

**Lift Test Sample Size Estimation with Desired Lift Level** \*Note the data below is just for an example of how to use the formulas, and it is not based on any actual analysis\*

<b>Test Time frame</b>	1/1/2021 to 3/31/2021
<b>Estimated Test Window (Day)</b>	90
<b>Estimated Prospects Available</b>	30000
<b>Estimated Test Prospects</b>	15000
<b>Estimated Number of Holdout Prospects</b>	15000
<b>Estimated Conversions from Historical Data:</b>	
<b>Estimated Number of Test Conversion</b>	525
<b>Estimated Number of Holdout Conversion</b>	375

--- Step 1. Enter your input here

<b>Minimal Required Sample Size</b>	
<b>Total Prospects</b>	11,191 Test and Holdout
<b>Test Prospects</b>	5,595 Test Only
<b>Holdout Prospects</b>	5,595 Holdout Only
<b>Minimal Required Conversions</b>	
<b>Test Group</b>	1,518.05
<b>Holdout Group</b>	1,444.19

<b>Using Holdout Group Conversion Rate as Baseline</b>	1 Step 2. Enter your best estimates here
<b>Estimated Test Group Conversion Rate</b>	27.13%
<b>Estimated Holdout Group Conversion Rate</b>	25.81%
<b>Estimated Test Group Lift</b>	5%
<b>Estimated Monthly Prospects (Avg.)</b>	5000

<b>Minimal Required Test Runtime</b>	
<b>Days</b>	67
<b>Months</b>	2.24

<b>Significance Level Selection</b>	0.9	Step 3. Choose Here	<i>Percent of the time the observed results are real and not an error caused by randomness.</i>
<b>Statistical Power Selection</b>	0.9	Step 4. Choose Here	<i>Percent of the time the minimum effect size will be detected, assuming it exists</i>

**Based on the Test Group Lift Estimated or Observed in the past (Cell B29), look up the total sample size (Row 42) needed for that lift level and how long it requires to reach that sample size (Row 45) below**

Minimal Detectable Difference	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	110%	120%	130%	140%	150%	160%	170%	180%	190%	200%	Step 5. Look up for the estimated lift %
Significance (Alpha)	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Power (Beta)	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Holdout Conversion Rate Assumption	25.81%	25.81%	25.81%	25.81%	25.81%	25.81%	25.81%	25.81%	25.81%	25.81%	25.81%	25.81%	25.81%	25.81%	25.81%	25.81%	25.81%	25.81%	25.81%	25.81%	25.81%
Corresponded Test Conversion Rate	28.39%	30.97%	33.55%	36.13%	38.72%	41.30%	43.88%	46.46%	49.04%	51.62%	54.20%	56.78%	59.36%	61.94%	64.53%	67.11%	69.69%	72.27%	74.85%	77.43%	
Required Number of Prospect (Each Group)	5,329	1,368	622	356	231	163	121	93	74	60	49	41	35	29	25	22	19	16	14	12	Step 6. Find the sample size for each group.
Required Number of Prospects (Test+Holdout)	11,191	2,872	1,305	712	486	342	253	195	154	125	103	86	73	62	53	46	40	34	30	26	(Adjusted 5% more to accommodate estimation error)
Min Total Sales Needed in Test Group	1,512.96	423.59	208.56	128.72	89.62	67.19	52.91	43.14	36.07	30.74	27	23	21	18	16.27	14.59	13.11	11.80	10.63	9.57	
Min Period to Generate Required Prospects (Months)	2.24	0.57	0.26	0.14	0.10	0.07	0.05	0.04	0.03	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
Min Period to Generate Required Prospects (Days)	67	17	8	4	3	2	2	1	1	1	1	1	1	0	0	0	0	0	0	0	

\*Note: Using 30 days a month as the multiplier

No Need to Change Input Here																					
10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	110%	120%	130%	140%	150%	160%	170%	180%	190%	200%		
alpha	alpha	alpha	alpha	alpha	alpha	alpha	alpha	alpha	alpha	alpha	alpha	alpha	alpha	alpha	alpha	alpha	alpha	alpha	alpha	alpha	
10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	
beta	beta	beta	beta	beta	beta	beta	beta	beta	beta	beta	beta	beta	beta	beta	beta	beta	beta	beta	beta	beta	
10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	
Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	Z(alpha)	
-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	
Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	Z(1-beta)	
-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	-1.281551564	
Base Line	Base Line	Base Line	Base Line	Base Line	Base Line	Base Line	Base Line	Base Line	Base Line	Base Line	Base Line	Base Line	Base Line	Base Line	Base Line	Base Line	Base Line	Base Line	Base Line	Base Line	
25.810%	25.810%	25.810%	25.810%	25.810%	25.810%	25.810%	25.810%	25.810%	25.810%	25.810%	25.810%	25.810%	25.810%	25.810%	25.810%	25.810%	25.810%	25.810%	25.810%	25.810%	
Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	Minimum	
10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	110%	120%	130%	140%	150%	160%	170%	180%	190%	200%		
1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	1 Tailed Sample	
3,893	999	454	260	169	119	88	68	54	44	36	30	25	21	18	16	14	12	10	9		
2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	2 Tailed Sample	
5,073	1,393	592	339	229	155	115	88	70	57	47	39	33	28	24	21	18	16	14	12		