**Math 111 The Basic Practice of Statistics**
**Supplemental Videos by Chapter**

**Chapter 1 Picturing Distributions with Graphs**

1.1 Individuals and variables- https://www.youtube.com/watch?v=MVm3PKsXl78
1.2 Categorical variables: pie charts and bar graphs https://www.youtube.com/watch?v=uHRqkGXX55I
1.3 Categorical variables: histograms- https://www.khanacademy.org/math/probability/data-distributions-a1/displays-of-distributions/v/histograms-intro
1.4 Interpreting histograms- https://www.khanacademy.org/math/probability/data-distributions-a1/displays-of-distributions/v/histograms-intro
1.5 Quantitative Variables: stemplots- https://www.khanacademy.org/math/pre-algebra/pre-algebra-math-reasoning/pre-algebra-stem-leaf/v/u08-l1-t2-we3-stem-and-leaf-plots
1.6 Time plots- https://www.youtube.com/watch?v=ca0rDWo7IpI

**Chapter 2 Describing Distributions with Numbers**

2.1 Measuring center: the mean- https://www.khanacademy.org/math/probability/data-distributions-a1/summarizing-center-distributions/v/statistics-intro-mean-median-and-mode
2.2 Measuring center: the median- https://www.khanacademy.org/math/probability/data-distributions-a1/summarizing-center-distributions/v/statistics-intro-mean-median-and-mode
2.3 Comparing the mean and the median- https://www.khanacademy.org/math/statistics-probability/summarizing-quantitative-data/more-mean-median/v/comparing-distribution-means
2.4 Measuring variability: the quartiles- https://www.khanacademy.org/math/probability/data-distributions-a1/summarizing-spread-distributions/v/range-variance-and-standard-deviation-as-measures-of-dispersion
2.5 The five-number summary and boxplots- https://www.youtube.com/watch?v=QI0oaZ-WTvU
2.6 Spotting suspected outliers and modified boxplots- https://www.youtube.com/watch?v=Y9OA5vhLGrY
2.7 Measuring variability: the standard deviation- https://www.khanacademy.org/math/probability/data-distributions-a1/summarizing-spread-distributions/v/range-variance-and-standard-deviation-as-measures-of-dispersion
2.8 Choosing measures of center and variability- https://www.youtube.com/watch?v=F6zcGSY15Vw
2.9 Using technology-
2.10 Organizing a statistical problem- https://www.youtube.com/watch?v=s3LQQg6oOto

**Chapter 3 The Normal Distributions**

3.1 Density Curves- https://www.khanacademy.org/math/ap-statistics/density-curves-normal-distribution-ap/density-curves/v/density-curves
3.2 Describing density curves- https://www.khanacademy.org/math/ap-statistics/density-curves-normal-distribution-ap/density-curves/v/density-curves
3.3 Normal distributions- https://www.youtube.com/watch?v=iYiOVISWXS4
3.4 The 68-95-99.7 rule- https://www.youtube.com/watch?v=cgxPcdPbujI
3.5 The standard Normal distribution- https://www.youtube.com/watch?v=c11d3vVM5v8
3.6 Finding Normal proportions- https://www.youtube.com/watch?v=5Zo6mBnSP64
3.7 Using the standard Normal table- https://www.youtube.com/watch?v=Fevu674sLOA

3.8 Finding a value given a proportion- https://www.youtube.com/watch?v=NEQH-j4ycVw

**Chapter 4 Scatterplots and Correlation**

4.1 Explanatory and response variables- https://www.youtube.com/watch?v=DAH8DyLXdjM
4.2 Displaying relationships: scatterplots- https://www.youtube.com/watch?v=XmZVK0wrfiw
4.3 Interpreting Scatterplots- https://www.youtube.com/watch?v=q1GDCniGQ74
4.4 Adding Categorical variables to scatterplots- https://www.youtube.com/watch?v=FJ9s8gk4Xg8
4.5 Measuring linear association: correlation- https://www.youtube.com/watch?v=nyI_0q1gAwM
4.6 Facts about correlation-

**Chapter 5 Regression**

5.1 Regression lines- https://www.youtube.com/watch?v=gb4qqX4uhYA
5.2 The least-squares regression line- https://www.khanacademy.org/math/ap-statistics/bivariate-data-ap/least-squares-regression/v/introduction-to-residuals-and-least-squares-regression
5.3 Using technology
5.4 Facts about least-squares regression
5.5 Residuals- https://www.khanacademy.org/math/ap-statistics/bivariate-data-ap/least-squares-regression/v/introduction-to-residuals-and-least-squares-regression
5.6 Influential observations- https://www.youtube.com/watch?v=xc_X9GFVuVU
5.7 Cautions about correlation and regression- https://www.youtube.com/watch?v=aZy-arMAx0M
5.8 Association does not imply causation- https://www.youtube.com/watch?v=FJcUU0GXsms

**Chapter 6 Two Way Tables**

6.1 Marginal Distributions: https://www.khanacademy.org/math/ap-statistics/analyzing-categorical-ap/distributions-two-way-tables/v/marginal-distribution-and-conditional-distribution
6.2 Conditional Distributions: https://www.khanacademy.org/math/ap-statistics/analyzing-categorical-ap/distributions-two-way-tables/v/marginal-distribution-and-conditional-distribution
6.3 Simpson's Paradox: https://www.youtube.com/watch?v=ebEkn-BiW5k

**Chapter 8 Producing Data: Sampling**

8.1 Population versus Sample: https://www.youtube.com/watch?v=eIZD1BFfw8E
8.2 How to Sample Badly: https://www.khanacademy.org/math/ap-statistics/gathering-data-ap/sampling-observational-studies/v/examples-of-bias-in-surveys
8.3 Simple Random Samples: https://www.youtube.com/watch?v=acfjqWTwee0&vl=en
8.4 Inference about Population: https://www.youtube.com/watch?v=tFRXsngz4UQ
8.5 Other Sampling Designs: https://www.youtube.com/watch?v=be9e-Q-jC-0
8.6 Cautions about Sample Surveys: https://www.youtube.com/watch?v=EZrP_av3cmA
8.7 The Impact of Technology: (Example Article) http://blog.qsample.com/mobile-surveys/

**Chapter 9 Producing Data: Experiments**

9.1 Observation versus Experiment: https://www.youtube.com/watch?v=Z_OJzgkKe2A
9.2 Subjects, Factors, Treatments: https://www.khanacademy.org/math/statistics-probability/designing-studies/experiments-stats-library/v/introduction-to-experiment-design

9.3 How to experiment Badly: https://sciencing.com/definition-uncontrolled-variable-8519368.html
9.4 Randomized Comparative Experiments: https://www.youtube.com/watch?v=rlwNJ6WHnQw

9.5 The Logic of Randomized Comparative Experiments: https://www.youtube.com/watch?v=rlwNJ6WHnQw
9.6 Cautions about Experimentation: https://www.youtube.com/watch?v=rlwNJ6WHnQw
9.7 Matched Pairs and Other Block Designs: https://www.youtube.com/watch?v=4LL-HYss7MU

**Chapter 12 Introducing Probability**

12.1 The idea of Probability: https://www.youtube.com/watch?v=uzkc-qNVoOk
12.2 The Search for Randomness
12.3 Probability Models: https://www.youtube.com/watch?v=X4-qX2EGxF8
12.4 Probability Rules: https://www.youtube.com/watch?v=F_5UROeeWSc
12.5 Finite(Discrete) Probability Models: https://www.youtube.com/watch?v=dOr0NKyD31Q
12.6 Continuous Probability Models: https://www.youtube.com/watch?v=dOr0NKyD31Q

**Chapter 15 Sampling Distributions**

15.1 Parameters and Statistics: https://www.youtube.com/watch?v=M-L8C2aOf7E
15.2 Statistical Estimation and the Law of Large Numbers: https://www.youtube.com/watch?v=MntX3zWNWec
15.3 Sampling Distributions: https://www.youtube.com/watch?v=EOlNb1XXC_M
15.4 The sampling distribution of $\bar{x}$: https://www.youtube.com/watch?v=q50GpTdFYyI
15.5 The Central Limit Theorem: https://www.youtube.com/watch?v=JNm3M9cqWyc

**Chapter 16 Confidence Intervals: The Basics**

16.1 The Reasoning of Statistical Estimation: https://www.youtube.com/watch?v=_BiVb6neUP0
16.2 Margin of Error and Confidence Level: https://www.youtube.com/watch?v=_BiVb6neUP0
16.3 Confidence Intervals for a Population Mean: https://www.youtube.com/watch?v=czdwHU27OqA
16.4 How Confidence Intervals Behave: https://www.youtube.com/watch?v=hhxHM7qtRxQ

**Chapter 17 Tests of Significance: The Basics**

17.1 The Reasoning of Tests of Significance: https://www.youtube.com/watch?v=VK-rnA3-41c
17.2 Stating Hypotheses: https://www.youtube.com/watch?v=VK-rnA3-41c
17.3 P-Value and Statistical Significance: https://www.youtube.com/watch?v=5FmxvmlOmfA
17.4 Tests for a Population Mean: https://www.youtube.com/watch?v=pGv13jvnjKc

**Chapter 18 Inference in Practice**

18.1 Conditions for Inference in Practice: https://www.youtube.com/watch?v=JxvlqR97TEo
18.2 Cautions about Confidence Intervals: https://www.youtube.com/watch?v=peQhbpGVBjg
18.3 Cautions about Significance Tests: https://www.youtube.com/watch?v=xY-a644kSAU

**Chapter 20 Inference about a Population Mean**

20.1 Conditions for Inference about a Mean: https://www.youtube.com/watch?v=JxvlqR97TEo
20.2 The $t$ Distribution: https://www.youtube.com/watch?v=T9nI6vhTU1Y
20.3 The One-Sample $t$ Confidence Interval: https://www.youtube.com/watch?v=UmAJJtEo6cQ
20.4 The One-Sample $t$ Test: https://www.youtube.com/watch?v=vEG_MOnyMdE
20.5 Examples of Technology
20.6 Matched Pairs $t$ Procedures: https://www.youtube.com/watch?v=AGh66ZPpOSQ
20.7 Robustness of a $t$ Procedures: https://www.youtube.com/watch?v=wVjKzp_7KYQ

**Chapter 25 Two Categorical Variables: The Chi-Square Test**

25.1 Two-Way Tables: https://www.youtube.com/watch?v=hhl7qa0ZAhU
25.2 The Problem of Multiple Comparisons: https://www.youtube.com/watch?v=EMzcZFtGZZE
25.3 Expected Counts in Two-Way Tables: https://www.youtube.com/watch?v=zdmL2qcsV_o&t=282s
25.4 The Chi-Square Statistic: https://www.youtube.com/watch?v=VskmMgXmkMQ
25.5 Examples of Technology
25.6 The Chi-Square Distribution: https://www.youtube.com/watch?v=dXB3cUGnaxQ
25.7 Cell Counts Required for the Chi-Square Test: https://www.youtube.com/watch?v=TuSo3kMkEG0
25.8 Uses of the Chi-Square Tests:
Independence and Homogeneity: https://www.youtube.com/watch?v=H99hj2lsBDQ
25.9 The Chi-Square Test for Goodness of Fit*: https://www.youtube.com/watch?v=H99hj2lsBDQ