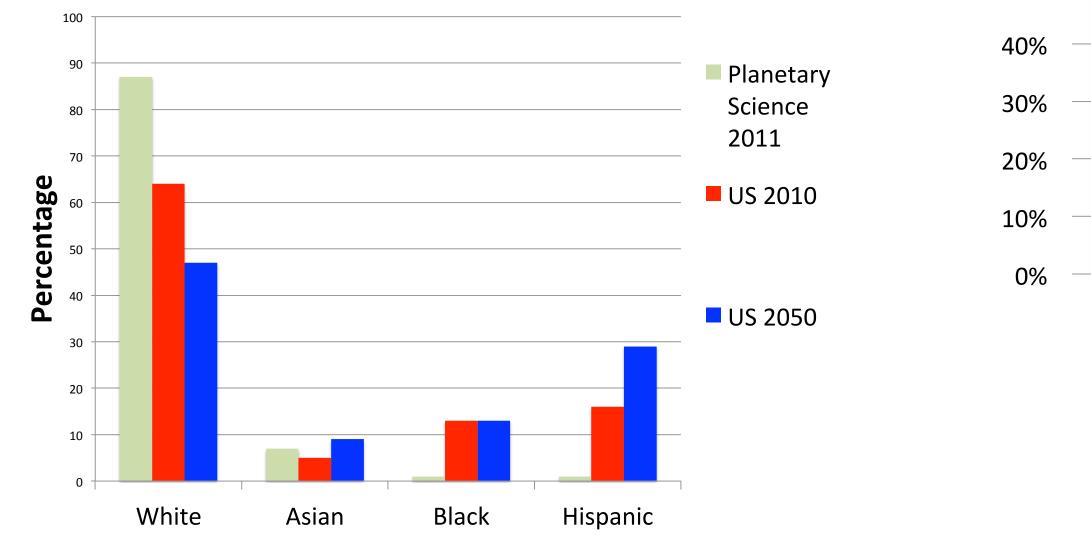
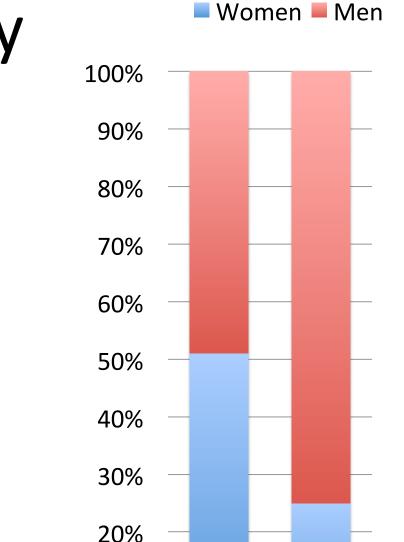
# Women of Color in the Planetary Science Workforce: General participation and membership within spacecraft mission teams

Julie A. Rathbun PSI/U of R twitter.com/LokiVolcano rathbun@psi.edu

Lynnae C. Quick (Smithsonian Institution), Serina Diniega (Jet Propulsion Laboratory, California Institute of Technology)

Demographics of the Planetary Science workforce do not match those of the US population



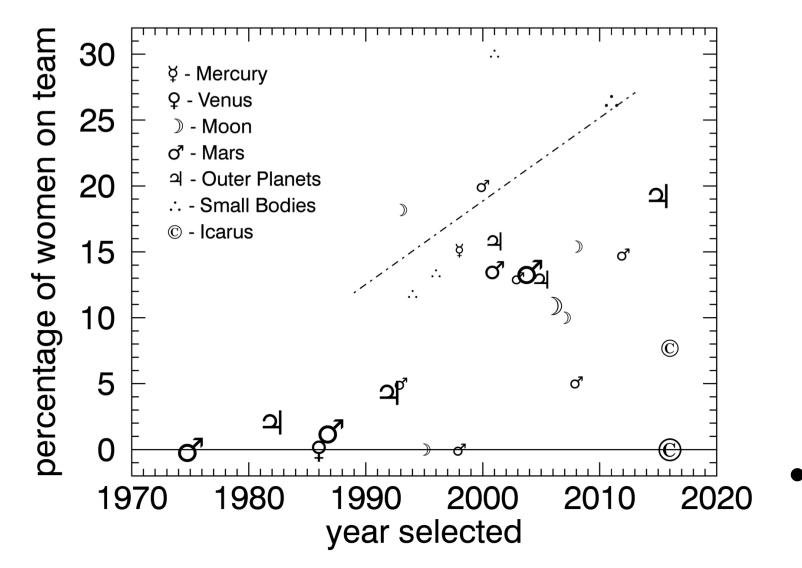


## **Planetary Scientist Pipeline**

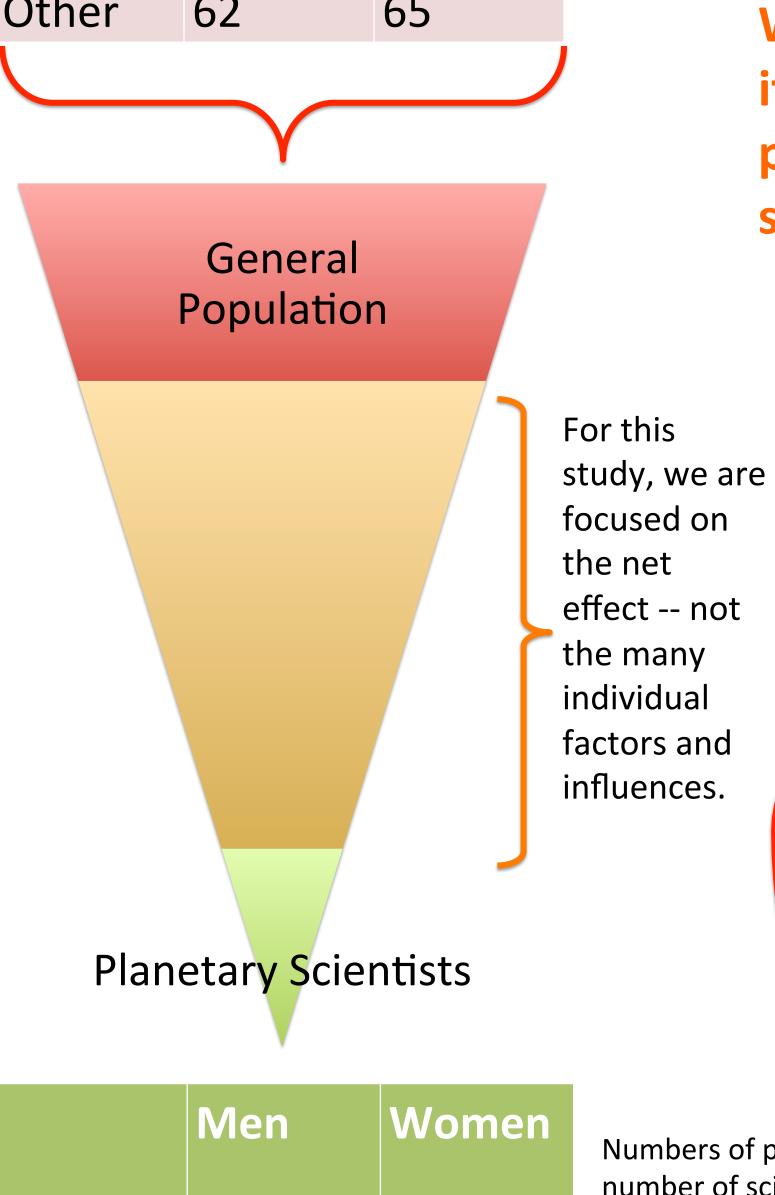
	Men	Women	Who's going into the pipeline?
White	1661	1772	<ul> <li>Assumptions:</li> <li>1. Demographics of the group going into the pipeline matches the 2010 US census distribution</li> <li>2. Number of white men going in = number coming out.</li> </ul>
Latinx	382	396	
Black	355	368	
Asian	146	152	
Other	62	65	What wave at a she show was

Refs: 2011 Planetary Science Workforce Survey [1], 2010 US Census [2], US Population predictions [3]

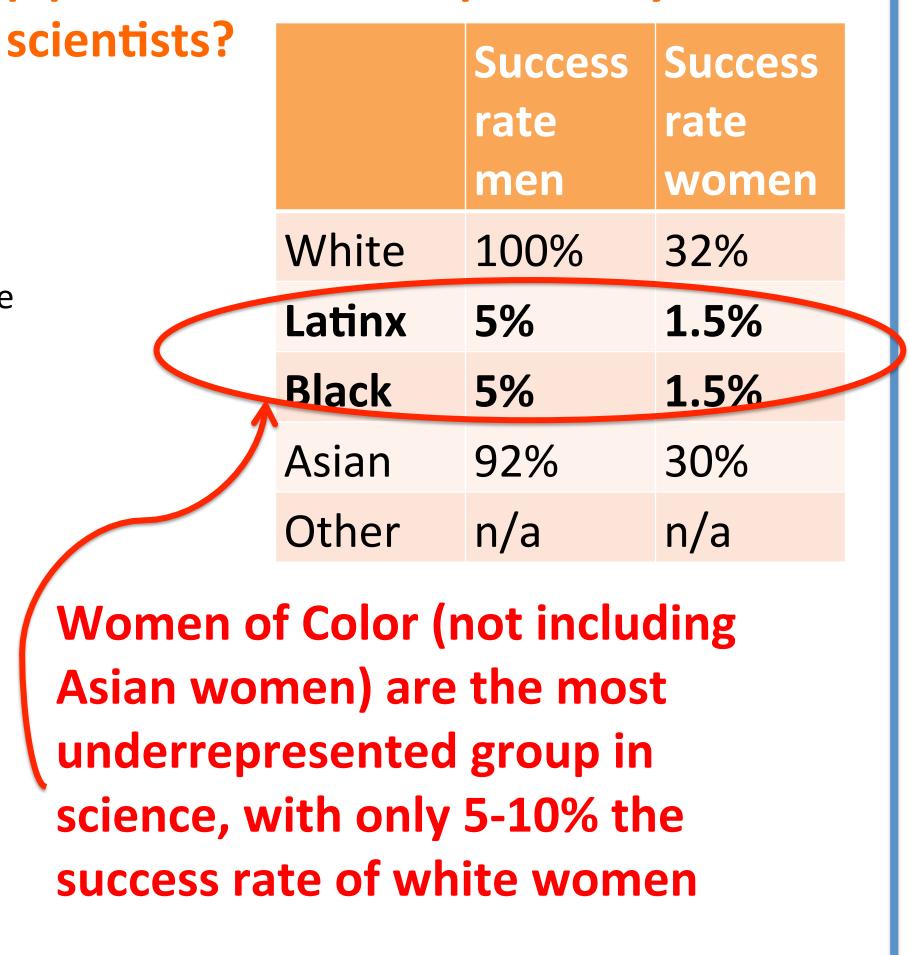
### Women on science teams of **Planetary robotic missions**



Since 2001, percentage of women on missions has remained flat (best fit slope = -0.07), despite an increase in the number of women in planetary science [4,5] 2001-2016, average percentage of women on teams is 15.8%



What percentage of each group makes it from the US population, through the pipeline, to become planetary



Numbers of planetary scientists are calculated based on [1]: Used total number of scientists contacted, response rate, and percentage that selfidentify as planetary scientists to calculate 2525 total planetary scientists. Determined total numbers in each demographic based on reported percentages and assuming that percentage of women is constant across racial lines (percentages shown at left). Our own count of Black and Latinx planetary scientists shows that men do not significantly outnumber women as they do for white scientists. However, our count does agree that there are small numbers of planetary scientists from both groups. Assuming equal numbers of men and women, the success rate for Black and Latinx women and men are all approximately 3%.

- Most of the women on NASA mission science teams are white women.
- Planetary scientists have different career pipelines and trajectories than astronomers
  - May be trained as geologists, chemists, physicists, astronomers, and biologists
  - May work at universities, NASA centers, federallyfunded research and development centers (such as JPL, APL, LPI), or nonprofit institutes (such as

White	1661	554
Latinx	19	6
Black	19	6
Asian	134	45
Other	76	26

## Conclusions

- Not only is there a pipeline problem for women lacksquarein planetary science, there are additional barriers to success in the field even once women are in the field.
- Asian Americans are represented in planetary  $\bullet$ science at rates almost as high as whites.
- Women of Color (not including Asian women) are the most underrepresented group in science.
- White women are closer in representation to

### Recommendations

- Future demographic studies of the Planetary Science workforce should consider and report race and gender simultaneously to determine the role of intersectionality on participation in planetary science.
- **Recruitment and retention efforts need to** focus on the groups that are the most underrepresented in planetary science: racial minority groups.

SWRI, PSI, or Smithsonian).

- Membership on a robotic spacecraft science teams is one measure of success
  - Leads to new data, financial security, opportunities for major presentations and future missions
  - Initial membership can be difficult to attain, as flight experience is highly valued.

R

Redlands



References: [1] White, et. al. 2011 (http://lasp.colorado.edu/home/mop/files/ 2015/08/Rep ort.pdf). [2] 2010 US Census Brief (http://www.census.gov/prod/ cen2010/briefs/c2010br- 02.pdf). [3] Passel, J. S. and Cohn D. (2008) US Population Projections: 2005-2050, (http://assets.pewresearch.org/wp-content/uploads/sites/ 3/2010/10/85.pdf). [4] Rathbun, J. A., et al. (2015) DPS, 312.01 [5] Rathbun, J. A. (2016) DPS, 332.01

white men than to women of color

- For every 3 white men that make it through the pipeline there is 1 white women.
- For every 20 white women that make it through there are only 1-2 women of color.
- More than 95% of potentially talented women of color are being left behind and kept out of the planetary science community.
- The low numbers of women of color in the field directly affects the number of women of color on spacecraft science teams.
- Purely gender-focused efforts are unlikely to sufficiently help women of color remain in the field.

More studies are needed into the barriers to equal representation along the entire pipeline, including within planetary

science.

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'leaky pipeline'

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