**Activity: Sampling from *The Federalist Papers*** (from *TPS* 5e)

The Federalist Papers are a series of 85 essays supporting the ratification of the U.S. Constitution. At the time they were published, the identity of the authors was a secret known to just a few people. Over time, however, the authors were identified as Alexander Hamilton, James Madison, and John Jay. The authorship of 73 of the essays is fairly certain, leaving 12 in dispute. However, thanks in some part to statistical analysis[[1]](#footnote-1), most scholars now believe that the 12 disputed essays were written by Madison alone or in collaboration with Hamilton[[2]](#footnote-2).

There are several ways to use statistics to help determine the authorship of a disputed text. One method is to estimate the average word length in a disputed text and compare it to the average word lengths of works where the authorship is not in dispute.

**Directions:** The following passage is the opening paragraph of *Federalist Paper #51[[3]](#footnote-3)*, one of the disputed essays. The theme of this essay is the separation of powers between the three branches of government. Choose 5 words from this passage, count the number of letters in each of the words you selected, and find the average word length. Share your estimate with the class and create a class dotplot.

To what expedient, then, shall we finally resort, for maintaining in practice the necessary partition of power among the several departments, as laid down in the Constitution? The only answer that can be given is, that as all these exterior provisions are found to be inadequate, the defect must be supplied, by so contriving the interior structure of the government as that its several constituent parts may, by their mutual relations, be the means of keeping each other in their proper places. Without presuming to undertake a full development of this important idea, I will hazard a few general observations, which may perhaps place it in a clearer light, and enable us to form a more correct judgment of the principles and structure of the government planned by the convention.

**Directions:** Use a table of random digits or a random number generator to select a simple random sample (SRS) of 5 words from the opening passage of the *Federalist Paper #51*. Once you have chosen the words, count the number of letters in each of the words you selected and find the average word length. Share your estimate with the class and create a class dotplot. How does this dotplot compare to the first one? Can you think of any reasons why they might be different?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Word** | **Number** | **Word** | **Number** | **Word** |
| 1 | To | 44 | To | 87 | A |
| 2 | What | 45 | Be | 88 | Full |
| 3 | Expedient | 46 | Inadequate | 89 | Development |
| 4 | Then | 47 | The | 90 | Of |
| 5 | Shall | 48 | Defect | 91 | This |
| 6 | We | 49 | Must | 92 | Important |
| 7 | Finally | 50 | Be | 93 | Idea |
| 8 | Resort | 51 | Supplied | 94 | I |
| 9 | For | 52 | By | 95 | Will |
| 10 | Maintaining | 53 | So | 96 | Hazard |
| 11 | In | 54 | Contriving | 97 | A |
| 12 | Practice | 55 | The | 98 | Few |
| 13 | The | 56 | Interior | 99 | General |
| 14 | Necessary | 57 | Structure | 100 | Observations |
| 15 | Partition | 58 | Of | 101 | Which |
| 16 | Of | 59 | The | 102 | May |
| 17 | Power | 60 | Government | 103 | Perhaps |
| 18 | Among | 61 | As | 104 | Place |
| 19 | The | 62 | That | 105 | It |
| 20 | Several | 63 | Its | 106 | In |
| 21 | Departments | 64 | Several | 107 | A |
| 22 | As | 65 | Constituent | 108 | Clearer |
| 23 | Laid | 66 | Parts | 109 | Light |
| 24 | Down | 67 | May | 110 | And |
| 25 | In | 68 | By | 111 | Enable |
| 26 | The | 69 | Their | 112 | Us |
| 27 | Constitution | 70 | Mutual | 113 | To |
| 28 | The | 71 | Relations | 114 | Form |
| 29 | Only | 72 | Be | 115 | A |
| 30 | Answer | 73 | The | 116 | More |
| 31 | That | 74 | Means | 117 | Correct |
| 32 | Can | 75 | Of | 118 | Judgment |
| 33 | Be | 76 | Keeping | 119 | Of |
| 34 | Given | 77 | Each | 120 | The |
| 35 | Is | 78 | Other | 121 | Principles |
| 36 | That | 79 | In | 122 | And |
| 37 | As | 80 | Their | 123 | Structure |
| 38 | All | 81 | Proper | 124 | Of |
| 39 | These | 82 | Places | 125 | The |
| 40 | Exterior | 83 | Without | 126 | Government |
| 41 | Provisions | 84 | Presuming | 127 | Planned |
| 42 | Are | 85 | To | 128 | By |
| 43 | Found | 86 | Undertake | 129 | The |
|  | | | | 130 | Convention |

Note: To seed the random number generator on the TI-NSPIRE have students enter **RandSeed** followed by a unique number on the Calculator screen.

1. Frederick Mosteller and David L. Wallace. *Inference and Disputed Authorship: The Federalist*.

   Addison-Wesley, Reading, Mass., 1964. [↑](#footnote-ref-1)
2. <http://en.wikipedia.org/wiki/Federalist_papers> [↑](#footnote-ref-2)
3. <http://www.constitution.org/fed/federa51.htm> [↑](#footnote-ref-3)