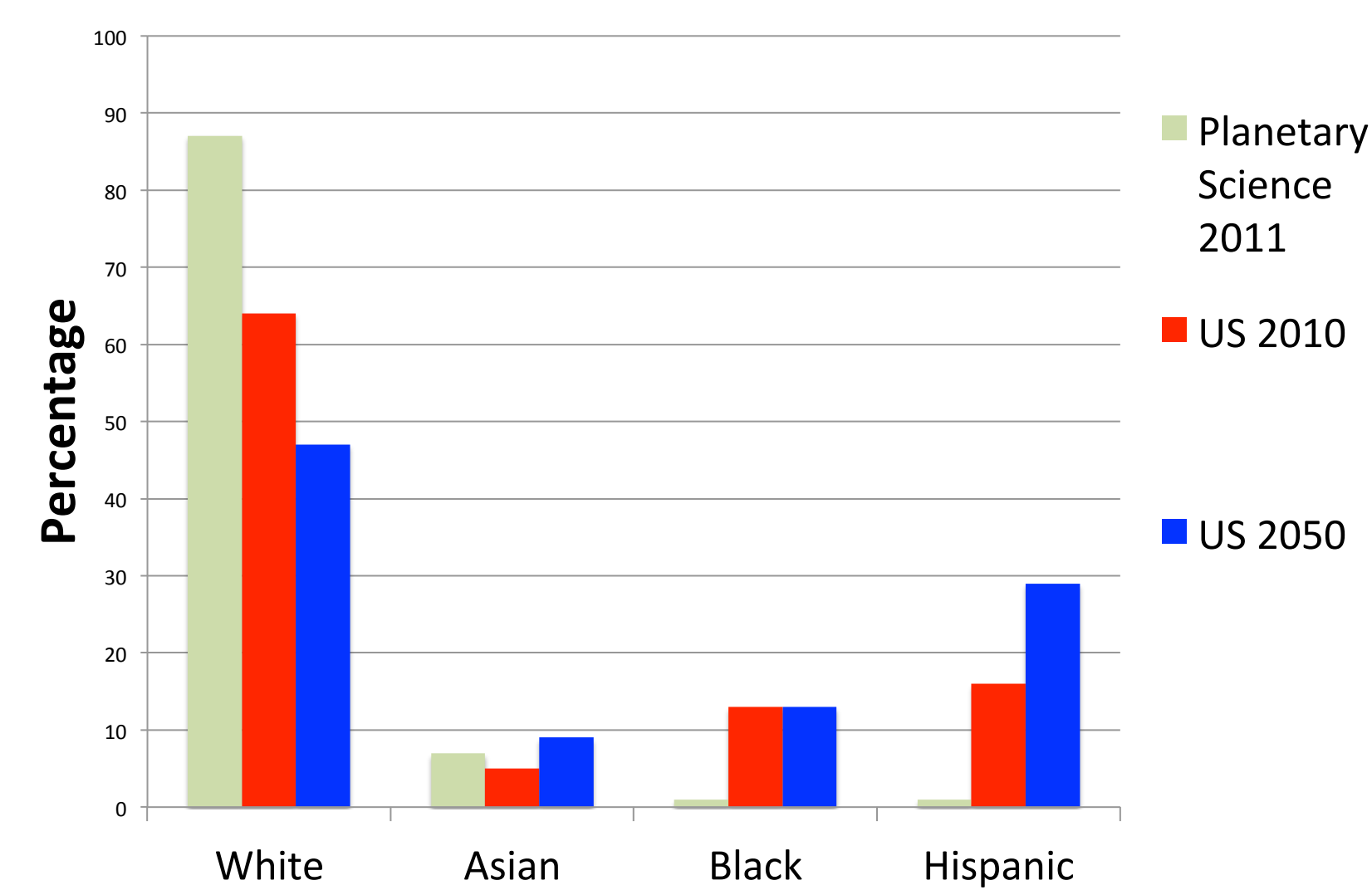


Women of Color in the Planetary Science Workforce: General participation and membership within spacecraft mission teams

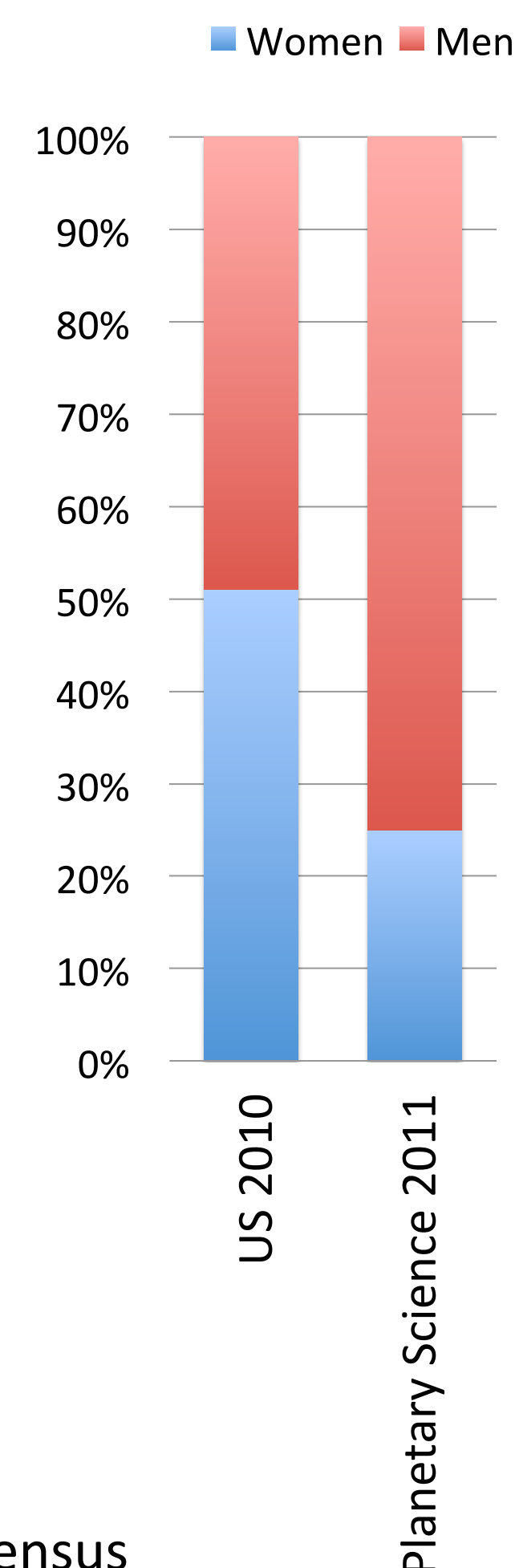
Julie A. Rathbun PSI/U of R
rathbun@psi.edu twitter.com/LokiVolcano

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



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



Planetary Scientist Pipeline

	Men	Women
White	1661	1772
Latinx	382	396
Black	355	368
Asian	146	152
Other	62	65

Who's going into the pipeline?

Assumptions:

1. Demographics of the group going into the pipeline matches the 2010 US census distribution
2. Number of white men going in = number coming out.

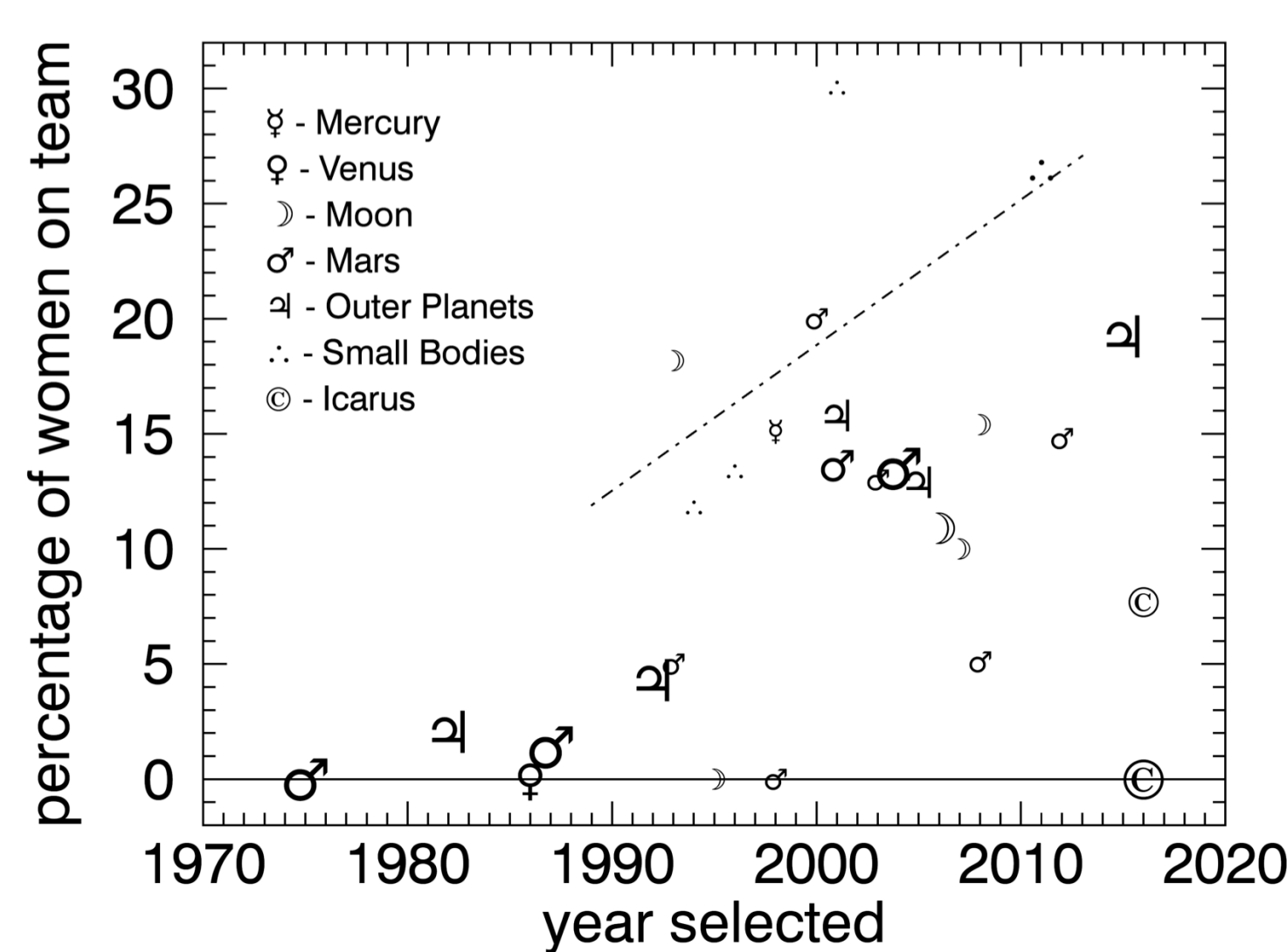
What percentage of each group makes it from the US population, through the pipeline, to become planetary scientists?

	Success rate men	Success rate women
White	100%	32%
Latinx	5%	1.5%
Black	5%	1.5%
Asian	92%	30%
Other	n/a	n/a

For this study, we are focused on the net effect -- not the many individual factors and influences.

Women of Color (not including Asian women) are the most underrepresented group in science, with only 5-10% the success rate of white women

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%

- 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, federally-funded research and development centers (such as JPL, APL, LPI), or non-profit institutes (such as 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.

Conclusions

- Not only is there a pipeline problem for women in planetary science, there are additional barriers to success in the field even once women are in the field.
- Asian Americans are represented in planetary 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 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.**

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

