Simulations suggest only 22 people are required to start a colony on Mars

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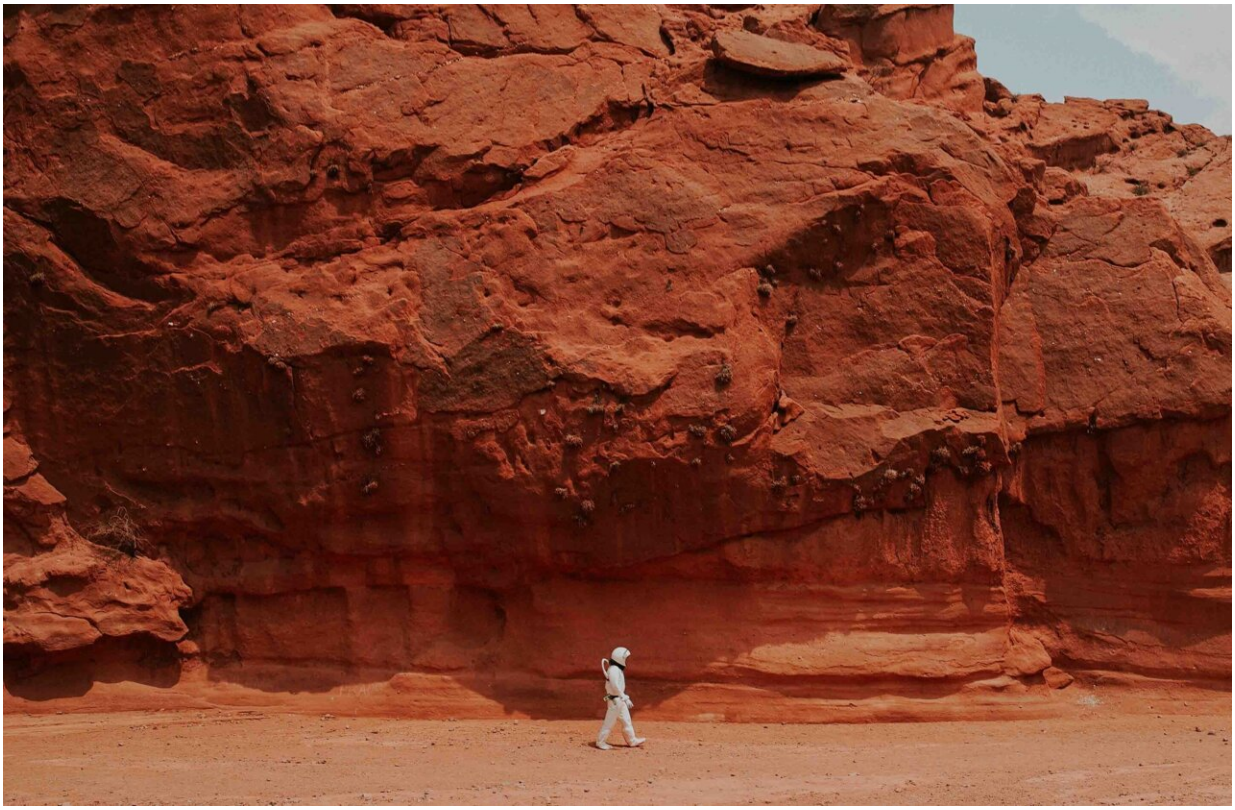

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A team of computational social scientists at George Mason University has found via simulations that 22 people is the minimum number needed to start a human colony on Mars. The group has posted a paper describing their simulation on the *arXiv* preprint server.

As humans around the globe ponder the possibility of one day sending people to Mars, and then at some later date, establishing a colony, scientists are exploring ways to overcome the hurdles standing in the way of achieving such goals. One factor that needs to be addressed, according to the team, is determining how many people could sustain a Mars colony, and what types of people are required.

To find possible answers, the team created a model simulating a Mars colony, focused specifically on how many people are required to create a viable colony as well as the characteristics that would most likely contribute to the success of such a colony. To that end, they used data from past endeavors, such as questionnaires filled out by groups aboard the International Space Station or those living in close quarters in the Arctic for months at a time. They also attempted to factor in known character traits such as resilience to stress, social skills and degree of neuroticism.

The research team ran five simulations, each of which modeled 28 Earth years of colony life, while changing factors between runs, such as the number of people in a Mars colony. They found that 22 was the bare minimum number of people. They also found that people with agreeable personalities were, unsurprisingly, more likely not only to survive such a mission, but to thrive, allowing the colony to persist. On the other hand, they found that people with neurotic personalities were more likely to fail their mission and to die earlier than others, putting the success of the mission as a whole at risk.

More information: Edgar Arguello et al, An Exploration of Mars Colonization with Agent-Based Modeling, *arXiv* (2023). DOI: 10.48550/arxiv.2308.05916