

# PUBLIC OPINION IMPLICATIONS FOR TRAINING AND COMMERCIAL SPACEFLIGHT INDUSTRY DEVELOPMENT

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# REMINDER

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Oral Presentation Abstracts

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# Introduction

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- Viability of the commercial human spaceflight industry is dependent upon participation of laypersons
- Unclear whether laypersons fully understand the risks involved in suborbital spaceflight
- The public must be willing to invest in spaceflight
- Investment is dependent on a perception that flights are safe and enjoyable
- Public perception may alter industry buy-in, particularly following a mishap or publicized negative experience

# Methods

- 148 subjects (70% men, 30% women)
- Varied training lengths and exposures
  - 2-7 centrifuge runs over 0.5 to 2 days
  - Culminating in 2 simulated suborbital spaceflights
- Subjects completed a retrospective questionnaire regarding perceptions of training and spaceflight-related risks



# Results Overview

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- Two-thirds of respondents felt their training was sufficient for suborbital spaceflight preparations
- Most important features:
  - clear explanations
  - trainer first-hand experience and subject knowledge
  - demonstration and practice sessions
- Over 80% indicated that training should be required before commercial spaceflight
- Training programs should be certified by an overseeing entity

# Training Sufficiency

- Two-thirds of respondents felt their training was sufficient for suborbital spaceflight preparations
  - No significant difference in responses related to cohort, length of training, age, or medical history
  - Subjects identified as “concerning for anxiety” tended to want more training related to motion sickness prevention and high-G familiarization

# Training of Other SFPs

- **Only 40%** of respondents indicated that they would be willing to fly with untrained SFPs
- Additional 15% indicated that they would request reassignment, but would fly as assigned to avoid delaying their own flights
- 43% indicated that they would delay their own flight for reassignment to join a passenger group that had been trained
- 1% indicated that they would be so uncomfortable with untrained SFPs that they would request a refund rather than fly

# Why Train Everyone

- 98% indicated that they were concerned that the untrained SFP might panic and degrade the experience for everyone else
- 90% indicated they were concerned the untrained passengers wouldn't know what to do in the case of emergency
- 50% indicated untrained passengers would be dangerous
- 40% of subjects stated that passengers should be trained so they would have a better experience

# Perception of Pilots' Desires

- **Most subjects** indicated that pilots of multi-passenger vehicles should **refuse** to fly untrained SFPs
- One-fourth indicated that this was secondary to the risk that untrained SFPs might give other customers a bad experience
- Nearly 50% indicated that untrained passengers would be too great a risk to the pilots, other passengers, or the vehicle

# Training Requirements

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- 80% of respondents indicated that training should be required.
- 40% suggesting that the training program should be left to the company/provider to develop
- 40% thought that the Federal Aviation Administration (FAA) or a similar government entity should oversee the development of appropriate training programs

# Training Cost & Certification

- Over 50% thought that passengers should be responsible for the cost of training programs
- 30% thought that this cost should be covered by the industry providers
- Three-fourths of respondents indicated that the FAA, other government entity, or designated aerospace experts should provide external certification of training programs
- One-fourth believed that the industry provider should have the final determination of whether or not a training program is sufficient for the vehicle in question

# Emergency Scenario Training

- Two-thirds indicated that emergency scenario training should be provided prior to flight
- One-fourth suggested that such training should be minimized to avoid worrying participants
- 90% did not believe that emergency training should be the focus of the majority of training time



# Conclusions

- Two-thirds of respondents felt their centrifuge training was sufficient for suborbital spaceflight G profile
  - Surprisingly, this was independent of length of training, inclusion of didactics or relaxation exercise, or whether or not they experienced single-directional centrifuge training exposures
- Over 80% indicated that training should be required before commercial spaceflight and
- Training programs should be certified by an overseeing entity

# Considerations for Industry

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- Perceptions and expectations are powerful factors
- Whether or not expectations are met may have consequences on public opinion
- Meeting public expectation and educating the public regarding spaceflight risk is very important
- Efforts towards risk mitigation may prove to have a beneficial effect on the public acceptance and interest in the commercial spaceflight industry

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# Questions