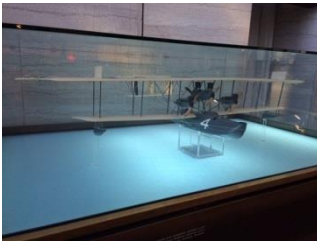


# Visitor Behaviors in the Milestones Gallery at the National Air and Space Museum



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## Introduction

This report summarizes observations of 109 visitors to the National Air and Space Museum (NASM) in October and November, 2013. Visitors were selected for inclusion in the study in an unbiased way<sup>1</sup> and were observed from the time they passed through the entrance magnetometers at the NASM entrance on the National Mall side of the building until they left the Milestones Gallery area. The observer recorded each selected person's overall time in the gallery, locations where that person stopped for more than three seconds, time spent (in seconds) at each of those stops, and activities at each stop. In addition the observer recorded the apparent sex of the individual and the number of accompanying persons, and estimated the individual's age within categories. The purpose of the study is to inform NASM staff as they plan a re-installation of the gallery. The observation study complements a survey study administered in early December.

## Visitor Characteristics

Visitors were observed to be 53% Male, 47% Female. Estimated ages are shown in Table 1 and group size in Table 2.

**Table 1**  
**Estimated Ages**

|          |     |
|----------|-----|
| 6 to 12  | 4%  |
| 12 to 19 | 9%  |
| 20s      | 14% |
| 30s      | 28% |
| 40s      | 28% |
| 50+      | 17% |

**Table 2**  
**Group Size**

|       |     |
|-------|-----|
| Alone | 10% |
| 2     | 41% |
| 3     | 25% |
| 4     | 8%  |
| 5     | 7%  |
| 6     | 0%  |
| 7+    | 9%  |

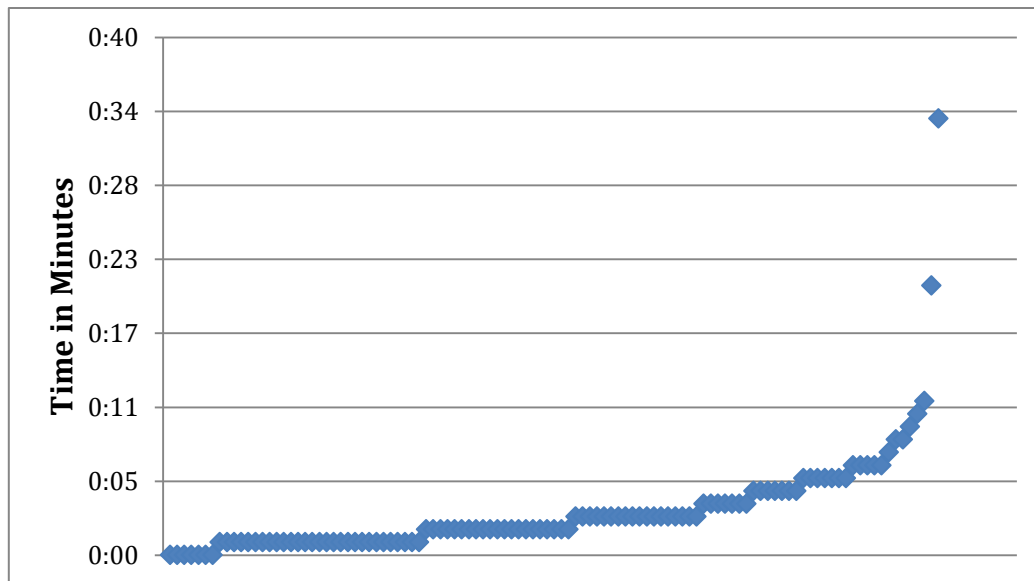
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<sup>1</sup> During observation periods the observer selected the first person to walk out of the magnetometer upon the completion of the prior observation. Observation start times ranged from 10:30 in the morning to 4:30 in the afternoon.

## Time in Milestones

The mean time these visitors spent in the Milestones gallery is 3 minutes (Median 2; Minimum 0; Maximum 34). The most common time is 1 minute (27% of visitors), followed by 2 minutes (19%), followed by 3 minutes (17%). All other times (0 minutes; 4 minutes; 5 minutes; 6 minutes; 7 minutes; 8 minutes and above) were each spent by about 6% of visitors. Time in Milestones is illustrated in Figure 1.

**Figure 1**  
**Time in Milestones**  
**(in minutes)**



## Number of Stops

The protocol for the study identified 21 locations on the floor of the Milestones gallery, as well as the information desk and a stop not associated with a location on the floor of the gallery. In addition 9 exit points were identified. See Table 3 for a list of all stop locations and exit points in order of the most frequented.

One in ten visitors (11%) did not stop at any of the locations in Milestones for the minimum three seconds. The mean number of stops was 3.3 (Maximum 12; Median 3; Mode 3). Figure 4 illustrates the number of stops and exits.

**Table 3**  
**Number of Stops/Exits at Each Location/Exit and Percent of All Stops**

| <b>Floor Locations</b>                                       | <b>Number of Stops</b> | <b>Percent of All Stops</b> |
|--------------------------------------------------------------|------------------------|-----------------------------|
| Apollo 11                                                    | 39                     | 14%                         |
| Gemini 4 & Bell XP-59A Airacomet (Label for overhead object) | 30                     | 11%                         |
| Moon Rock                                                    | 27                     | 10%                         |
| Pershing-2 & SS-20 Missiles                                  | 26                     | 9%                          |
| Viking Lander                                                | 25                     | 9%                          |
| Mercury Friendship 7                                         | 24                     | 9%                          |
| Information Desk                                             | 21                     | 8%                          |
| Goddard Rocket                                               | 20                     | 7%                          |
| Breitling Orbiter 3 Gondola                                  | 16                     | 6%                          |
| Central donation box                                         | 14                     | 5%                          |
| East donation box                                            | 11                     | 4%                          |
| West donation box                                            | 4                      | 1%                          |
| Pioneer 10 (Label for overhead object)                       | 4                      | 1%                          |
| Stardust                                                     | 3                      | 1%                          |
| Sputnik 1 & Explorer 1 (Label for overhead object)           | 3                      | 1%                          |
| West corner seating                                          | 2                      | 1%                          |
| Navy/Curtiss NC-4 (1:24 Scale model)                         | 2                      | 1%                          |
| North American X-15 (Label for overhead object)              | 2                      | 1%                          |
| Bell X-1 (Label for overhead object)                         | 1                      | 0%                          |
| East corner seating                                          | 1                      | 0%                          |
| SpaceShipOne (Label for overhead object)                     | 1                      | 0%                          |
| Ryan NYP Spirit of St. Louis (Label for overhead object)     | 0                      | 0%                          |
| <b>No Floor Location</b>                                     |                        |                             |
| A stop where there is no object/display on the gallery floor | 82                     |                             |
| <b>Exit Points</b>                                           | <b>Exits</b>           |                             |
| Exit to Right of the East escalator                          | 38                     |                             |
| Exit to Left of the West escalator                           | 24                     |                             |
| Exit to West escalator                                       | 14                     |                             |
| Exit to Right of the East escalator                          | 11                     |                             |
| Exit to East escalator                                       | 9                      |                             |
| Exit to Left of the East escalator                           | 6                      |                             |
| Exit to National Mall                                        | 3                      |                             |
| Exit to East of the Information Desk                         | 2                      |                             |
| Exit to West of the Information Desk                         | 2                      |                             |

As Table 3 demonstrates, 88% of all stops took place at the top ten locations, and hardly anyone stopped at the labels for the hanging objects.

## Stop Times

The mean stop time is 45 seconds (Min 4; Max 673; Median 29; Mode 8).<sup>2</sup>

Table 4 illustrates that attracting power is not the same as holding power. For example, although the Breitling Orbiter 3 Gondola is the ninth most-stopped-at location it is third in average length of stop.

**Table 4**  
**Number of Stops and Average Time Stopped in Seconds**

| Floor Location                                               | Number of Stops | Mean Stop Time |
|--------------------------------------------------------------|-----------------|----------------|
| Apollo 11                                                    | 39              | 77             |
| Gemini 4 & Bell XP-59A Airacomet (Label for overhead object) | 30              | 35             |
| Moon Rock                                                    | 27              | 40             |
| Pershing-2 & SS-20 Missiles                                  | 26              | 53             |
| Viking Lander                                                | 25              | 50             |
| Mercury Friendship 7                                         | 24              | 53             |
| Information Desk                                             | 21              | 67             |
| Goddard Rocket                                               | 20              | 40             |
| Breitling Orbiter 3 Gondola                                  | 16              | 59             |
| Central donation box                                         | 14              | 21             |
| East donation box                                            | 11              | 18             |
| West donation box                                            | 4               | 41             |
| Pioneer 10 (Label for overhead object)                       | 4               | 22             |
| Stardust                                                     | 3               | 21             |
| Sputnik 1 & Explorer 1 (Label for overhead object)           | 3               | 28             |
| West corner seating                                          | 2               | 11             |
| Navy/Curtiss NC-4 (1:24 Scale model)                         | 2               | 52             |
| North American X-15 (Label for overhead object)              | 2               | 44             |
| Bell X-1 (Label for overhead object)                         | 1               | 12             |
| East corner seating                                          | 1               | 15             |
| SpaceShipOne (Label for overhead object)                     | 1               | 170            |
| Ryan NYP Sprit of St. Louis (Label for overhead object)      | 0               | 0              |
| <b>No Floor Location</b>                                     |                 |                |
| A stop where there is no object/display on the gallery floor | 82              | 30             |

The stop with no object/display on the gallery floor includes stops where the visitor was viewing hanging objects. Altogether 46 of the 82 stops without a floor location (56%) involved looking up at one or more hanging objects at some point during the

<sup>2</sup> This includes the three seconds that is required in the definition of a stop.

stop. In addition visitors looked up at the hanging objects 60 times while stopped at a floor location.

## Activities

The observer recorded 10 types of activity: taking a photograph, conversing, reading text, watching a video, touching, participating in a group tour, waiting for someone, looking up, listening to a docent, and miscellaneous. The most common activities were conversing (256 instances), reading texts (132 instances), looking up at a hanging object (106 instances), taking photos (71 instances), and touching (68 instances). The locations where these activities took place are shown in the following tables 5 – 9.

**Table 5**  
**Stops with Photo-taking**

| <b>Location</b>                        | <b>Took Photo(s)</b> |
|----------------------------------------|----------------------|
| Apollo 11                              | 13                   |
| No Floor Location                      | 13                   |
| Viking Lander                          | 10                   |
| Mercury Friendship 7                   | 7                    |
| Gemini 4 & Bell XP-59A Airacomet label | 7                    |
| Pershing-2 & SS-20 Missiles            | 6                    |
| Moon Rock                              | 6                    |
| Goddard Rocket                         | 3                    |
| East donation box                      | 2                    |
| Central donation box                   | 2                    |
| Breitling Orbiter 3 Gondola            | 2                    |
| Sputnik 1 & Explorer 1 label           | 1                    |

Although Table 5 indicates the locations where photos were taken, the photos were not necessarily of things at those locations. In particular, photos taken at “no floor location” were sometimes photos of the hanging objects, sometimes photos of an object taken from a distance away from it, and sometimes views of the gallery or pictures of accompanying visitors. The two donation boxes, for example, are good locations for wide-angle views.

Similarly, the fact that a visitor had a conversation at a particular location does not necessarily mean that the conversations would have related to what was on view at that location. Conversations took place most frequently at stops that were not associated with a particular display, as shown in Table 6.

**Table 6**  
**Stops with Conversation**

| <b>Location</b>                        | <b>Conversed</b> |
|----------------------------------------|------------------|
| No Floor Location                      | 56               |
| Apollo 11                              | 29               |
| Gemini 4 & Bell XP-59A Airacomet label | 23               |
| Viking Lander                          | 21               |
| Pershing-2 & SS-20 Missiles            | 20               |
| Information Desk                       | 19               |
| Mercury Friendship 7                   | 17               |
| Moon Rock                              | 17               |
| Breitling Orbiter 3 Gondola            | 13               |
| Goddard Rocket                         | 10               |
| Central donation box                   | 8                |
| East donation box                      | 5                |
| West donation box                      | 4                |
| Sputnik 1 & Explorer 1 label           | 3                |
| Stardust                               | 3                |
| Pioneer 10 label                       | 2                |
| Navy/Curtiss NC-4 model                | 2                |
| West corner seating                    | 1                |
| SpaceShipOne label                     | 1                |
| North American X-15 label              | 1                |
| East corner seating                    | 1                |

Visitors were observed reading exhibition texts at the locations listed in Table 7, and touching the displays at the locations in Table 8.

Locations have different ranks in the eight tables presented so far. For example, if we consider the eight most-stopped-at displays on the floor of Milestones, the Moon Rock is number 3 in terms of the number of stops, number 6 in stop time, number 7 in photo-taking, number 8 in conversations, and number 8 in text reading, but number 1 in touching. The sum of these rank positions for the Moon Rock is 33. When we do this for all of the eight most-stopped-at displays, we see that the Apollo 11 is clearly the centerpiece of the gallery, with a rank sum of 9. In other words, it is at or near the top of the list in all six of these aspects. All the other locations trail well behind, with the Viking Lander, Gemini 4, and the Missiles fairly close together in second place. See Table 9.

**Table 7**  
**Stops with Text-reading**

| <b>Location</b>                        | <b>Read Text</b> |
|----------------------------------------|------------------|
| Apollo 11                              | 23               |
| Viking Lander                          | 17               |
| Pershing-2 & SS-20 Missiles            | 14               |
| Breitling Orbiter 3 Gondola            | 13               |
| Goddard Rocket                         | 13               |
| Gemini 4 & Bell XP-59A Airacomet label | 10               |
| Mercury Friendship 7                   | 8                |
| Moon Rock                              | 5                |
| Central donation box                   | 5                |
| No Floor Location                      | 4                |
| Information Desk                       | 4                |
| East donation box                      | 3                |
| Pioneer 10 label                       | 3                |
| Stardust                               | 2                |
| Navy/Curtiss NC-4 model                | 2                |
| West corner seating                    | 2                |
| West donation box                      | 1                |
| Sputnik 1 & Explorer 1 label           | 1                |
| SpaceShipOne label                     | 1                |
| Bell X-1 label                         | 1                |

**Table 8**  
**Stops with Display-touching**

| <b>Location</b>                        | <b>Touched</b> |
|----------------------------------------|----------------|
| Moon Rock                              | 14             |
| Gemini 4 & Bell XP-59A Airacomet label | 10             |
| Apollo 11                              | 10             |
| Mercury Friendship 7                   | 9              |
| Viking Lander                          | 7              |
| Pershing-2 & SS-20 Missiles            | 4              |
| Breitling Orbiter 3 Gondola            | 3              |
| Goddard Rocket                         | 3              |
| Central donation box                   | 3              |
| East donation box                      | 1              |
| Stardust                               | 1              |
| Navy/Curtiss NC-4 model                | 1              |



**Table 9**  
**Ranks of the Top Eight Displays**

| Location                    | Stops | Stop time | Photo | Converse | Read | Touch | Rank Sum |
|-----------------------------|-------|-----------|-------|----------|------|-------|----------|
| Apollo 11                   | 1     | 1         | 1     | 2        | 1    | 3     | 9        |
| Viking Lander               | 5     | 5         | 3     | 4        | 2    | 5     | 24       |
| Gemini 4                    | 2     | 8         | 5     | 3        | 6    | 2     | 26       |
| Pershing & SS-20 Missiles   | 4     | 3         | 6     | 5        | 3    | 6     | 27       |
| Mercury Friendship 7        | 6     | 4         | 4     | 7        | 7    | 4     | 32       |
| Moon Rock                   | 3     | 6         | 7     | 8        | 8    | 1     | 33       |
| Breitling Orbiter 3 Gondola | 8     | 2         | 11    | 9        | 4    | 7     | 41       |
| Goddard Rocket              | 7     | 7         | 8     | 10       | 5    | 8     | 45       |

### Looking Up

The objects that hang overhead in Milestones are a very important feature of the space. There was no reliable way to tell what a visitor was looking at when they looked overhead, but we can quantify some of this activity. First, we can identify where visitors looked up at the hanging objects, as shown in Table 10. The most prominent of these is “no floor location,” which means that the stop was independent of a stop at a display.

**Table 10**  
**Stops with Looking Up**

| Location                               | Looked Up |
|----------------------------------------|-----------|
| No Floor Location                      | 46        |
| Moon Rock                              | 12        |
| Pershing-2 & SS-20 Missiles            | 11        |
| Mercury Friendship 7                   | 11        |
| Gemini 4 & Bell XP-59A Airacomet label | 9         |
| Apollo 11                              | 4         |
| Breitling Orbiter 3 Gondola            | 4         |
| Viking Lander                          | 3         |
| Goddard Rocket                         | 3         |
| East donation box                      | 2         |
| Central donation box                   | 1         |

Second, we can look at the first stop that visitors made in Milestones. For 38 visitors, their first stop was at “no floor location,” and 27 of those 38 looked up. In other

words, 25 percent of all visitors who entered Milestones from the Mall stopped and looked up at the hanging objects before stopping anywhere else. Altogether 66 observed visitors (61%) looked up at the hanging objects at least once.

## Path

The data allows us to identify the initial path into Milestones. Table 11 shows the locations for the first stop or exit.

**Table 11**  
**Number of First Stops or Exits in Milestones**

| <b>Floor Location</b>                   | <b>First Stop/Exit</b> |
|-----------------------------------------|------------------------|
| Moon Rock                               | 17                     |
| Mercury Friendship 7                    | 11                     |
| Gemini 4                                | 11                     |
| Central donation box                    | 7                      |
| East donation box                       | 4                      |
| Information desk                        | 3                      |
| Apollo 11                               | 2                      |
| Goddard Rocket                          | 2                      |
| Pershing-2 & SS-20 Missiles             | 1                      |
| West donation box                       | 1                      |
|                                         |                        |
| <b>No Floor Location</b>                |                        |
| A stop where there is no object/display | 39                     |
|                                         |                        |
| <b>Exits</b>                            |                        |
| Exit to Right of the East escalator     | 5                      |
| Exit to West escalator                  | 4                      |
| Exit to Left of the West escalator      | 1                      |
| Exit to East of the Information Desk    | 1                      |
| Exit to West of the Information Desk    | 1                      |

Most entering visitors stop at the three closest locations – Moon Rock, Mercury capsule, and Gemini capsule, with more going to the Moon Rock than to the other two. One-third of the Moon Rock visitors then move over to the Gemini capsule for their second stop and one-third of them choose the Mercury capsule. Aside from those few stops visitors disperse quickly throughout Milestones.

Of the 21 visitors who stopped at the information desk, 3 went there directly as first stop, 8 as second stop (mostly after stopping at a location without a display), 4 as

third stop, 1 as fourth, 2 as fifth, 1 as sixth, and 2 as seventh. Most of these information desk visitors (13 of the 21) got maps there.

## Discussion

- The Apollo 11 capsule is the star of Milestones, having generated the most stops, time, and engagement.
- The prominently placed trio of the Moon Rock, Gemini capsule and Mercury capsule attracted visitors immediately, although the Viking lander and the Missiles generate more engagement overall.
- The hanging objects attracted a good deal of attention – for one in four visitors the first stop was to look up at the hanging objects – but practically no one read the labels for those objects.
- The information desk was an important stop, since one in five visitors went there (mostly to get a map). But only three visitors started with the information desk, in part because it is initially invisible behind the Apollo 11 capsule.

Changes to Milestones will depend upon the aims for this space. Will it serve as an introduction to the museum? A treasure box of highlights? A space to orient and plan the visit? An area for groups to assemble either upon entering or before leaving?

The tracking data suggests that the present Milestones gallery serves as a selection of highlights, with four clear “stars” (Apollo, Viking, Gemini, and Missiles), among which the Apollo capsule generates the highest level of engagement. Overall relatively little reading took place and visitors were only in the space for a few minutes. Of course, time is not necessarily a good gauge of impact, and the effect of the space and its objects on the visitors cannot be determined from observation. The data from the entrance-exit survey might help to clarify the influence of this area on the quality of the visitor experience.

The entrance-exit study will also help to clarify the extent to which the information desk may need to be more prominent and which information aids are most needed. It obviously takes visitors who need help a while to locate the desk in the gallery’s present configuration.