Hidden Figures
Data that Drives Policy & Data that Doesn’t

GIA JADICK
Duke University
AIP Mather Public Policy Intern
The Inspiration

Based on the untold true story

Hidden Figures
The Inspiration

HR 1396: “Hidden Figures Congressional Gold Medal Act”

A BILL

To award Congressional Gold Medals to Katherine Johnson and Dr. Christine Darden, to posthumously award Congressional Gold Medals to Dorothy Vaughan and Mary Jackson, and to award a Congressional Gold Medal to honor all of the women who contributed to the success of the National Aeronautics and Space Administration during the Space Race.
The Inspiration

HR 1396: “Hidden Figures Congressional Gold Medal Act”

A BILL

To award Congressional Gold Medals to Katherine Johnson and Dr. Christine Darden, to posthumously award Congressional Gold Medals to Dorothy Vaughan and Mary Jackson, and to award a Congressional Gold Medal to honor all of the women who contributed to the success of the National Aeronautics and Space Administration during the Space Race.
**Definitions**

**hidden**  
*adjective*

1. concealed; obscure; covert:

   *hidden meaning; hidden hostility.*

**figure**  
*noun*

1. a numerical symbol, especially an Arabic numeral.
2. an amount or value expressed in numbers.
Definitions

**hidden**  [hid-n]  SHOW IPA

SYNONYMS | EXAMPLES |

<table>
<thead>
<tr>
<th>adjective</th>
</tr>
</thead>
<tbody>
<tr>
<td>concealed; obscure</td>
</tr>
</tbody>
</table>

**HIDDEN FIGURE**

*noun*

a concealed or obscure value expressed in numbers

**figure**  [fig-ur]  SHOW IPA

SYNONYMS | EXAMPLES | WORD ORIGIN | IDIOMS

<table>
<thead>
<tr>
<th>noun</th>
</tr>
</thead>
<tbody>
<tr>
<td>a numerical symbol, especially an Arabic numeral.</td>
</tr>
<tr>
<td>an amount or value expressed in numbers.</td>
</tr>
</tbody>
</table>
Data that Drives Policy
The House Committee on Science, Space, and Technology

How are bills revised?
- Hearings
- Markups

Science Committee
- Looks at scientific issues
- Data is important!

Bipartisanship
- What is it?
- Why should we care?
“This is not a Democratic or Republican issue.”

Rep. Stevens (D-MI)

“It seems that my Democratic colleagues are intent on politicizing scientific integrity... there was no phone call, no deliberation. At least, no bipartisan deliberation.

Rep. Norman (R-SC)
“This is not a Democratic or Republican issue.”

Rep. Stevens

“It seems that my Democratic colleagues are intent on politicizing scientific integrity... there was no phone call, no deliberation. At least, no bipartisan deliberation.”

Rep. Norman

There has always been tension between scientists and Congress. But Lamar Smith, the chairman of the House Committee on Science, Space, and Technology, has escalated that tension into outright war.
“This is not a Democratic or Republican issue.”

Rep. Stevens

“It seems that my Democratic colleagues are intent on politicizing scientific integrity… there was no phone call, no deliberation. At least, no bipartisan deliberation.”

Rep. Norman

“Every bill has to be bipartisan, or it will be blocked.”

Rep. Smith (R-TX)
“Scientific Integrity” hearing

“This is not a Democratic or Republican issue.”

Rep. Stevens

“It seems that my Democratic colleagues are intent on politicizing scientific integrity… there was no phone call, no deliberation. At least, no bipartisan deliberation.”

Rep. Norman

“Every bill has to be bipartisan, or it will be blocked.”

Rep. Smith (R-TX)
Figure 1: Bipartisanship

Ratio: Majority to Minority Party Cosponsors

Ratio vs Congress Number

Congress Number

108 110 112 114 116

Ratio

1 2 3 4 5
Figure 1: Bipartisanship

Ratio: Majority to Minority Party Cosponsors

Democratic majority Congress
Figure 1: Bipartisanship

Ratio: Majority to Minority Party Cosponsors

Democratic majority Congress

Republican majority Congress
Figure 1: Bipartisanship

Ratio: Majority to Minority Party Cosponsors

Democratic majority Congress
Republican majority Congress
perfectly bipartisan
Figure 2: Amount of Legislation

![Graph showing the amount of legislation through Congress number.](image)
Data that Doesn’t
MINI-PROJECT: Event Demographics

- Dozens of briefings on the Hill
- Anecdotal experience - gender discrepancies
  - Or, confirmation bias?
- Solution: Data
  - Event Title
  - Description Text
  - Gender(s) of Moderator, Panelists, Audience Q&A
Short Answer: It’s Not Confirmation Bias

- Event Panels
  - 64% male

- Audience Q&A
  - 77% male
## Figure 5: Event Moderators

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>% Male Q&amp;A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Moderator</td>
<td>15</td>
<td>80%</td>
</tr>
<tr>
<td>Female Moderator</td>
<td>5</td>
<td>52%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1st Q - Male</th>
<th>1st Q - Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Moderator</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>Female Moderator</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>
Figure 5: Event Moderators

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>% Male Q&amp;A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Moderator</td>
<td>15</td>
<td>80%</td>
</tr>
<tr>
<td>Female Moderator</td>
<td>5</td>
<td>52%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1st Q - Male</th>
<th>1st Q - Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Moderator</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>Female Moderator</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>
Figure 5: Event Moderators

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>% Male Q&amp;A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Moderator</td>
<td>15</td>
<td>80%</td>
</tr>
<tr>
<td>Female Moderator</td>
<td>5</td>
<td>52%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1st Q - Male</th>
<th>1st Q - Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Moderator</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>Female Moderator</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

P value: 0.5598 not significant
Figure 6: Event Demographics

Gender of Panelists v. Audience Q&A: P-value = 0.0327
Figure 6: Event Demographics

significant
Possible Explanations

Psychological Effect

Overall attendance ratios

Topics
Testing the “Event Topic” Hypothesis

- Text analysis program in Python
- Categorized common words into lists
- Significant findings?
  - Yes!

<table>
<thead>
<tr>
<th>STEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>science</td>
</tr>
<tr>
<td>technology</td>
</tr>
<tr>
<td>engineering</td>
</tr>
<tr>
<td>mathematics</td>
</tr>
<tr>
<td>energy</td>
</tr>
<tr>
<td>electricity</td>
</tr>
<tr>
<td>earth</td>
</tr>
<tr>
<td>moon</td>
</tr>
<tr>
<td>mars</td>
</tr>
<tr>
<td>orbit</td>
</tr>
<tr>
<td>space</td>
</tr>
<tr>
<td>NASA</td>
</tr>
<tr>
<td>nuclear</td>
</tr>
<tr>
<td>laboratory</td>
</tr>
<tr>
<td>digital</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diversity</th>
</tr>
</thead>
<tbody>
<tr>
<td>diversity</td>
</tr>
<tr>
<td>representation</td>
</tr>
<tr>
<td>minorities</td>
</tr>
<tr>
<td>women</td>
</tr>
<tr>
<td>females</td>
</tr>
<tr>
<td>diverse</td>
</tr>
<tr>
<td>identity</td>
</tr>
<tr>
<td>income</td>
</tr>
<tr>
<td>color</td>
</tr>
</tbody>
</table>
Figures 7 & 8: Topic Words

Diversity words v. Speakers: P-value = 0.0360

STEMplus words v. Q&A: P-value = 0.0384
Figures 7 & 8: Topic Words

Gender of Panelists v. Audience Q&A: P-value = 0.0327

Female Panelists & Male Audience in Q&A:

# of diversity words in event description

% male panelists

% male audience Q&A
Conclusions

- Event Demographics
  - Correlation between panelist and Q&A gender ratios
  - To improve:
    - More data
    - Hire a psychologist
    - Learn machine learning

- Bipartisanship
  - Ironically partisan
  - Could be declining with time
  - Need a way to look at interpersonal interactions
Sources

- [www.dictionary.com](http://www.dictionary.com)
  - Specifically, the words “hidden” and “figure”

- [www.congress.gov](http://www.congress.gov)
  - Science Committee data from 107\textsuperscript{th} Congress to 116\textsuperscript{th} Congress

- [www.hillhappenings.com](http://www.hillhappenings.com)
  - Event titles and descriptions
QUESTIONS?

GIA JADICK

Duke University
AIP Mather Public Policy Intern