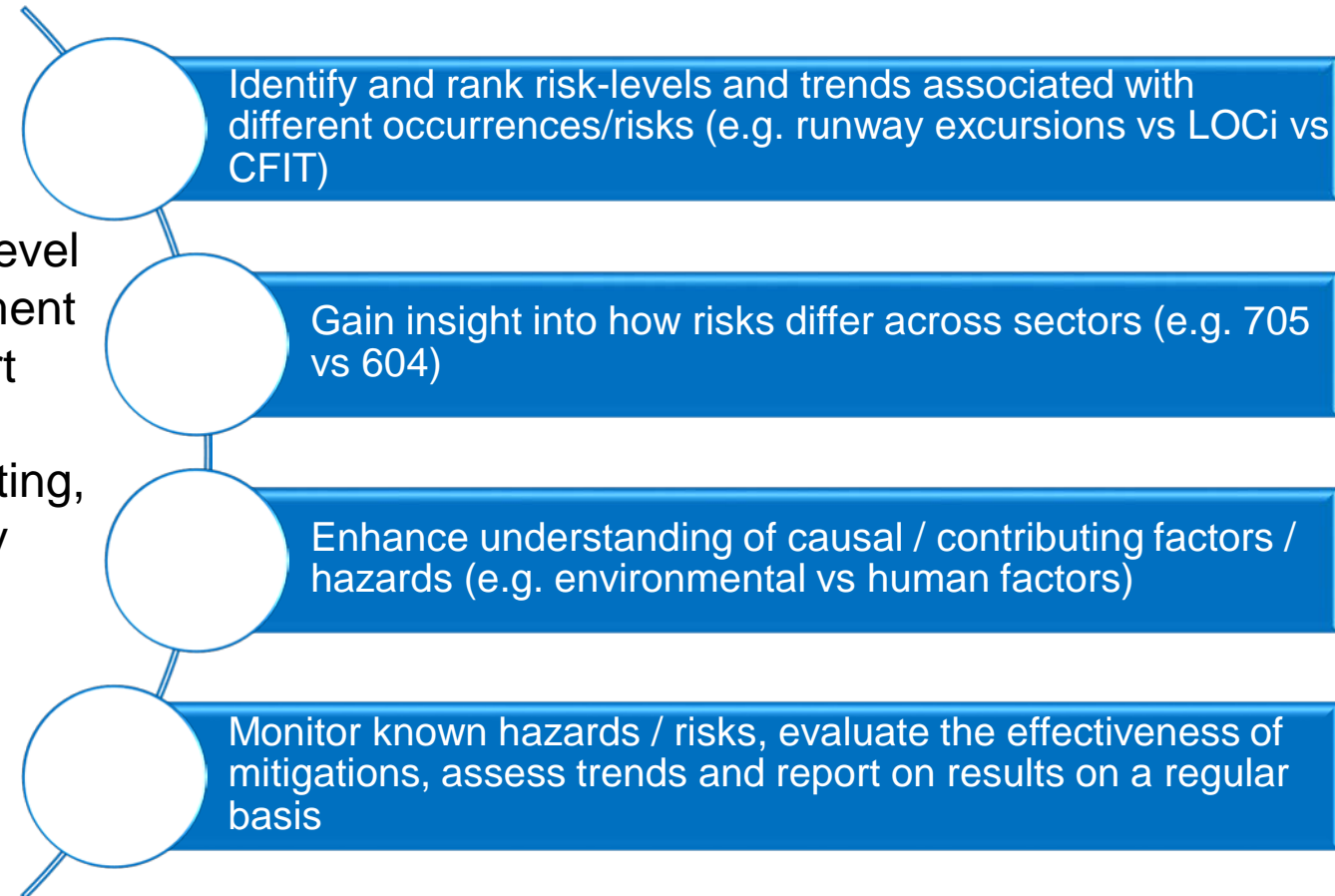
2016 CYOW - Macdonald-Cartier International Airport

Event Categories attributed to Incidents

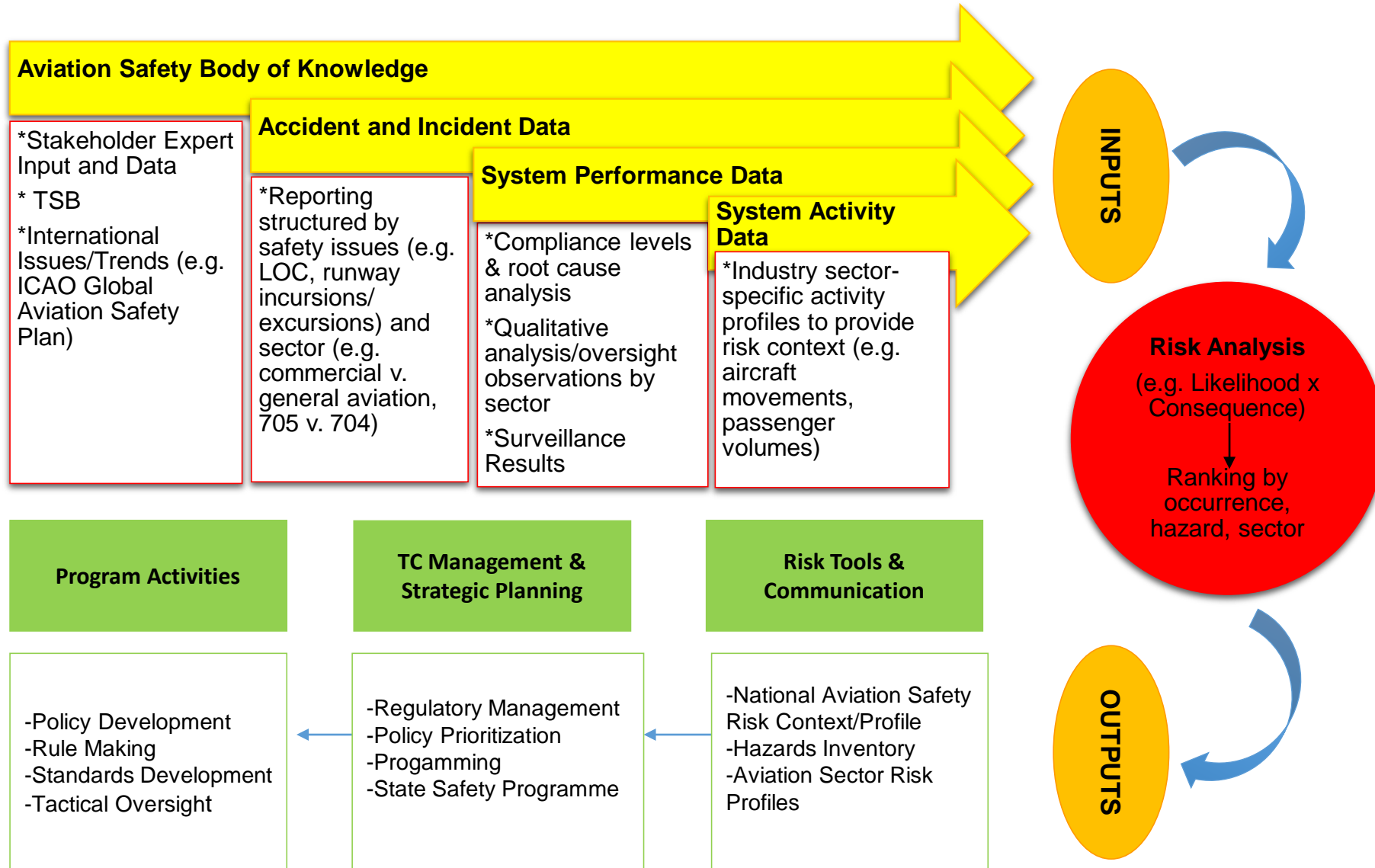


STRATEGIC SAFETY RISK ASSESSMENT (SSRA) PROGRAM OBJECTIVES

Establish a system-level safety risk management framework to support strategic business planning, priority setting, policy and regulatory development, and oversight planning.



SSRA OVERVIEW



FINAL THOUGHTS

- Transport Canada is pursuing initiatives to strengthen its ability to make aviation safety-related decisions, to better target resources to areas of greatest risk.
- These initiatives are maturing - they are oriented towards a more proactive risk management approach.
- Transport Canada looks forward to continued dialogue and engagement with industry as its strategic risk management approaches/tools evolve.