

Adequate Yearly Progress (AYP) And Statistical Reliability

North Dakota's Application of the Binomial Distribution

If a school has twenty students tested and the AYP goal is 50%, how many students must pass for the school to avoid identification?

If we don't care about statistical reliability, ten. However, when dealing with small numbers of students, we need to address how likely it is that a particular score based on a small number of students accurately reflects the entire school.

The binomial distribution allows us to set a level of statistical reliability for the identification process.

For twenty students and an AYP Goal of 50%:

- Without statistical reliability – 10 to not be identified,
- At 99.0% confidence level – 5, and
- At 99.9% confidence level – 3.

By using binomial distribution and statistical reliability, schools get a benefit or leeway on their AYP score so that we can be 99.9% sure that we do not misidentify a school for program improvement based on a small number of students.

**Number of Proficient Students Needed to Avoid Identification (at a 99.0% Confidence Level)
NDDPI 06/03/2003**

Total Students	AYP Goals:															Grad. 89.9%	90.0%	ADA 93.0%	Part. 95.0%	2014 100%
	25.0%	30.0%	35.0%	40.0%	45.0%	50.0%	55.0%	60.0%	65.0%	70.0%	75.0%	80.0%	85.0%							
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
3	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	2	3	3
4	0	0	0	0	0	0	0	0	0	1	1	1	1	2	2	2	2	3	4	4
5	0	0	0	0	0	0	0	0	1	1	1	2	2	3	3	3	3	4	5	5
6	0	0	0	0	0	1	1	1	1	1	2	2	3	3	3	3	4	4	5	6
7	0	0	0	0	0	1	1	1	2	2	2	3	3	4	4	5	5	6	7	7
8	0	0	0	0	1	1	1	2	2	2	3	3	4	5	5	6	6	7	8	8
9	0	0	0	0	1	1	2	2	2	3	4	4	5	6	6	7	7	8	9	9
10	0	0	0	1	1	1	2	2	3	3	4	5	6	6	7	7	8	9	10	10
12	0	0	1	1	2	2	3	3	4	5	5	6	7	8	8	9	9	10	11	12
14	0	1	1	2	2	3	3	4	5	6	6	7	8	10	10	11	11	12	13	14
16	0	1	2	2	3	3	4	5	6	7	8	9	10	11	11	12	13	14	15	16
18	1	1	2	3	3	4	5	6	7	8	9	10	11	13	13	14	15	16	17	18
20	1	2	2	3	4	5	6	7	8	9	10	12	13	14	14	15	16	17	18	20
25	2	3	4	5	6	7	8	9	11	12	13	15	17	19	19	20	21	22	23	25
30	2	4	5	6	7	9	10	12	13	15	17	19	21	23	23	24	25	26	27	30
35	3	5	6	7	9	11	12	14	16	18	20	22	24	27	27	29	30	31	32	35
40	4	6	7	9	11	13	15	17	19	21	23	26	28	31	31	33	34	35	36	40
50	6	8	10	12	14	17	19	22	24	27	30	33	36	39	40	42	43	44	45	50
60	8	10	13	15	18	21	24	27	30	34	37	40	44	48	48	51	52	53	54	60
70	10	12	15	19	22	25	29	32	36	40	44	48	52	57	57	60	61	62	63	70
80	11	15	18	22	26	30	34	38	42	46	51	55	60	65	65	69	70	71	72	80
90	13	17	21	25	30	34	38	43	48	53	58	63	68	74	74	78	79	80	81	90
100	15	20	24	29	34	38	43	48	54	59	65	70	76	82	82	87	88	89	90	100
150	26	32	39	46	53	61	68	76	84	92	100	108	117	126	126	132	133	134	135	150
200	36	45	55	64	74	84	94	104	114	125	135	146	158	169	170	177	178	179	180	200
300	58	72	86	100	115	130	145	160	176	191	207	223	240	257	257	268	269	270	271	300
400	80	99	118	137	157	177	197	217	238	258	280	301	323	345	345	360	361	362	363	400
500	103	126	150	175	199	224	249	274	300	326	352	379	406	433	434	451	452	453	454	500