**More Stats Formulas January 9, 2017**

Source: <http://yc.yccd.edu/student/success-center/doc/Statistical%20Formulas%20for%20Statistics%201.doc>

|  |  |
| --- | --- |
| **FREQUENTLY USED FORMULAS** | ***n* = sample size; *N* = population size** |
| **Sample mean**  statis1 | |
| **Population mean**  statis2 | |
| **Sample standard deviation**  statis3  statis4 | |
| **Population standard deviation**  statis5 | |
| **Sample mean for a frequency distribution**  statis6 | |
| **Sample standard deviation for a frequency distribution**  statis7 | |
| **Sample coefficient of variation**  statis8 | |
| **Range =** Largest data value - smallest data value | |
| **Standard z value**  statis9 | |
| **Original x value**  statis10 | |
| **Central limit theorem**  statis11 | |

|  |
| --- |
| **PROBABILITY FORMULAS** |
| **Probability of an event A**  statis12  where *f* = frequency of occurrence of event n = sample size |
| **Probability of the complement of event A**  *P*(not *A*) = 1 - *P*(*A*) |
| **Multiplication rule for independent events**  eqn157.gif (380 bytes) |
| **General multiplication rules**  eqn158.gif (484 bytes) eqn159.gif (482 bytes) |
| **Addition rule for mutually exclusive events**  *P*(*A* or *B*) = *P*(*A*) + *P*(*B*) |
| **General addition rule**  *P*(*A* or *B*) = *P*(*A*) + *P*(*B*) - *P*(*A* and *B*) |
| **Permutation rule**  eqn160.gif (337 bytes) |
| **Combination rule**  eqn161.gif (362 bytes) |
| **Mean of a discrete probability distribution**  statis15 |
| **Standard deviation of a discrete probability distribution**  statis16 |

|  |  |
| --- | --- |
| **BINOMIAL DISTRIBUTION FORMULAS** | **where *r* = number of successes;  *p* = probability of success;   *q* = 1 - *p*** |
| **Formula for a binomial probability distribution**  eqn162.gif (484 bytes) | |
| **Mean for a binomial distribution**  statis18 | |
| **Standard deviation for a binomial distribution**  statis1414 | |

|  |
| --- |
| **CONFIDENCE INTERVALS** |
| **Confidence interval for a mean (large samples)**  statis26 |
| **Confidence interval for a mean (Small samples)**  statis27 |
| **Confidence interval for a proportion (where *np* > 5 and *nq* > 5)**  statis28 |

|  |
| --- |
| **SAMPLE SIZE** |
| **Sample size for estimating means**  statis29 |
| **Sample size for estimating proportions**  statis30  statis31 |

|  |
| --- |
| **REGRESSION AND CORRELATION** |
| |  | | --- | | **In all these formulas**  statis32  statis19  statis33 | |
| **Least squares line**  statis2020 |
| **Standard error of estimate**  statis21 |
| **Pearson product-moment correlation coefficient**  statis22 |
| **Coefficient of determination**  *r* 2 |
| **Confidence interval for y**  *yp* - *E* < *y* < *yp* + *E* where *yp* is the predicted *y* value for *x*  statis23 |
| **Spearman Rank correlation coefficient**  statis24 |