**More Stats Formulas January 9, 2017**

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

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| **FREQUENTLY USED FORMULAS** | ***n* = sample size; *N* = population size** |
| **Sample mean** statis1 |
| **Population mean** statis2 |
| **Sample standard deviation** statis3statis4 |
| **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 |

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| **PROBABILITY FORMULAS** |
| **Probability of an event A**statis12where *f* = frequency of occurrence of eventn = 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 |

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| **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 |

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| **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 |

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| **SAMPLE SIZE** |
| **Sample size for estimating means** statis29 |
| **Sample size for estimating proportions** statis30statis31 |

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| **REGRESSION AND CORRELATION** |
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| **In all these formulas**statis32statis19statis33 |

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| **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 |