



# Relevance of the futron/zogby survey conclusions to the current space tourism industry

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## ABSTRACT

Thanks to recent technological achievements such as Burt Rutan's SpaceShipOne in 2004, Bigelow's Genesis I in July 2006 and Genesis II in July 2007 and the success of space adventures' flights to the ISS, space tourism is leaving the realm of science-fiction. It is now becoming increasingly familiar to the general public and even recognized by institutional bodies. The Futron/Zogby survey, revised in 2006 and completed with the 2006. Adventurers survey constitutes a good basis to understanding the characteristics of the nascent suborbital market and the profile of the potential customers for both suborbital and orbital travel. The previsions of these studies will be contrasted with recent market and customers' data that was not available at the time.

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## 1. Introduction

The first flights of a manned suborbital spacecraft to the "edge of space" were performed in the early 60s by North American Aviation's X-15s. Carried under the wing of the mothership B-52, they reached a maximal altitude of 67 miles (110 km). The development of suborbital space tourism does not therefore depend on any technological breakthrough, as does the orbital spaceflight market, but on the existence of a commercial potential that could secure a long-term investment return. Considering the high costs and risks involved in setting up a suborbital spaceline, market kick off will occur if there is a critical mass of wealthy individuals willing to pay the high initial fare. Its sustainability will be assured by a significant drop in the prices to make space tourism affordable to a wider public.

In 2004, a big milestone was reached in the race to develop the first commercial suborbital spaceplane. Burt Rutan's "SpaceShipOne" won the US\$10 million Ansari X

Price, attributed to the first private and re-usable spacecraft to reach the edge of space twice within two weeks.

Since then, many private companies have emerged in Europe and in the US to profit from this new industry. The current leader, Virgin Galactic, has been working on marketing and selling US\$200,000 sub-orbital trips starting from 2010 with a new 6-seater "SpaceShipTwo".

The long-term evolution of this market has been analysed in several studies during the last decade and the reference survey for orbital and sub-orbital space tourism remains the 2002 Futron/Zogby "millionaires' market study" [1] and its 2006 updated version regarding the suborbital market. Its conclusions are still a reference in the business plans of the space tourism competitors.

The "adventurers' survey" [2] was published in 2006 to "fill in the gaps" in the Futron analysis. It was conducted on the Incredible Adventures website and collected market data on a sample of the adventure tourism segment.

These studies, along with non-disclosed business cases made in the industry, show evidence of a profitable activity. In 2008, Astrium has identified more than 40 new start-ups looking to take a part of this promising and unexplored market. However, the financing model remains unclear and the current projects survive mostly

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through the sponsorship of business angels motivated by passion and pioneering, such as Richard Branson and Robert Bigelow.

## 2. Suborbital market potential and forecast

### 2.1. The Futron survey

The current definitive market study for space tourism was conducted by the Futron Corporation in 2002 and updated in 2006 for its suborbital part [3]. Given the nature of spaceflight, the choice of the interviewees is the key parameter to select a valid sample that can be extrapolated to a realistic worldwide forecast. Futron therefore conducted 450 phone interviews of a respondent pool of US “millionaires”, i.e. with a household income of at least US\$250,000 annually, or a minimum net worth of US\$1 million. The objective was to address the crucial questions about the viability of the space tourism industry (size of the market, growth potential and customer characteristics) in an unbiased way in order to make a realistic prognostic over a 20-year period.

Starting with the base population of “affluent households”, Futron narrowed the number of potential customers by applying several filters to take into account the specific constraints of suborbital space travel such as the expense, interest in suborbital spaceflight at the current prices, pioneering reduction (customers whose main motivation is to be a pioneer) and fitness requirements. The full market maturity was believed to be reached over a timeline of 40 years. The market diffusion model is a Fisher-Pry curve (“S” curve), which is a standard pattern to describe the absorption of new technological product.

The initial 2002 Futron conclusions were updated in 2006 to take into account the recent achievements in the domain of suborbital flight, and most notably the heavily covered media events surrounding the creation of Virgin Galactic. The updates concerned the start date of the market, shifted from 2002 to 2006; the initial ticket price that was set to US\$200,000 by Virgin Galactic, instead of US\$100,000 in the initial study; new population wealth statistics that leads to an increase of potential customers; the passengers fitness requirements, believed to be less stringent than expected if we refer to Virgin Galactic’s current medical check-up and pre-flight tests.

The forecasts of the Futron survey are summarized in the two following graphs (Fig. 1). The base service price (US\$200,000) would be maintained for the first three years of service, and then would gradually decline over the following decade to US\$50,000 by 2021. This forecast does not assume any supply constraints after service launch, as the service capacity and technical details of potential vehicles were not established at the time of the survey. The estimated demand for the year 2021 would be over 13,000 passengers, generating revenues in excess of US\$600 million.

### 2.2. The adventurers study

In September 2006 a new study using another methodology was published by Derek Webber of Spaceport

Associates and Jane Reifert of Incredible Adventures. They specifically researched the market of adventure tourism through an on-line survey on the web site of Incredible Adventures [4]. The 998 responses that were collected are not a representative sample of potential customers. It gives nevertheless useful hints about the perception of space activities among people who are the most likely to be interested in undertaking the experience, if space tourism is ever going to reach the masses: the “adventurers”.

Only 14 percent of the respondents were millionaires and the prices of spaceflights were still considered as too high, with only 7 percent registering for suborbital at current price levels (US\$100,000–US\$200,000). Thirty six percent of the poll was interested in buying a suborbital spaceflight at a price of US\$50,000 or below.

This tends to demonstrate the elasticity of the market and attenuates the importance of the “pioneering effect” in the customers’ motivations to buy a spaceflight. A majority of them were not ready to pay a premium price to fly on the inaugural flights and only 14 percent said they were driven by the desire to be pioneers. The majority (47 percent) planned to wait for the price to fall due to technological developments and 15 percent wanted to be assured of the safety of the spacecraft after some years of operation. In total, 62 percent were willing to wait for more affordable prices and safe proven flights.

The study uncovered several other aspects. Quite surprisingly, 70 percent of the respondents were not indifferent to the chosen spacecraft architecture in terms of take-off and landing preferences. The design adopted by Virgin Galactic (taking off with a spacecraft placed under a mother craft) was considered as half as much interesting than vertical or full horizontal take-off. Moreover, 53 percent asked for a horizontal landing on land. The favourite spacecraft configuration seems to be the most familiar one for most of the customers: a unique plane bringing the travellers all the way up to space like a commercial airline.

The choice of the location of the spaceport did not make a big difference to customers: this is coherent with the customer data released by Virgin Galactic that shows that customers come from more than 30 different countries. In the future, the choice of the spaceport will therefore depend less on national criteria than on the advantages of the location (aeronautic traffic management, landscapes, etc.).

New ways of funding a space trip have been also investigated. Spaceflight is still considered as too hazardous to allow corporate sponsorship but some 31 percent would pay US\$100 or more for a lottery ticket to win an orbital spaceflight.

The time required for training should not be an issue for suborbital flights, as a two weeks training is acceptable to 69 percent of the population. The actual training time is more likely to be a couple of days.

The study also highlighted the huge gap between customers’ expectations in terms of space destinations, and what the industry currently has to offer. Regardless of price and availability, when asked which destination they favour, a travel around the Moon was the first choice (59 percent), followed by an orbital flight (47 percent).

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