



STEM Programs Unwrapped

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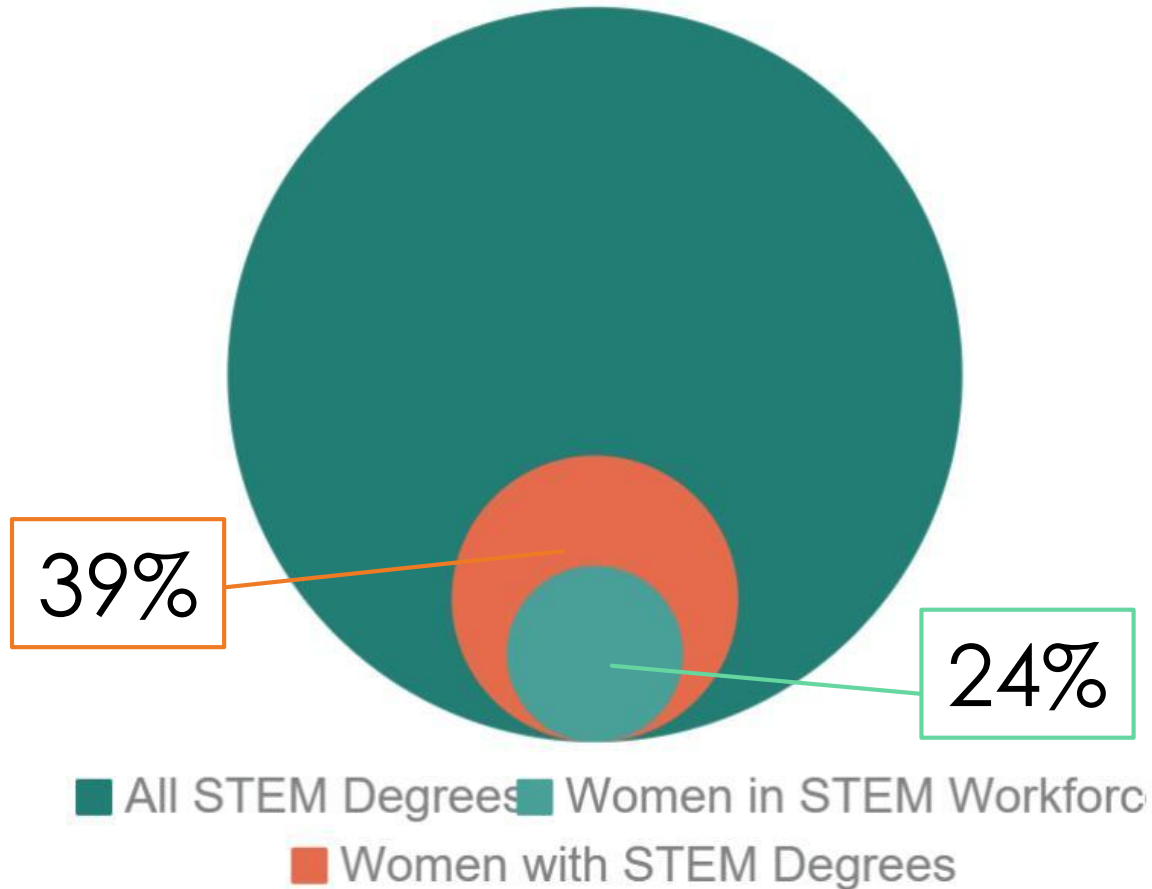
SPACE GRANT FALL MEETING – TUSCON

OCTOBER 2, 2015

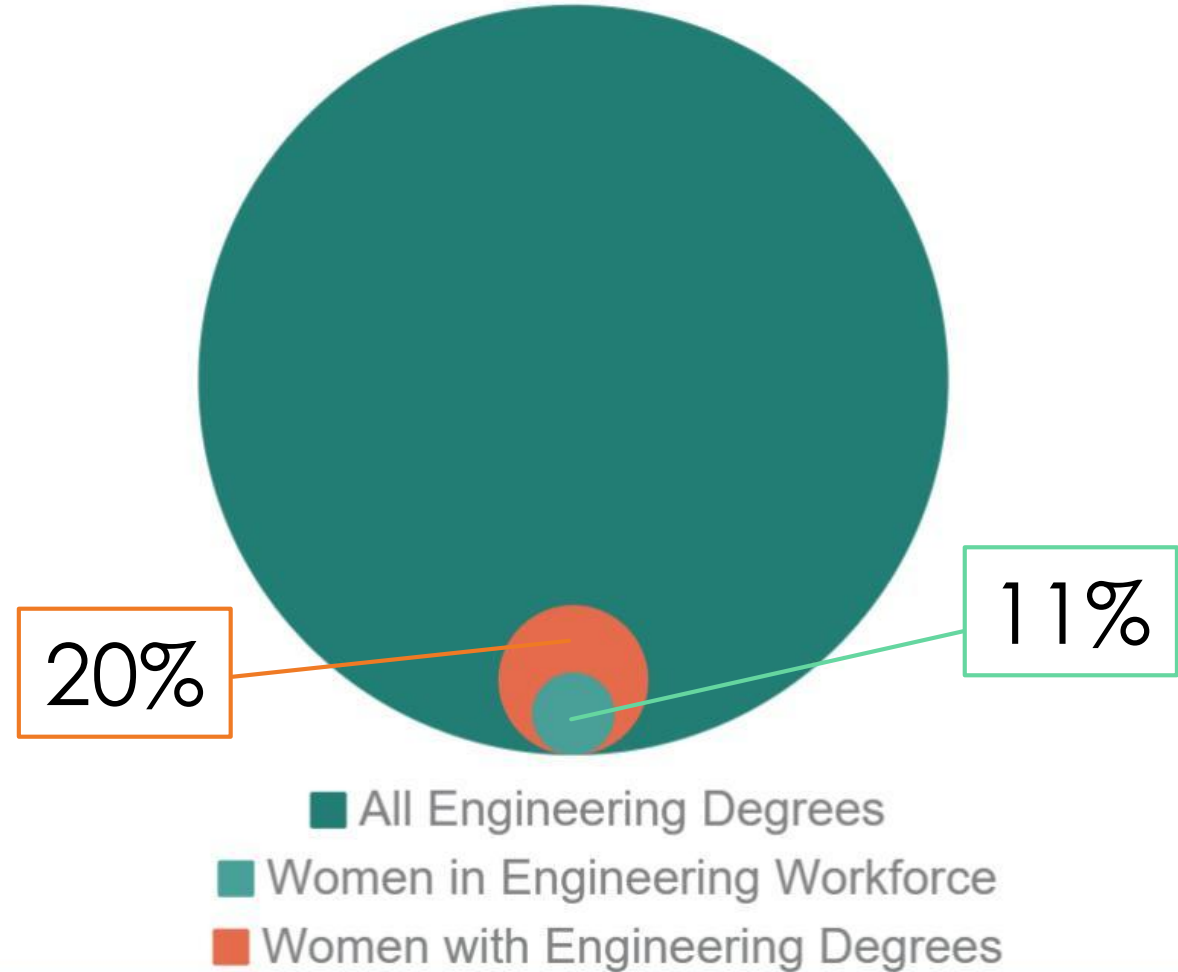
Representation Gap



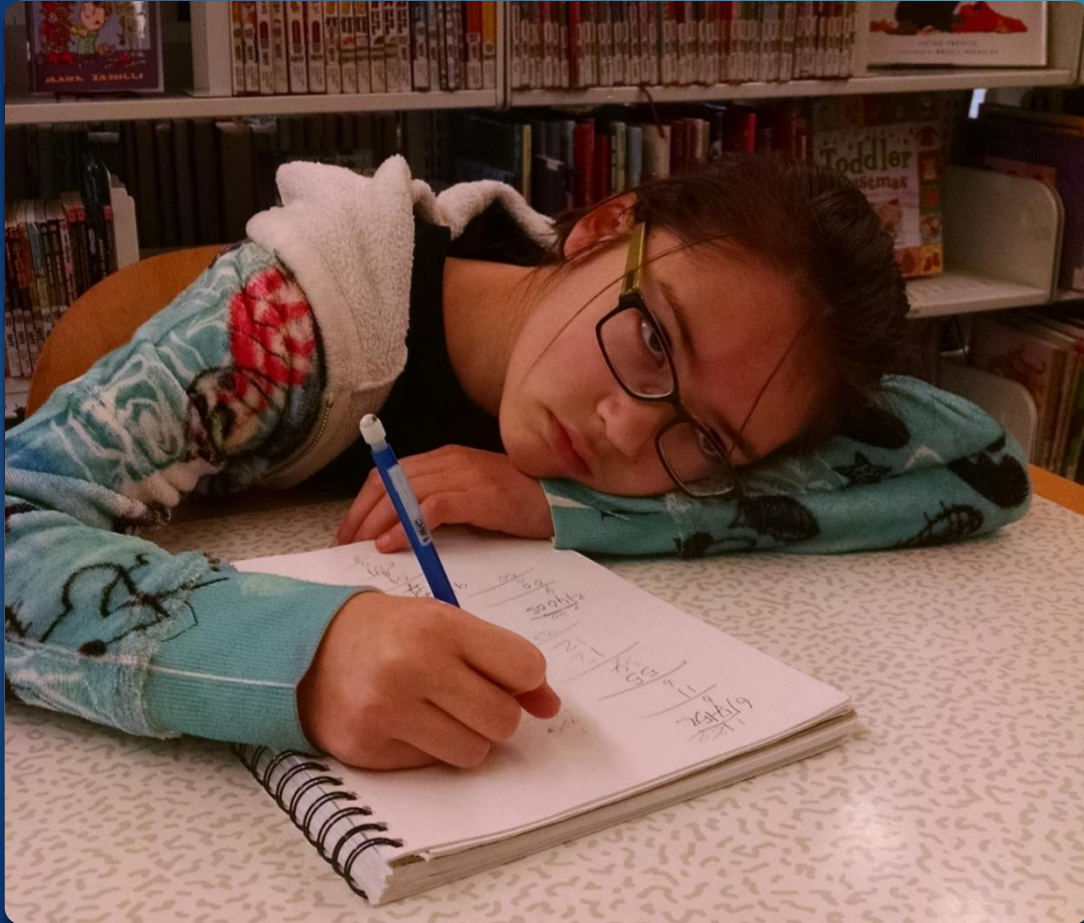
STEM Degrees



Engineering Degrees



STEM Education



Problem: Girls avoid science

Cause: The parents just don't care

Girls don't have enough exposure/experience

Girls aren't ready for science

Their families don't value STEM education

Girls lack confidence in math & science

They are coming from a "culture of poverty"

Solution: Fix student interest

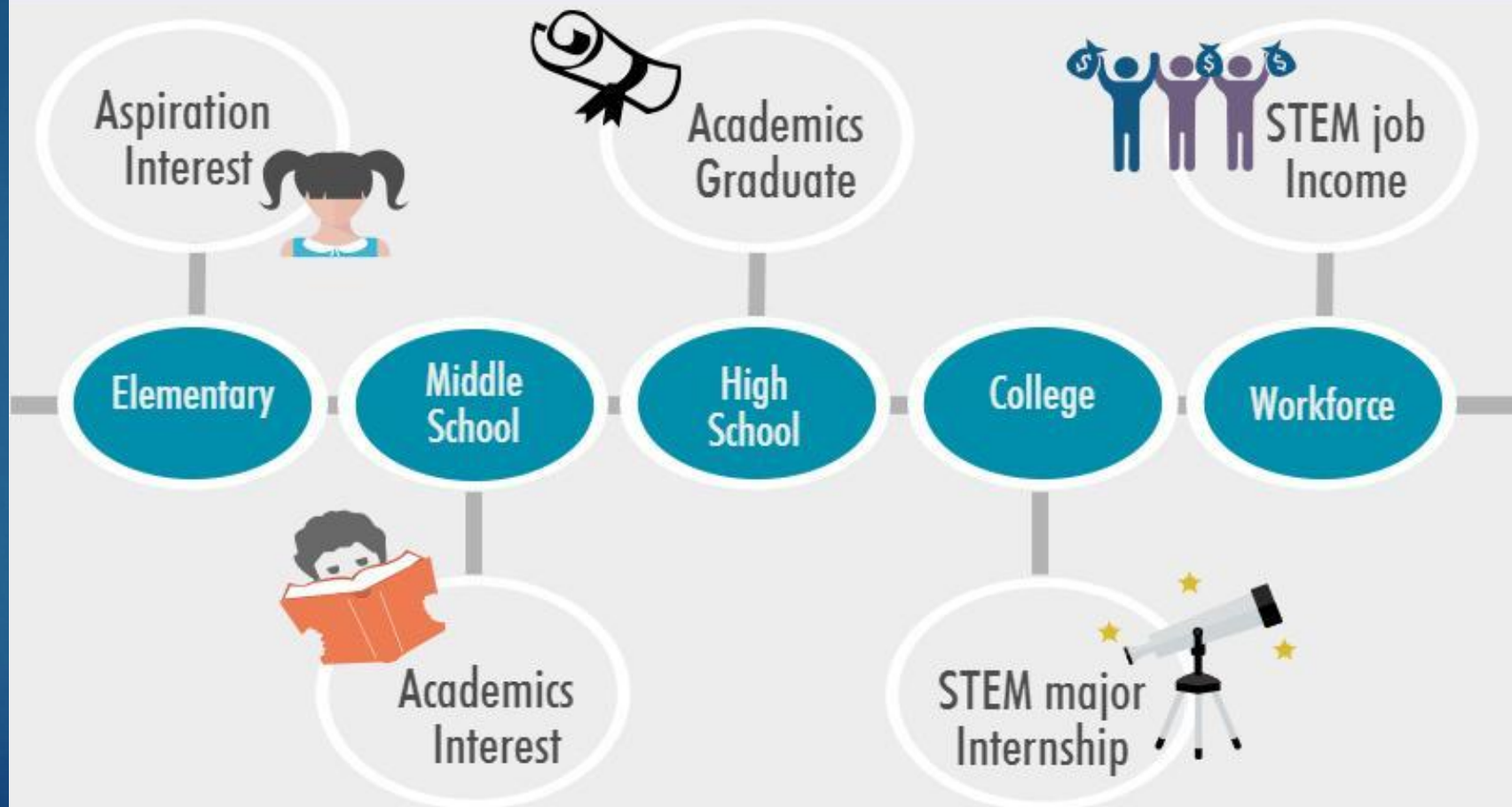
Human Spaceflight



- ▶ **Problem:** Crew member avoids spacewalks
- ▶ **Cause:**
- ▶ Suit problem?
- ▶ Airlock malfunction?
- ▶ Poor procedure?
- ▶ Workload?
- ▶ Mission unclear?
- ▶ **Solution:** Fix suit, procedure, train and support

STORY OF THE STEM PIPELINE

The STEM Education Narrative



Science culture

- ▶ Science is a very cultured experience.
- ▶ Assimilation - “cultural crossing” (Aikenhead & Huntley, 2009)
- ▶ We need scientific “bilingualism” (Lee, 1995)
- ▶ Chilly environment (Fouad et al., 2012)

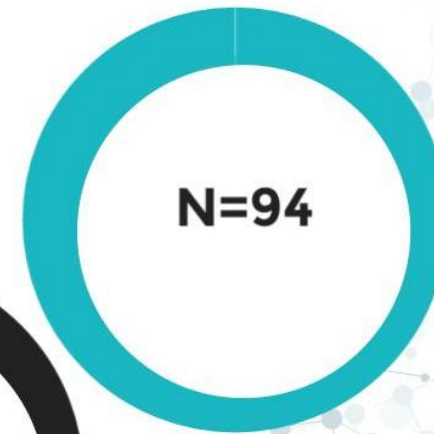
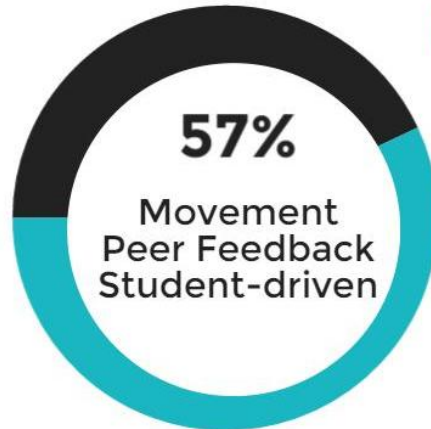
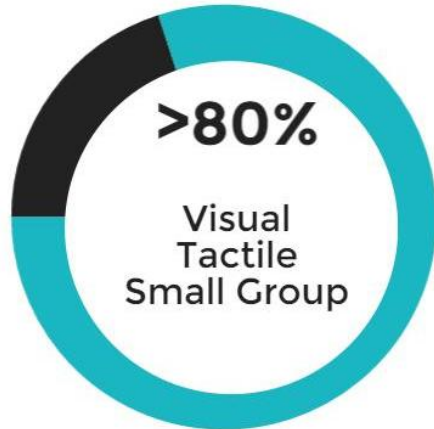
Instrument

- ▶ 27 question online quantitative questionnaire
- ▶ 10-15 minute
- ▶ STEM educators
 - ▶ Out-of-School-Time
 - ▶ Camp
 - ▶ Museums
 - ▶ Science Centers

Respondent Profile

- ▶ 13.6 years Average STEM education experience (n=75)
- ▶ Gender 68% female 32% male (n=73)
- ▶ Race (n=72)
 - 75% white
 - 11% black or African American
 - 7% Latino American
 - 7% Asian American
 - 4% Multiracial American
 - 3% Native American or Alaskan American
 - 1% Native Hawaiian or Other Pacific Islanders American

Question 8: Select which of the following elements are present in the program (check all that apply)



Is the program exclusively for...

- ▶ Girls only? 13 % (n=94)
- ▶ Girls of color only? 1% (n=90)

- ▶ By practice:
 - 10% of programs have over 50% girls of color participation.



Thank you!

QUESTIONS?

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