

The central feature of the proposed method is the enumeration of funding scenarios using $v=0,1,\dots,2^j-1$ and their conversions to 0/1 binary characters. The ease of equating v to binary forms that are indicative of all possible exclusions and inclusions of Category 2 features is countered with the possibly large row dimension ($=2^j$) of the corresponding spreadsheet. When exhaustive enumeration is not practical or of interest, the investigation may proceed in the following manner. Consider a situation with $J=20$ Category 2 features and $1,048,575 (=2^{20}-1)$ funding possibilities. The investigation may begin with multiple exhaustive enumerations each with fewer than twenty Category 2 features and operationalized within its own worksheet. One may consist of features $j=1-10$ and the other with features $j=11-20$. Each would produce $1,023 (=2^{10} - 1)$ different funding scenarios. Suppose among the enumerations of $j=11-20$ scenarios with $j=14,16,17$ the focus of interest. The consequence of funding them with all combinations of the least costly features $j=1-5$ appears in cells F13-CA44 of the Evaluation sheet of Illustration4.xlsx. The spreadsheet operations that produced these results consisted of the following. To begin, $j=14,16,17$ was converted to the scenario reference $v=106,496$ using Calculator cell K3. That reference was entered in cell F13 of the Evaluation sheet of Illustration1.xlsx and using the Fill feature of Excel the v up to and including $v=106,527$ were produced in cells F13-F44. Thereafter, copying the content of cells G12-CA12 to the rows filled with $v=106,496-106,527$ produced the Evaluation sheet of Illustration4.xlsx. The $v=106,496-106,527$ span the thirty-one ($=2^5-1$) **contiguous combinations** of $j=14,16,17$ with $j=1-5$. Figure 4.1 is a partial image of the Evaluation sheet of Illustration4.xlsx. The enumeration of **non-contiguous scenarios** is illustrated with the following. Suppose the investigation continues with interest in the consequence of funding features $j=14,16,17$ in combinations with features $j=2,4,5,7$. The scenarios may be enumerated beginning with the addition of feature $j=2$ to $j=14,16,17$ and adding $j=4,5,7$ one at a time to all previous scenarios so generated. The enumerations would produce fifteen (2^4-1) scenarios with features 2,14,16,17; 4,14,16,17; 2,4,14,16,17; 5,14,16,17; 2,5, 14,16,17; 4,5,14,16,17; 2,4,5,14,16,17; etc. using the mimicking procedure introduced in Section 3 of the manuscript. Each combination of features would be converted to a v reference using an Excel Data Table with cells K3 and K5 of the Calculator as input and output cell references. The v so identified would be assigned to cells in column F and the cell contents of columns G-CA of the corresponding rows would be populated in the manner discussed for contiguous v . See cells F45-CA60 of the Evaluation tab of worksheet Illustration4.xlsx for treatment of this non-contiguous cell reference case. In these ways, a universe with a large number of funding possibilities may be bifurcated and selected scenarios within or spanning the partitions may be enumerated and evaluated. Doing so repeatedly may lead to attractive (unattractive) scenarios to explore (avoid) and perhaps to a set of satisficing funding scenarios. Note too that the linear ‘stingy’ pursuit strategy of Section 3 of the manuscript generally provides a starting point for this situation.

See Figure 4.1 below.

Figure 4.1

Partial image of scenarios including $j=14,16,17$ from the evaluation sheet of illustration4.xlsx.

	F	BY	BZ	CA
11	Scenario reference, v	Funded Category 2 features, j^1	r	Scenario cost ²
13	106496	14, 16, 17	3	13.367
14	106497	1, 14, 16, 17	4	13.647
15	106498	2, 14, 16, 17	4	13.719

	F	BY	BZ	CA
11	Scenario reference, v	Funded Category 2 features, j^1	r	Scenario cost ²
29	106512	5, 14, 16, 17	4	13.774
30	106513	1, 5, 14, 16, 17	5	14.054
31	106514	2, 5, 14, 16, 17	5	14.126

16	106499	1, 2, 14, 16, 17	5	13.999	32	106515	1, 2, 5, 14, 16, 17	6	14.406
17	106500	3, 14, 16, 17	4	13.742	33	106516	3, 5, 14, 16, 17	5	14.149
18	106501	1, 3, 14, 16, 17	5	14.022	34	106517	1, 3, 5, 14, 16, 17	6	14.429
19	106502	2, 3, 14, 16, 17	5	14.094	35	106518	2, 3, 5, 14, 16, 17	6	14.501
20	106503	1, 2, 3, 14, 16, 17	6	14.374	36	106519	1, 2, 3, 5, 14, 16, 17	7	14.781
21	106504	4, 14, 16, 17	4	13.765	37	106520	4, 5, 14, 16, 17	5	14.172
22	106505	1, 4, 14, 16, 17	5	14.045	38	106521	1, 4, 5, 14, 16, 17	6	14.452
23	106506	2, 4, 14, 16, 17	5	14.117	39	106522	2, 4, 5, 14, 16, 17	6	14.524
24	106507	1, 2, 4, 14, 16, 17	6	14.397	40	106523	1, 2, 4, 5, 14, 16, 17	7	14.804
25	106508	3, 4, 14, 16, 17	5	14.140	41	106524	3, 4, 5, 14, 16, 17	6	14.547
26	106509	1, 3, 4, 14, 16, 17	6	14.420	42	106525	1, 3, 4, 5, 14, 16, 17	7	14.827
27	106510	2, 3, 4, 14, 16, 17	6	14.492	43	106526	2, 3, 4, 5, 14, 16, 17	7	14.899
28	106511	1, 2, 3, 4, 14, 16, 17	7	14.772	44	106527	1, 2, 3, 4, 5, 14, 16, 17	8	15.179

¹The bolding denotes where j=1, 2, 3, 4, and 5 are first combined (introduced) with j=14, 16, 17. ²\$M.