IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Utilization & Exploitation of Human Spaceflight Systems (3)

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UPDATED BENEFITS FOR HUMANITY FROM THE INTERNATIONAL SPACE STATION (FROM THE ISS PROGRAM SCIENCE FORUM)

Abstract

In 2018, the International Space Station (ISS) partnership completed a revision for the Third Edition of the International Space Station Benefits for Humanity, a compilation of case studies of benefits being realized from ISS activities in the areas of human health, Earth observations and disaster response, innovative technology, global education, and economic development of space. The revision included new assessments of economic value and scientific value with more detail than the Second Edition. The Third Edition contains updated statistics on the impacts of the benefits as well as new benefits that have developed since the previous publication. This presentation will summarize the updates on behalf of the ISS Program Science Forum, made up of senior science representatives across the ISS international partnership.

The economic valuation of ISS research benefits case studies was evaluated by an independent consultant and the results are presented in the Third Edition. The process involved a preliminary assessment of economic, social, and innovation factors. A more detailed assessment followed, which included factors such as addressable market, market penetration, revenue generation, ability to leverage across other applications or customer groups, quality of life improvements, health benefits, environmental benefits, cultural and community cohesion, inspiration, new knowledge, novel approaches, creation of a unique market niche, and research leadership.

Because of the unique microgravity environment of the ISS laboratory, the multidisciplinary and international nature of the research, and the significance of the investment in its development, analyzing ISS scientific impacts is an exceptional challenge. As a result, the scientific valuation of ISS research was developed by the ISS partnership using a combination of citation analyses, bibliometrics, and narratives of important ISS utilization results. Over 1,400 ISS results publications representing over 3,000 researchers on Earth were used in this evaluation to enable the communication of impacts of ISS research on various science and technology fields across many countries.

The publication also updates and expands the previously described benefits of research results in the areas of human health, environmental change and disaster response, technology development, education activities, and space commerce. Distinct benefits return to Earth from the only orbiting multidisciplinary laboratory of its kind. The ISS is a stepping stone for future space exploration while also providing findings that develop low Earth orbit as a place for sustained human activity and improve life on our planet.