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French-South African Institute of Technology (F'SATI) African Space Innovation Center (ASIC) F'SATI-ASIC

Data Centers in Space - Value from Space Applications and Positive Societal Impact

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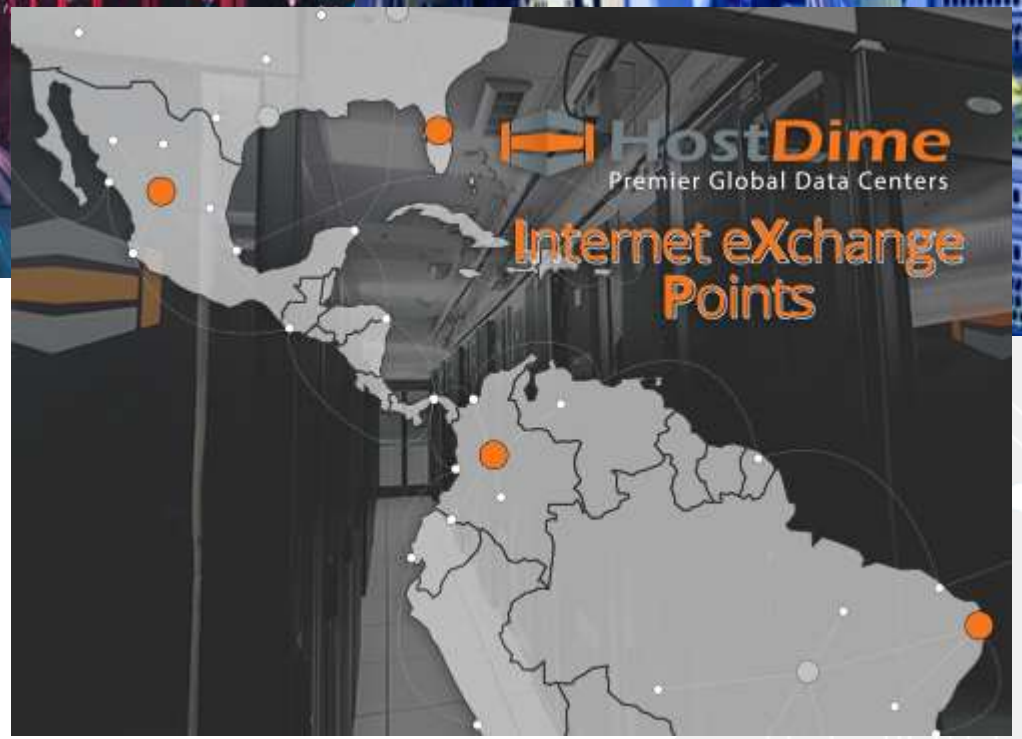
Content and the Internet – Data Centers



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Terrestrial Data Centers – The Cost and Effects

Group	Disease	Route leaving host	Route of infection
Disease which are often water-borne	Cholera	Faeces	Oral
	Typhoid	Faeces/urine	Oral
	Infectious hepatitis	Faeces	Oral
	Giardiasis	Faeces	Oral
	Amoebiasis	Faeces	Oral
	Dracunculiasis	Cutaneous	Oral
Diseases which are often associated with poor hygiene	Bacillary dysentery	Faeces	Oral
	Enteroviral diarrhea	Faeces	Oral
	Paratyphoid fever	Faeces	Oral
	Pinworm (Enterobius)	Anal	Oral
	Amoebiasis	Faeces	Oral
	Scabies	Cutaneous	Cutaneous
	Skin sepsis	Cutaneous	Cutaneous
	Lice and typhus	Bite	Bite
	Trachoma	Cutaneous	Cutaneous
	Conjunctivitis	Cutaneous	Cutaneous
Diseases which are often related to inadequate sanitation	Ascariasis	Faecal	Oral
	Trichuriasis	Faecal	Oral
	Hookworm (*Ancylostoma/Necator*)	Faecal	Oral/percutaneous
Diseases with part of life cycle of parasite in water	Schistosomiasis	Urine/faeces	Percutaneous
Diseases with vectors passing part of their life cycle in water	Dracunculiasis	Cutaneous	Oral

Adapted from Bradley, D J, London School of Hygiene and Tropical Medicine

Poor human, plant, and livestock health outcomes can result, especially when the effects of climate change, alongside increased water demand by data centers, are considered.

N. Forstinus, N. Ikechukwu, M. Emenike, and A. Christiana, "Water and Waterborne Diseases: A Review," *International Journal of TROPICAL DISEASE & Health*, vol. 12, no. 4, pp. 1–14, Jan. 2016, doi: https://doi.org/10.9734/ijtdh/2016/21895.

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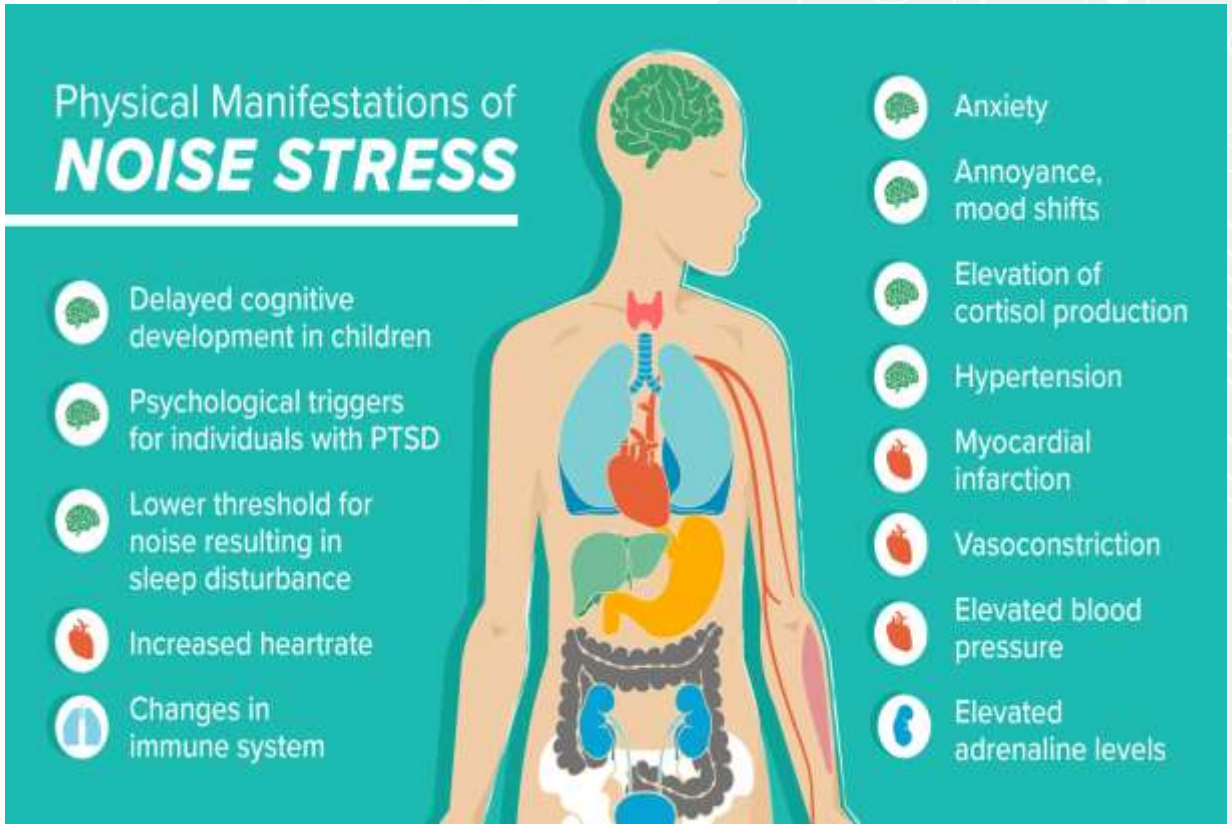
Terrestrial Data Centers – The Cost and Effects

Manassas residents protest over noise pollution from Amazon data center | FOX 5 DC

Watch ›

Noise comparisons: Neighborhoods with and without data centers

1,280 × 72



S. Booth, "Loud Noises: Health Dangers," Healthline, Jun. 07, 2018. https://www.healthline.com/health-news/loud-noises-bad-for-your-health

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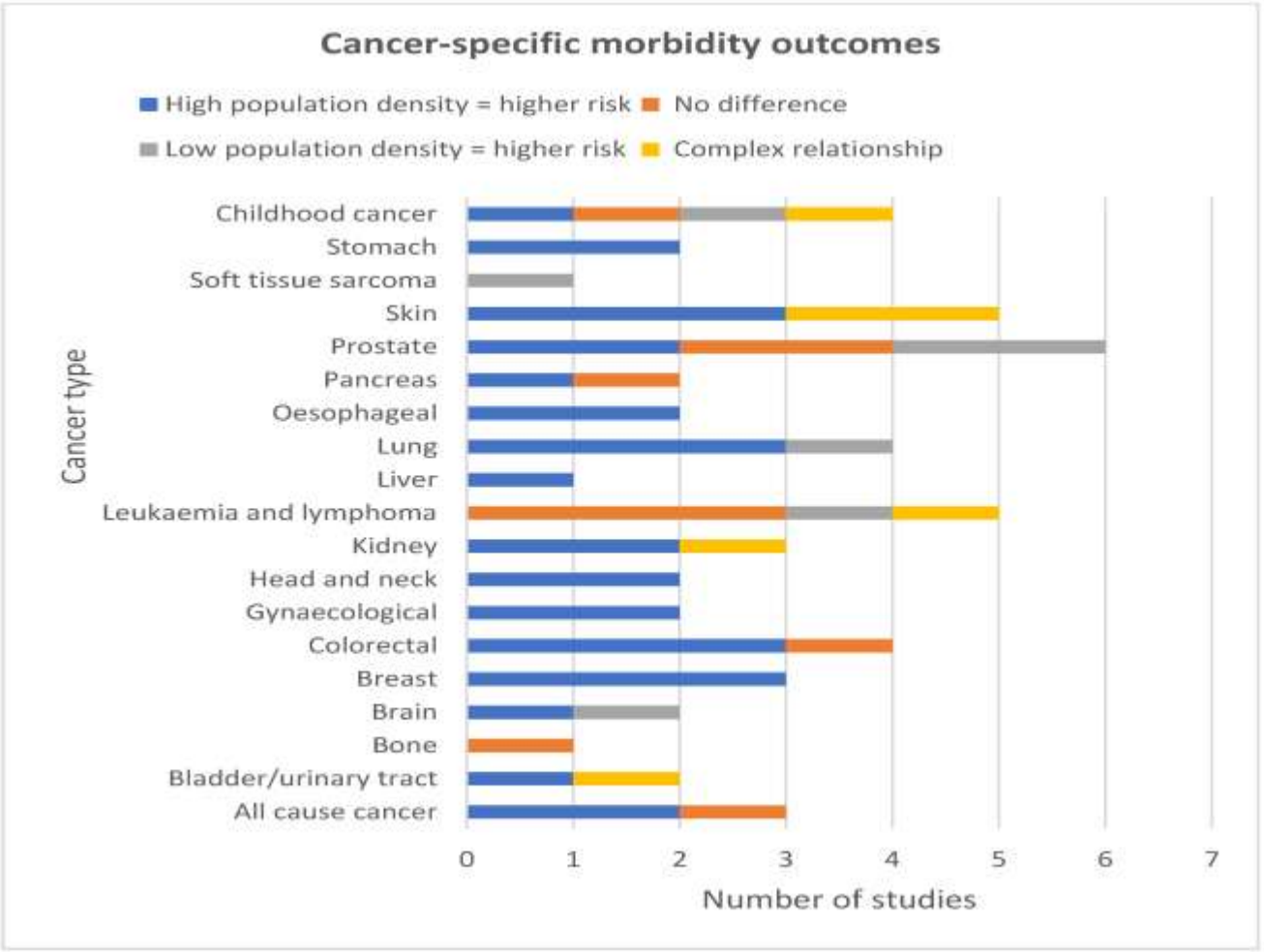
Terrestrial Data Centers – The Cost and Effects

M. Vincent, "Land and Expand: New Data Center Developments by Meta, T5, Prime, Ardent, Tract, Microsoft," *Datacenterfrontier.com*, 2024. https://www.datacenterfrontier.com/site-selection/article/55038457/land-and-expand-new-data-center-developments-by-meta-t5-prime-ardent-tract (accessed Aug. 14, 2025).

admin, "Pros and Cons of High-Density Housing," *Advisory Center for Affordable Settlements & Housing*, Nov. 23, 2024. https://www.acash.org.pk/pros-and-cons-of-high-density-housing/



E. R. Carnegie, G. Inglis, A. Taylor, A. Bak-Klimek, and O. Okoye, "Is Population Density Associated with Non-Communicable Disease in Western Developed Countries? A Systematic Review," *International Journal of Environmental Research and Public Health*, vol. 19, no. 5, p. 2638, Feb. 2022, doi: https://doi.org/10.3390/ijerph19052638.

The data revolution, if not well managed, will cost society in terms of reduced access to quality drinking water, reduced land for residential real estate (escalating mortgages, rents), and poor health. Negative health outcomes emerge as a result.

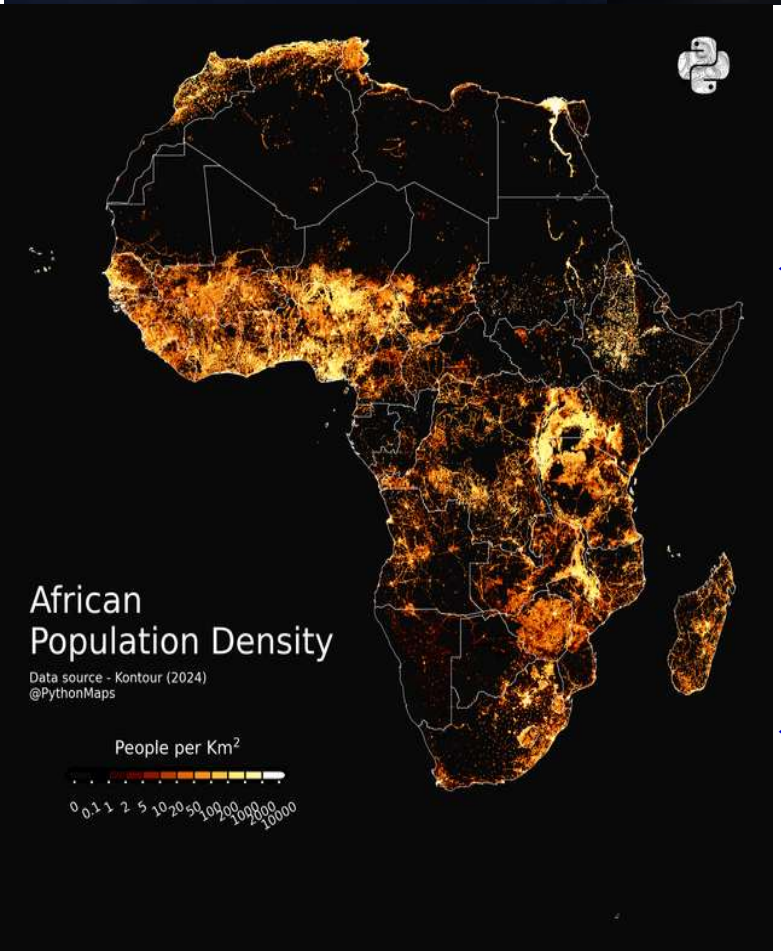
✓ **The presenter does not advocate that terrestrial data centers are non-beneficial in their entirety. Infact, they are recognized as important economic stimulants and drivers.**

Space and Society – Value Proposition.

Space solutions enable the realization of a solution addressing these challenges.

Why?

- ❑ **Low / Reduced / Zero Reliance on Earth's water resources.**
- ❑ **Low /Reduced/Zero Reliance on Earth's land resources.**
- ❑ **Low/Reduced/Zero contribution to noise pollution or significant noise exposure.**
- ❑ **Ensuring continued advances in data center digital technology.**



- ✓ **Reduced demand and pressure on Africa's freshwater resources when space-based data centers are used alongside terrestrial data centers.**
- ✓ **Reduced demand and pressure on Africa's land resources – when space-based data centers are used alongside terrestrial data centers.**
- ✓ **Improved health outcomes – when space-based data centers are used alongside terrestrial data centers due to a reduction in residential housing contention and related ill-health outcomes.**
- ✓ **Improved agricultural outcomes – when space-based data centers are used alongside terrestrial data centers, with more water being available for plants and livestock.**

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Conclusion

- ✓ Emergence of digital technology and the need to develop artificial intelligence necessitate increased investment in data centers.
- ✓ Putting data centers in space can help alleviate health-related and socioeconomic challenges.
- ✓ This is beneficial for Africa, especially the high population density regions.

Acknowledgement

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ENKOSI / DANKIE / SHUKRAN / THANK YOU

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