Oxygen-reduced atmospheres and people

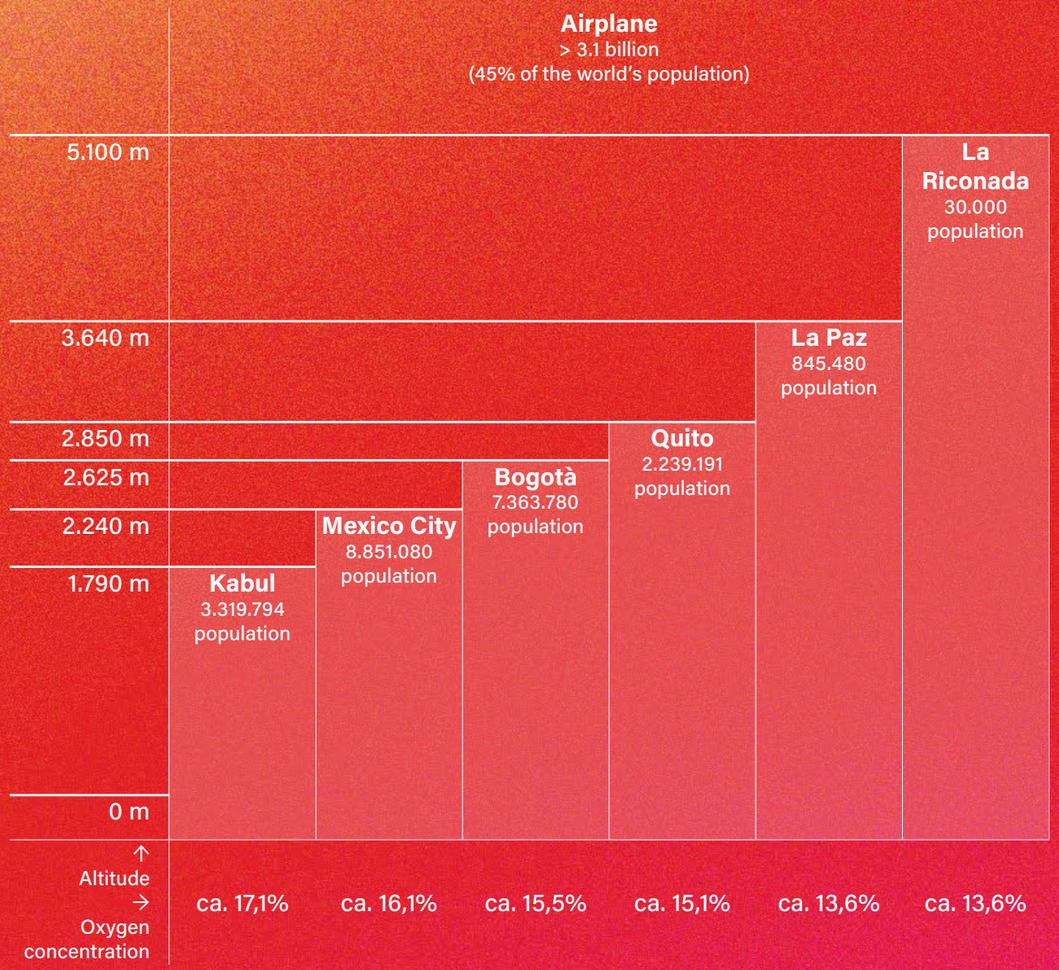


Diagram of perceived oxygen concentration in various world capitals located at altitude, with corresponding numbers of inhabitants (©Isolcell).

Air is composed mainly of nitrogen and oxygen: approximately 78.08 Vol.% nitrogen and 20.95 Vol.% oxygen, with small amounts of argon and CO_2. **This balance is essentially the same worldwide, from sea level to high altitude.**

Within defined limits, reduced oxygen levels can be tolerated by healthy people. The effects are comparable to those experienced at higher altitudes.

Altitude	**Oxygen** under isobaric conditions	**Atmospheric pressure**		**Oxygen pressure**		**Time of useful consciousness**
metres	**%**	**mmHg**	**hPa**	**mmHg**	**hPa**	
12900	**3.4**	123.5	164.7	25.8	34.4	15–30 sec.
10500	**5.0**	183.0	244.0	38.2	50.9	Approx. 1 min.
7000	**8.5**	307.8	410.4	64.3	87.7	3–5 min.
6500	**9.1**	330.0	440.0	69.0	92.0	> 30 min.
6000	**9.7**	353.6	471.4	73.9	98.5	
5500	**10.4**	378.6	504.8	79.1	105.5	
5000	**11.1**	404.8	539.7	84.6	112.8	**No limit**
4500	**11.9**	432.6	576.8	90.4	120.5	
4000	**12.7**	462.0	616.0	96.6	128.8	
3500	**13.6**	493.0	657.3	103.0	137.3	
3000	**14.5**	525.8	701.0	109.9	146.5	
2500	**15.4**	560.0	746.6	117.0	156.0	
2000	**16.4**	596.0	794.6	124.6	166.1	
1500	**17.4**	634.0	845.3	132.5	176.7	
1000	**18.5**	673.8	898.3	140.8	187.7	No limit
500	**19.7**	716.0	954.6	149.6	199.5	
0	**20.9**	760.0	1013.2	158.8	211.7	

Source: Consensus Document, UIAA Medical Commission, Vol: 15, Work in Hypoxic Conditions.
Intended for Physicians, Occupational Health and Safety Advisors, Interested Non-medical Persons.