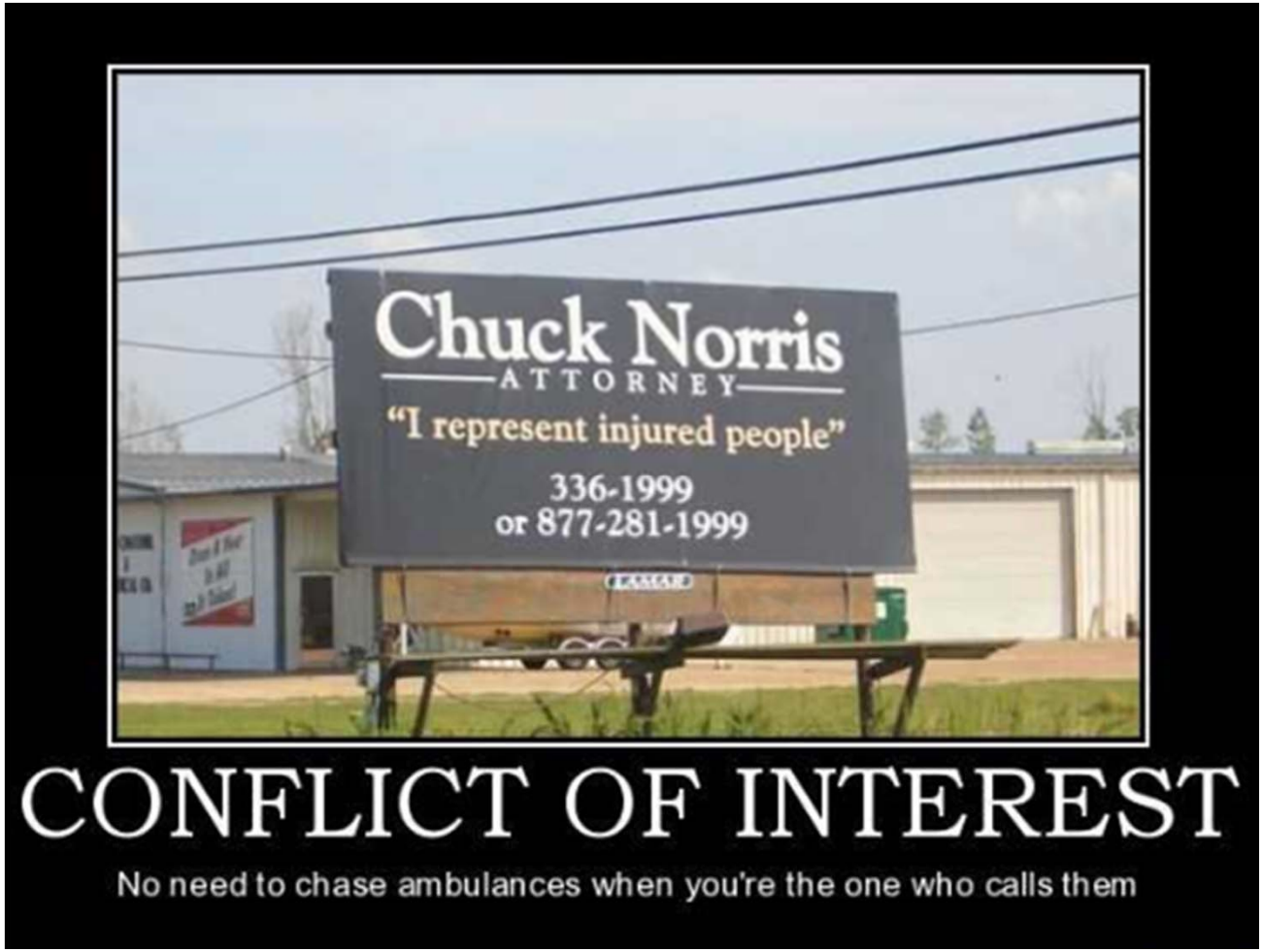
Fixed Wing vs Rotor Wing Transport for Trauma Patients

September 2017
Atlantic Trauma and Emergency Medicine Conference

onflict of Interest



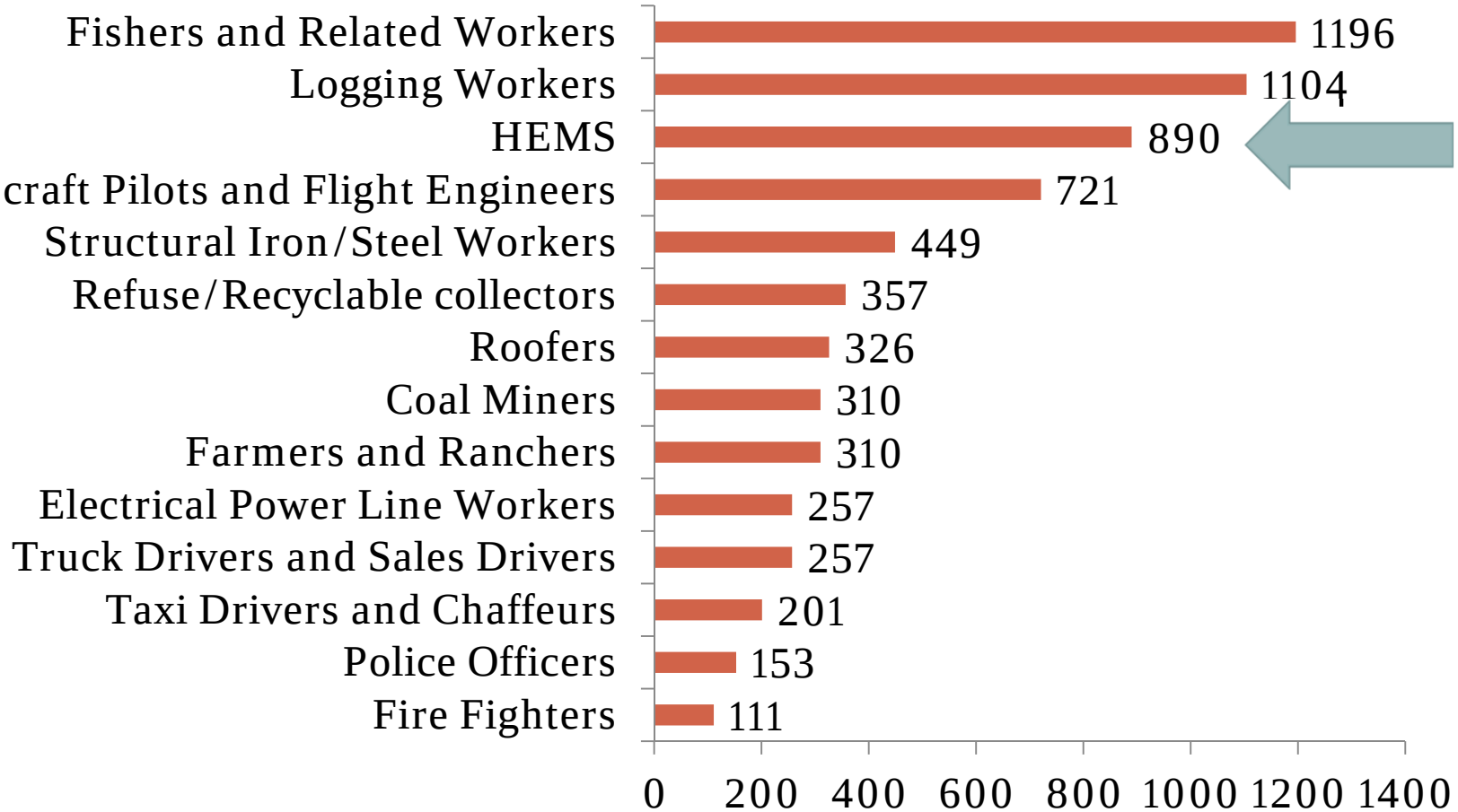

WHEN I BUY STUFF FOR ME

NB Fleet

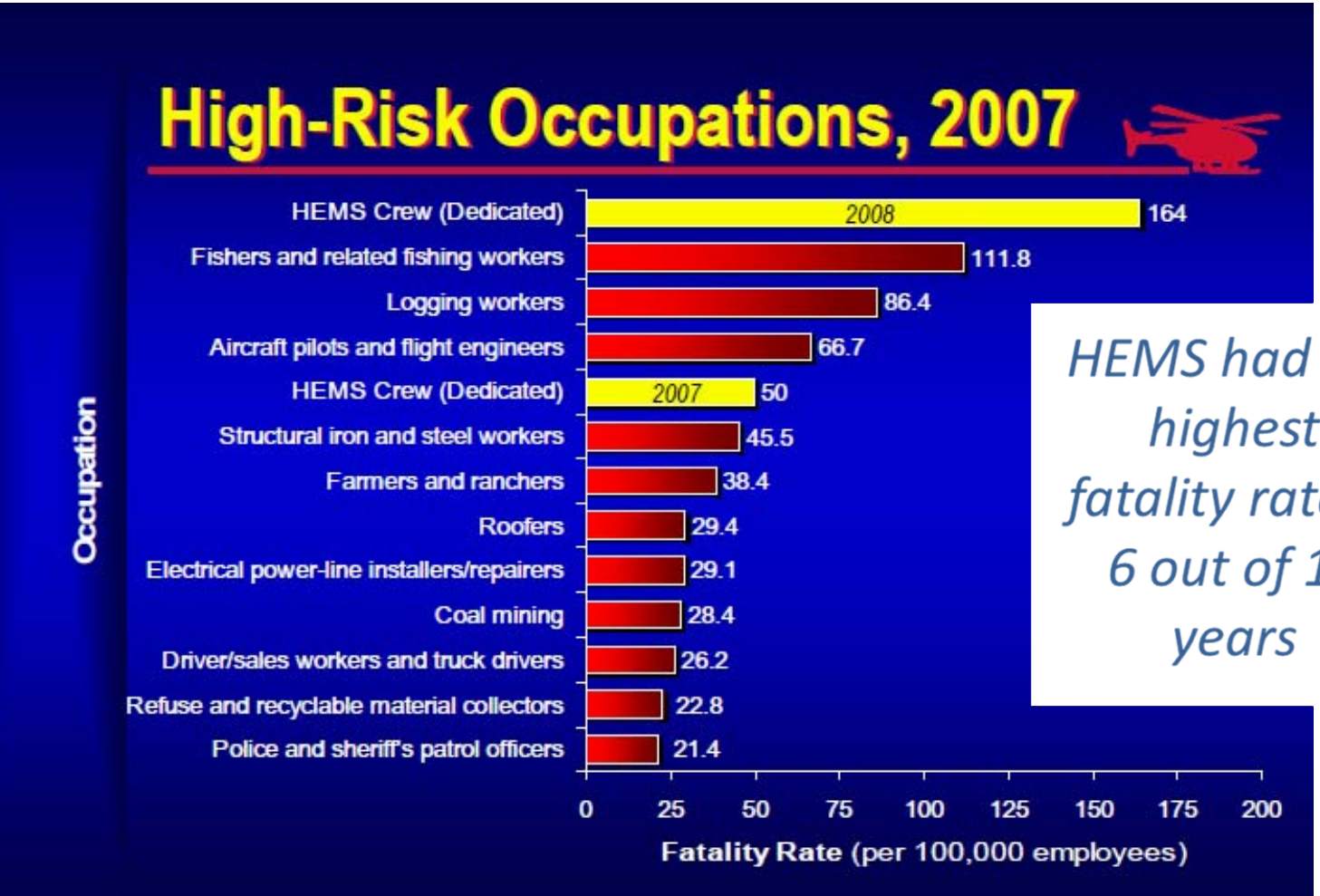
afety – Rotor Wing

afety – Fixed Wing

igh Risk Occupations – 17 Year Average
998-2014



igh Risk Occupations – 2008



HEMS had the highest fatality rate in 6 out of 15 years

r. Ira Blumen

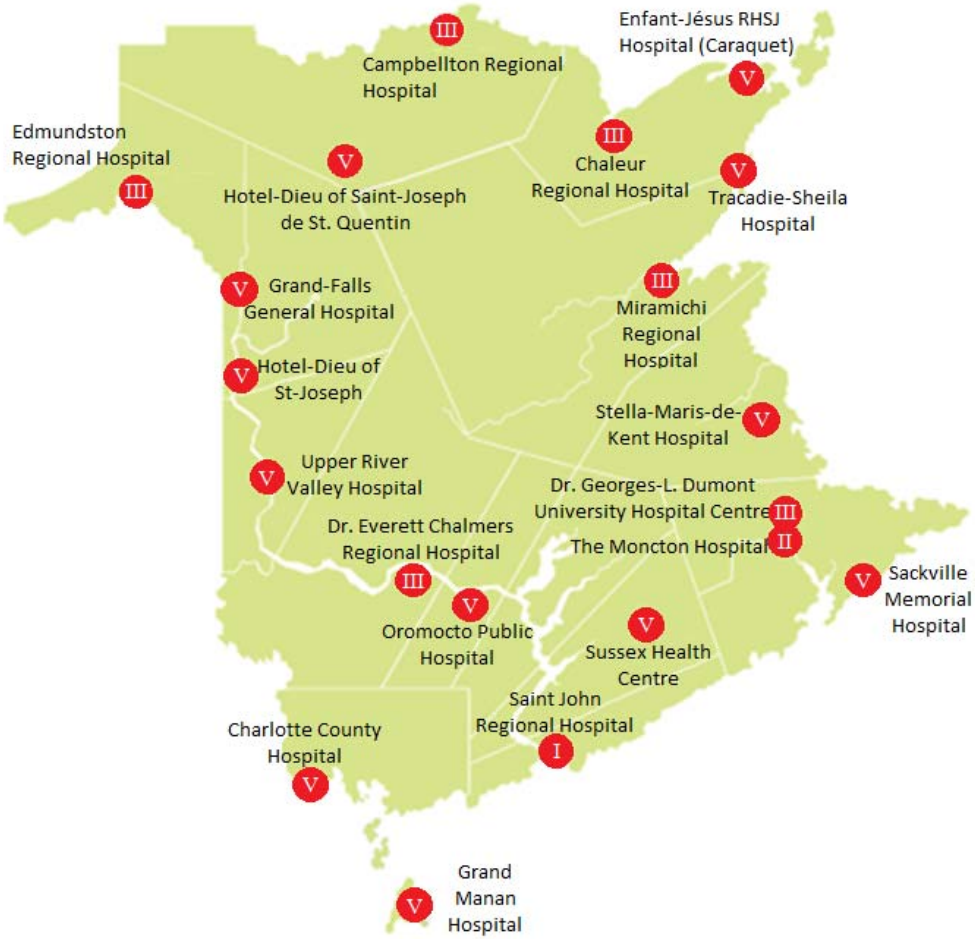
"We are averaging an accident every 31 days"

anadian Statistics

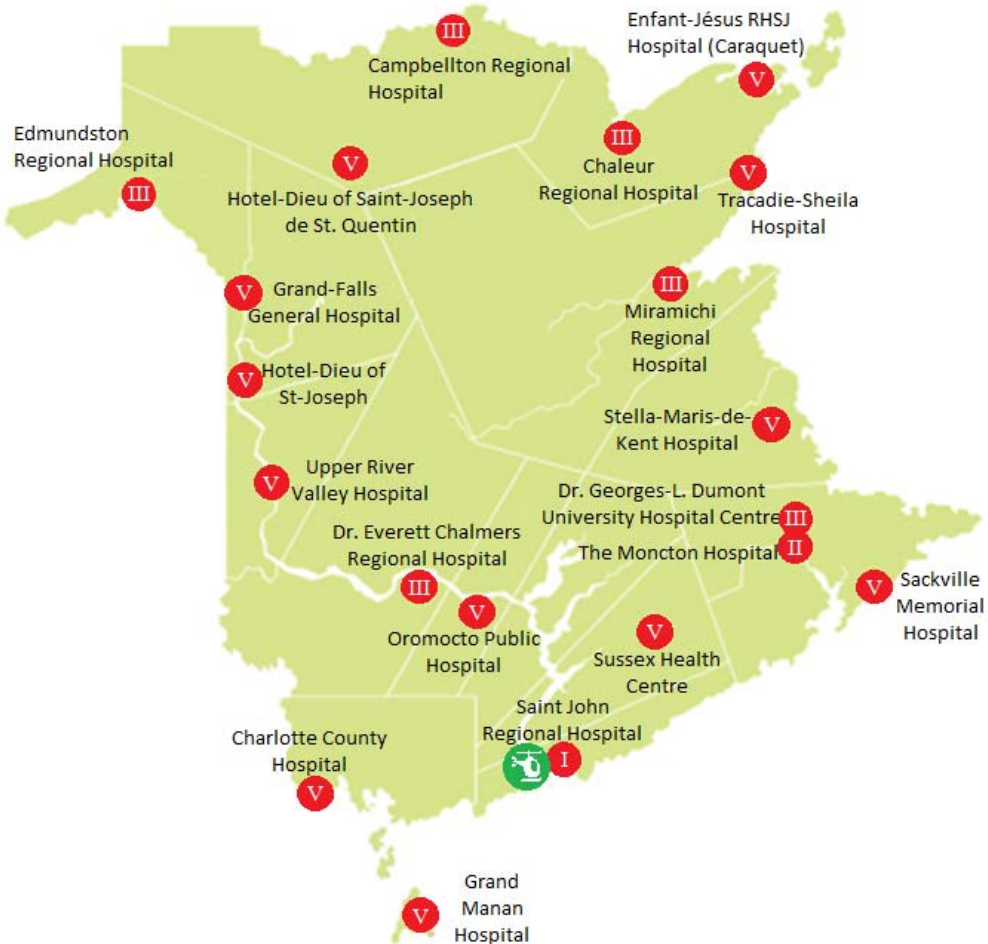
currences involving Canadian-registered aircraft 2004-2013

tal Accidents by craft and operator pe	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Air Taxi (703)	3	6	5	5	3	5	7	6	3	5
Helicopter	4	10	9	6	9	7	3	8	7	6

B Hospitals & Health Centres



B Hospitals, Health Centres & Helipads



B Hospitals, Health Centres & Airports

ight Hours VS Maintenance Hours

W

- 1.5 hours of flight =
  1 hour of maintenance

RW

- 1 hour of flight =
  3 hours of maintenance

So, after a patient transfer that required three flight hours, a fixed wing aircraft requires 2 hours of maintenance, while a rotor wing aircraft requires 9 hours of maintenance

ight Hours VS Maintenance Hours

, to provide 24/7 coverage for aircraft that are
ntinually tasked, you need:

2 fixed-wing aircraft

4 rotor-wing aircraft

ost

=

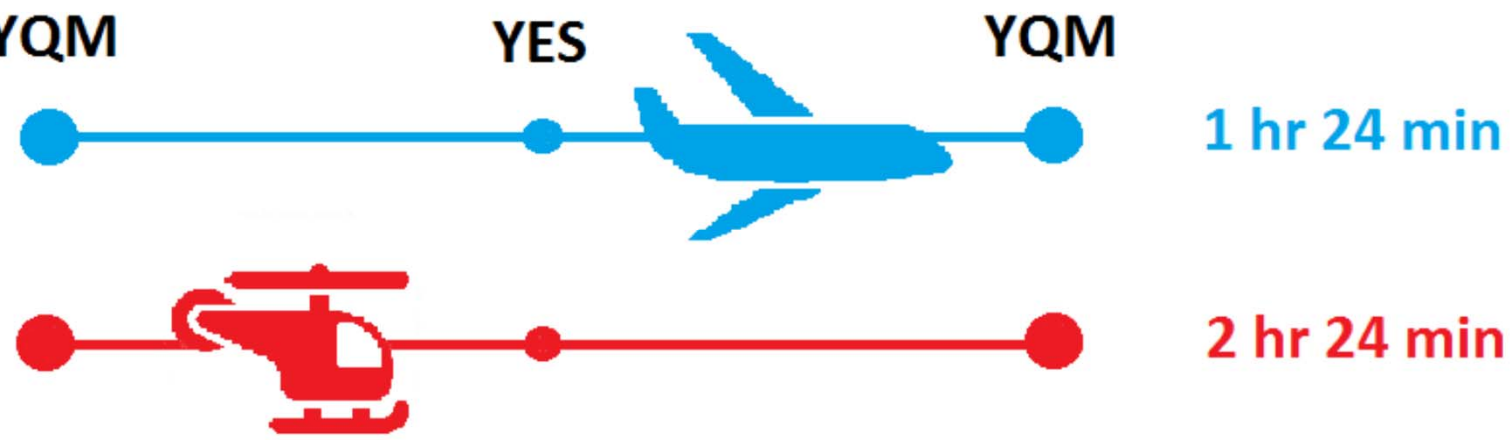
peed

/ Max Speed

531 km/hr

RW Max Speed

- 287 km/hr (max take-off weight at sea-level in standard atmospheric conditions



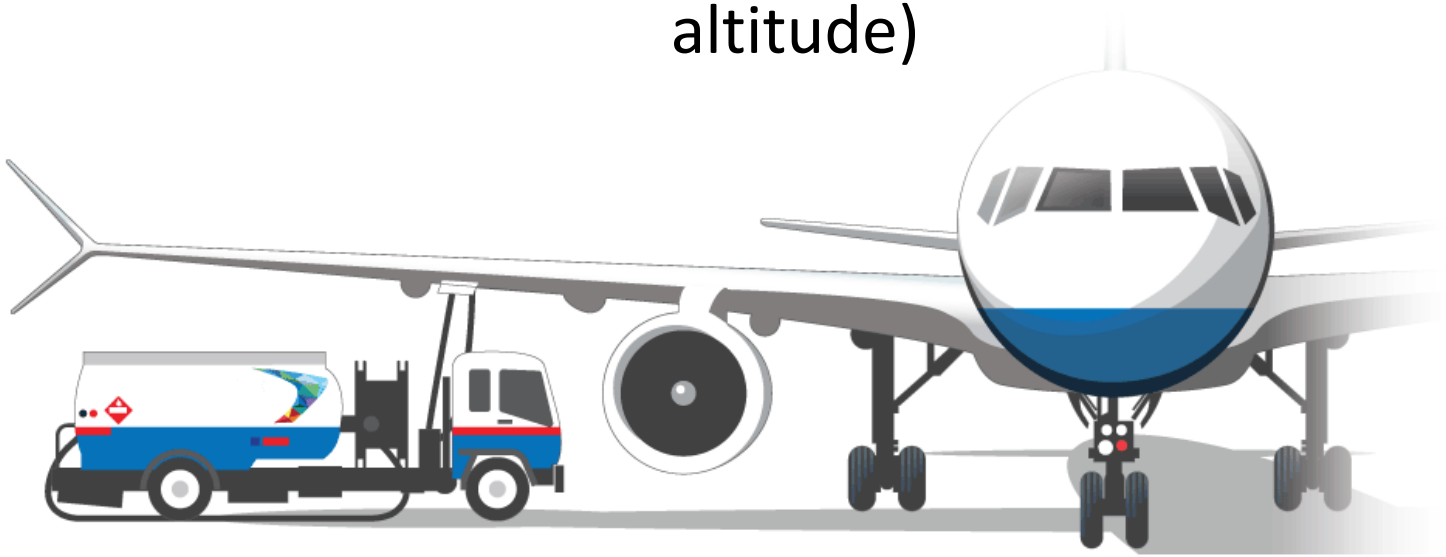
ange

FW

- 3338 kms

RW

- 761 kms (at long range cruise speed at 4000 ft altitude)



ng Air B200 Range

korsky 76 Helicopter Range

ressurization

W Max Altitude

- 35,000 ft max altitude
- Pressure differential 6.6 psi
- Sea-level cabin to 15,293 feet

RW Max Altitude

- 13,800 ft max altitude

ressurization

Ladies and gentlemen, this is your captain speaking. There is a minor malfunction in the pressurization system, but no problem, an oxygen mask will come out of the unit above your seat automatically

ffect on the Patient

W Max Altitude

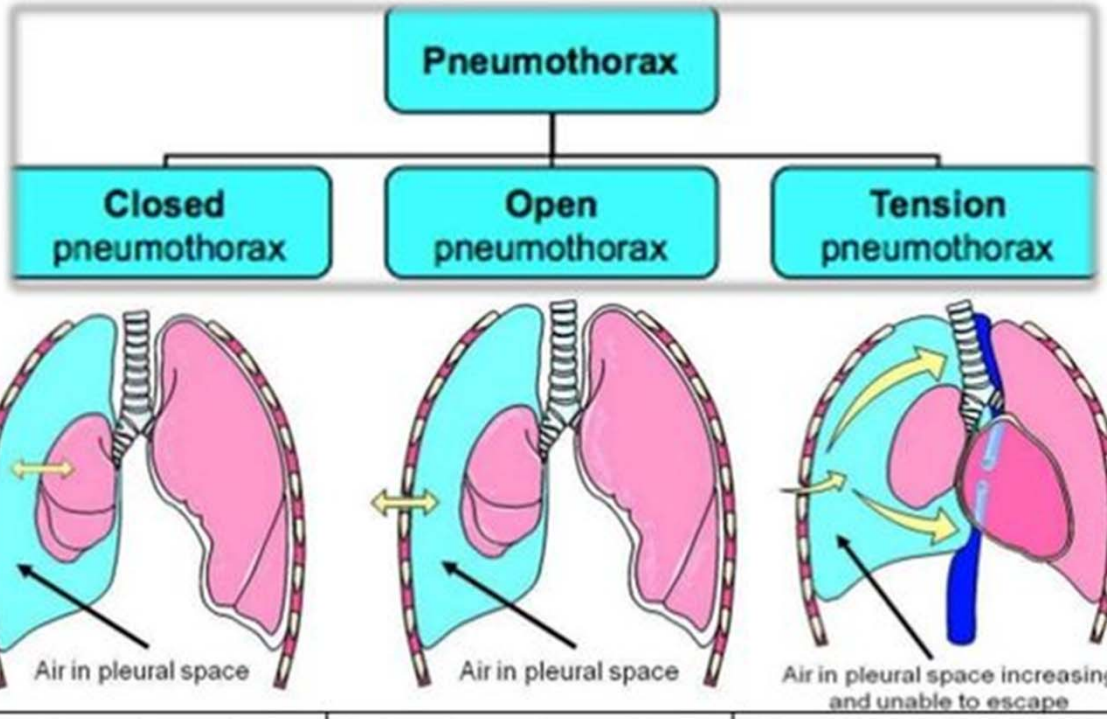
At 10,000 feet altitude, a 50 mL pneumothorax would still have a volume of 50 mLs in a pressurized cabin

At 10,000 feet altitude, a 250 mL pneumothorax would still have a volume of 250 mLs in a pressurized cabin

RW Max Altitude

- At 10,000 feet a 50 mL pneumothorax will have expanded to 73 mLs
- At 10,000 feet a 250 mL pneumothorax will have expanded to 363 mLs

ffect on the Patient

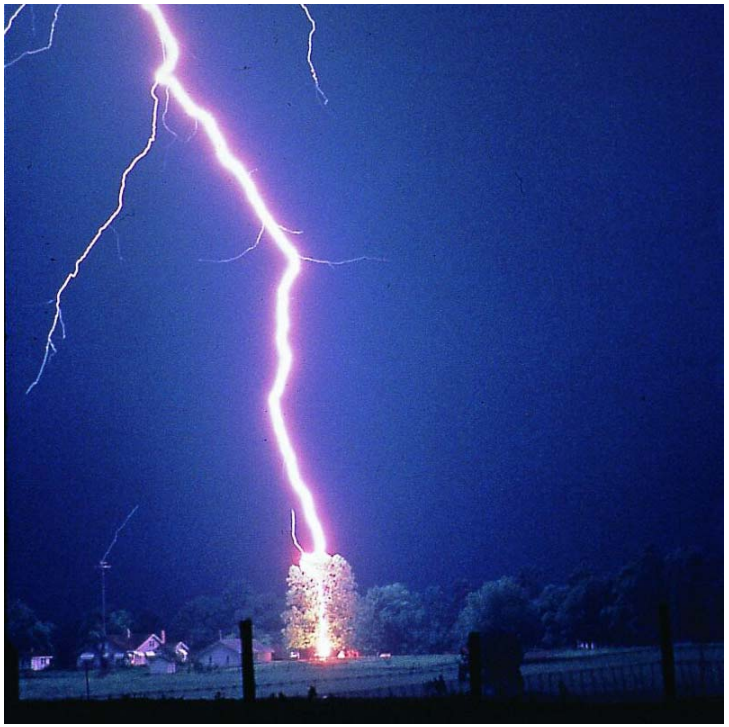


The pleural cavity pressure is < the atmospheric pressure	The pleural cavity pressure is = the atmospheric pressure	The pleural cavity pressure is > the atmospheric pressure

Weather

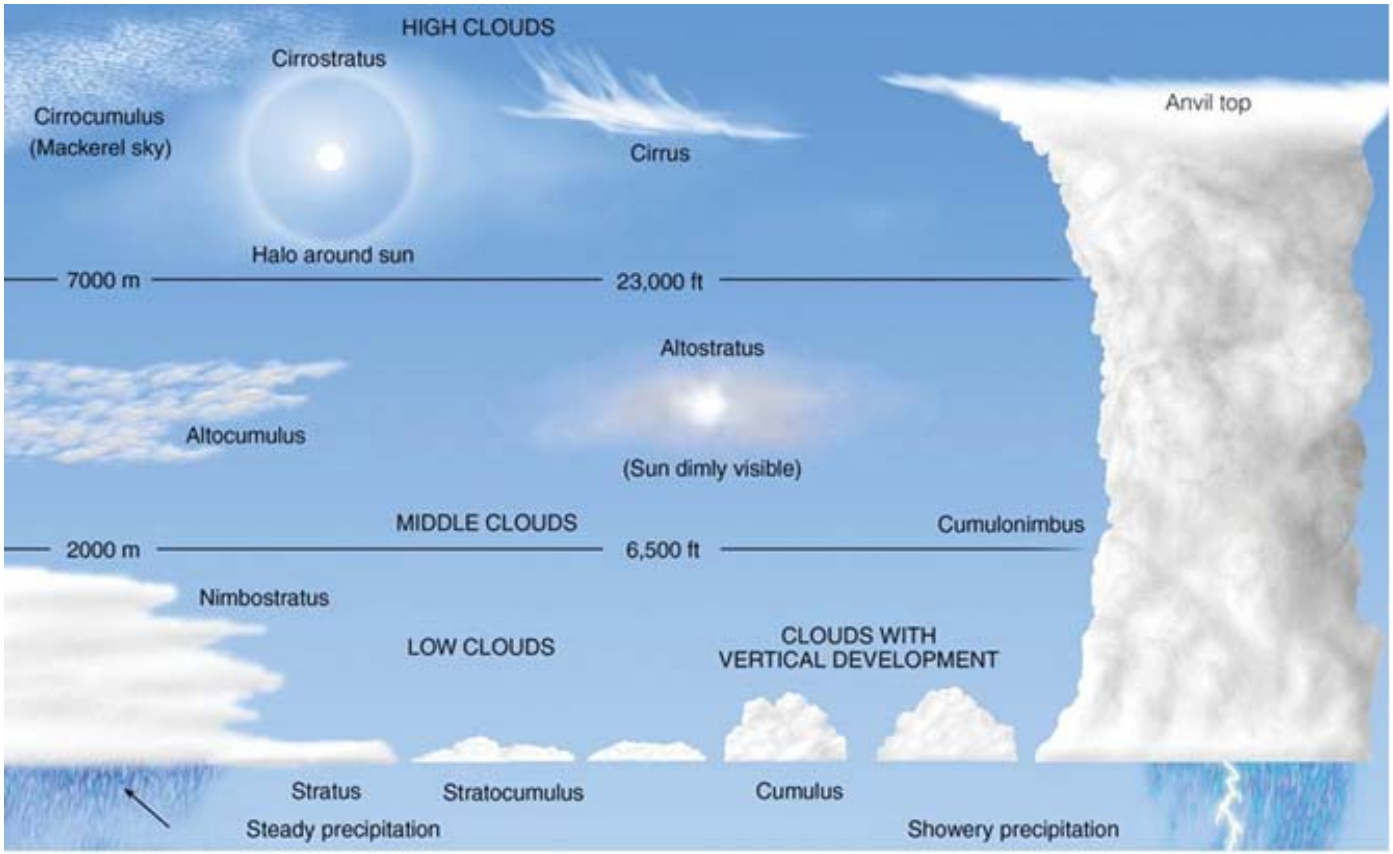
NavCanada website:

"New Brunswick and the Gaspe Peninsula have thunderstorm activity occurring, on average, between 10 to 20 days a year while Nova Scotia and Prince Edward Island receive only about half this number, or less"



W – Able to fly in bad weather

FW – 35000 ft max **RW – 13, 800 ft max**



perating Costs (including fuel)

W

$2.60 USD per nm

($3.20 CAD per nm)

RW

- $7.37 USD per nm

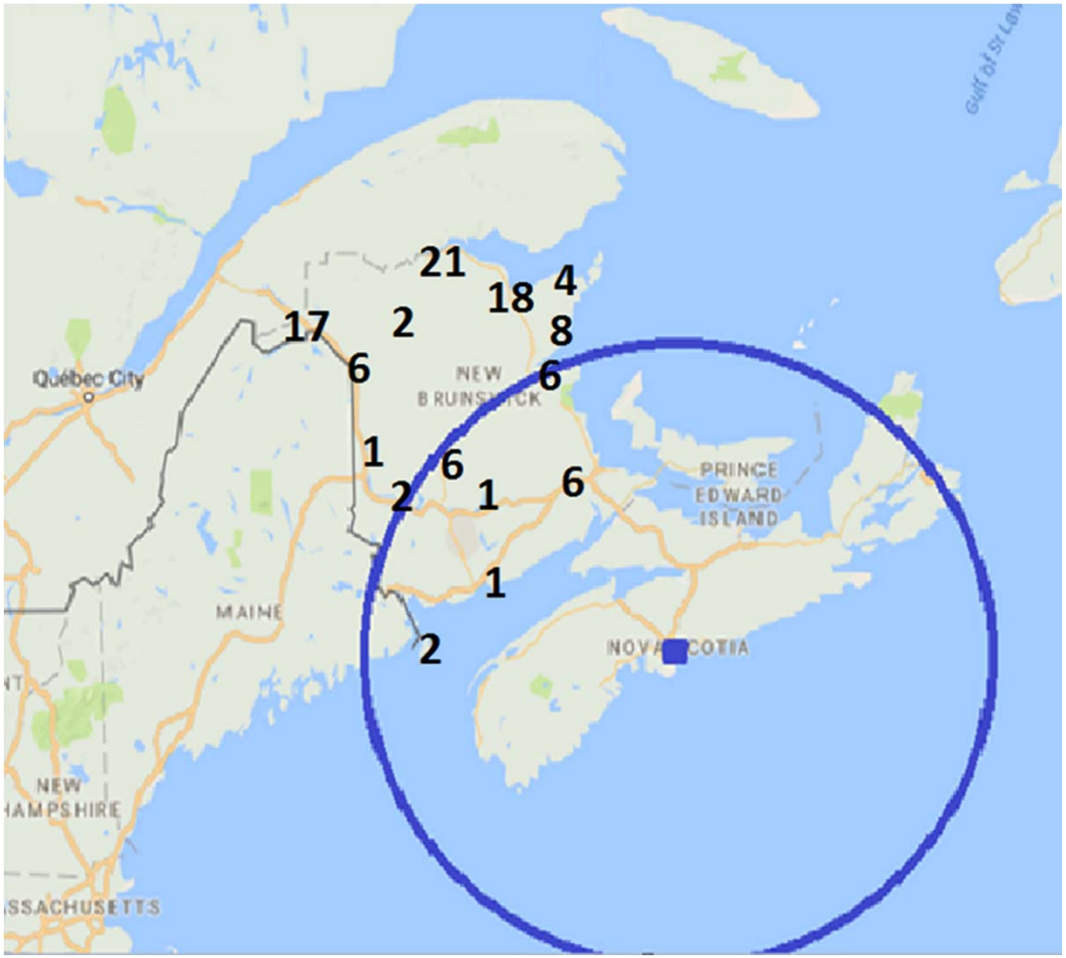
  ($9.06 CAD per nm)

cene Landings

cene Landings

- Fairly rare
- Excluded after dark (go to landing zones)
- Benefit of scene landing is for sites that are within limited range of a Level 1 facility, otherwise the benefit is lost due to slower flight speed and the potential need to refuel
- Restricted in bad weather
- After 1100 there is a 1 hour response time

rauma Patients Flown by ANB Air Ambulance
015-2017



rauma Patients Flown by ANB Air Ambulance
015-2017

- 101 patients - 83 Adult, 18 Pediatric
- 77 were outside the range of the only available helicopter based in Halifax
- Approximately 50% of these occurred after dark

ummary

xed Wing	Rotor Wing
Easier to fly	• Hard to fly
Less mechanically complex	• Mechanically complex
In full engine failure has ability to glide	• Glides like a rock, but can auto-rotate
More reliable	• Less reliable
Quieter (50-70 dba)	• Higher noise levels (89-96 dba)
Less expensive	• More expensive
Greater range	• Shorter range

ummary (cont.)

xed Wing

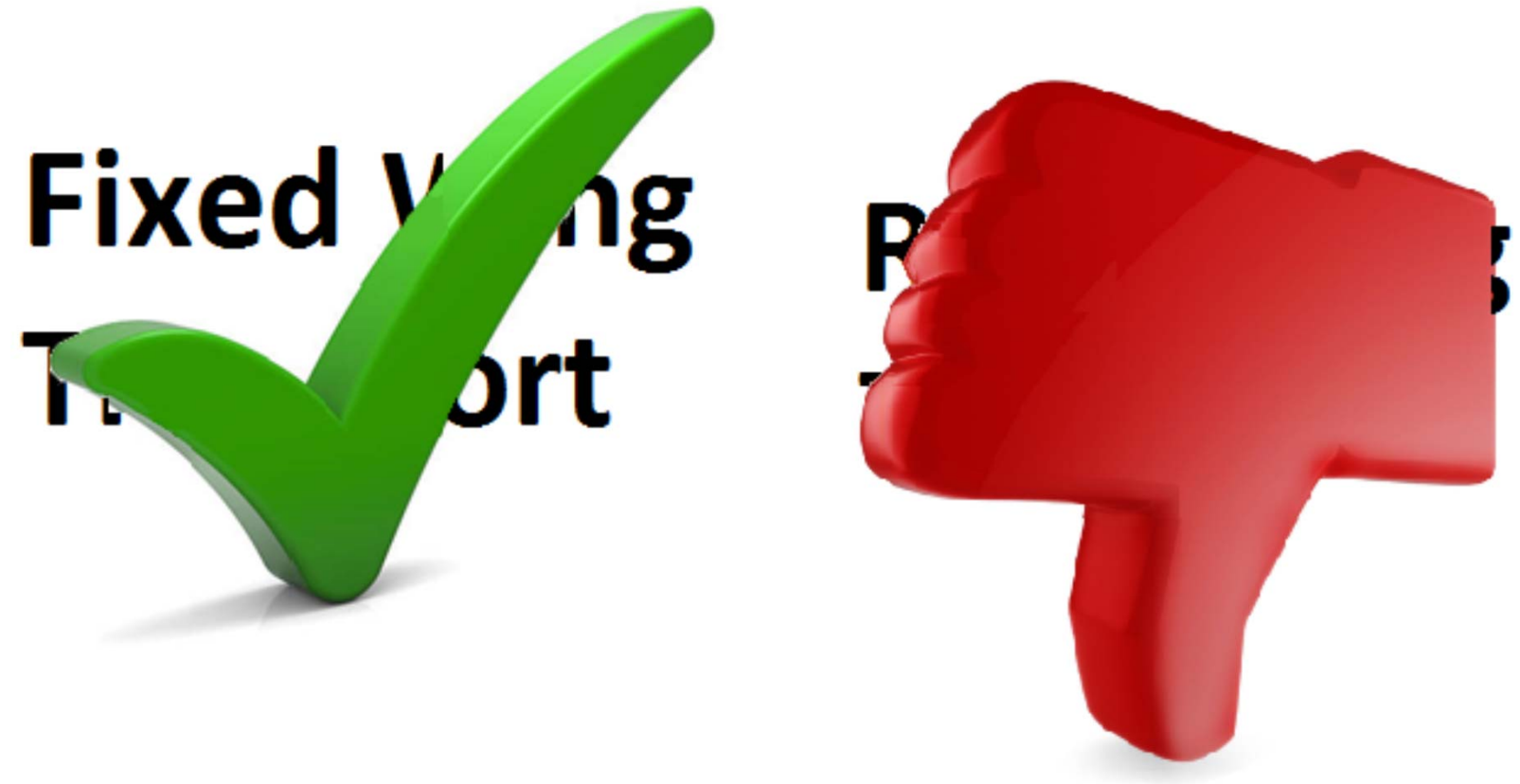
- Faster – almost twice the speed of rotor
- Altitude limit – 35000 ft
- Can fly above or around bad weather
- Pressurized aircraft
- Reliable at night
- Many airports available for landing sites

Rotor Wing

- Almost half the speed of fixed wing
- Altitude limit – 13800 ft
- Unable to fly above or around bad weather
- Non-pressurized aircraft
- Not typically utilized at night
- One approved Helipad next to Saint John Regional Hospital

nal Thoughts

Conclusion



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uestions?