Problem 1

All Institutions

For the average graduation rate across all institutions (based on completion within 150% of time), the following table gives a confidence interval and test for a difference between whites and nonwhites in average graduation rates.

Difference in Graduation Rates: (Whites-Nonwhites)			T-test for Ho: No Difference	
Lower 95% Limit	Mean	Upper 95% Limit	T Statistic	p-value
8.281%	9.091%	9.902%	22.00	<.0001

The difference between graduation rates is highly significant (p-value < 0.0001), with graduation rates for whites being higher by 9.091% +/- 0.81% (with 95% confidence)

Cohorts of at least 500 people

For the average graduation rate across institutions with an incoming cohort of at least 500 individuals, the following table gives a confidence interval and test for a difference between white students and nonwhite students in average graduation rates.

Difference in Graduation Rates: (whites-nonwhites)			T-test for Ho: No Difference	
Lower 95% Limit	Mean	Upper 95% Limit	T Statistic	p-value
7.134%	7.813%	8.493%	22.58	<.0001

The difference between graduation rates is highly significant (p-value < 0.0001), with graduation rates for whites being higher by 7.813% +/- 0.68% (with 95% confidence)

Graduation rates of at least 60%

For institutions with an incoming cohort of at least 500 people, the following table gives a test for the difference in proportion of instituitions with graduation rates of 60% or more for white students and nonwhite students.

Frequency Percent

Table of Rate for White by Rate for Other			
	Rate for Other		
Rate for White	Under 60%	60% or more	Total
Under 60%	243 35.06	4 0.58	247 35.64
60% or more	157 22.66	289 41.70	446 64.36
Total	400 57.72	293 42.28	693 100.00
Frequency Missing = 12			

McNemar's Test		
Chi-Square	DF	Pr > ChiSq
145.3975	1	<.0001

The difference in the proportion of institutions with graduation rates of over 60% for white students vs nonwhite students is highly significant (p-value < 0.0001), the estimated difference is 22.08% (64.36% - 42.28%)

Variable: gradrate

hloffer	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Doctoral		893	0.6000	0.1787	0.00598	0.0413	1.0000
No Doctoral		1056	0.5174	0.2185	0.00673	0.0385	1.0000
Diff (1-2)	Pooled		0.0827	0.2013	0.00915		
Diff (1-2)	Satterthwaite		0.0827		0.00900		

hloffer	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
Doctoral		0.6000	0.5883	0.6118	0.1787	0.1708	0.1874
No Doctoral		0.5174	0.5042	0.5306	0.2185	0.2096	0.2283
Diff (1-2)	Pooled	0.0827	0.0647	0.1006	0.2013	0.1952	0.2078
Diff (1-2)	Satterthwaite	0.0827	0.0650	0.1003			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	1947	9.04	<.0001
Satterthwaite	Unequal	1944.9	9.19	<.0001

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	1055	892	1.50	<.0001

Problem 2

All Institutions

For the average graduation rate across all institutions (based on completion within 150% of time), the following table gives a confidence interval and test for a difference between institutions that offer doctoral degrees and those that do not in average graduation rates.

Difference in Graduation Rates: (Doctoral - No Doctoral)			T-test for Ho: No Difference	
Lower 95% Limit	Mean	Upper 95% Limit	T Statistic	p-value
6.503%	8.268%	10.033%	9.19	<.0001

The difference between graduation rates is highly significant (p-value < 0.0001), with graduation rates for doctoral institutions being higher by 8.27% +/- 1.77% (with 95% confidence)

Variable: gradrate

hloffer	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Doctoral		540	0.6405	0.1645	0.00708	0.0413	0.9757
No Doctoral		206	0.6078	0.1906	0.0133	0.1518	0.9383
Diff (1-2)	Pooled		0.0327	0.1721	0.0141		
Diff (1-2)	Satterthwaite		0.0327		0.0151		

hloffer	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
Doctoral		0.6405	0.6266	0.6544	0.1645	0.1553	0.1750
No Doctoral		0.6078	0.5816	0.6340	0.1906	0.1738	0.2110
Diff (1-2)	Pooled	0.0327	0.00506	0.0604	0.1721	0.1638	0.1813
Diff (1-2)	Satterthwaite	0.0327	0.00312	0.0623			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	744	2.32	0.0205
Satterthwaite	Unequal	328	2.17	0.0304

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	205	539	1.34	0.0092

Cohorts of at least 500 people

For the average graduation rate across institutions with an incoming cohort of at least 500 students, the following table gives a confidence interval and test for a difference between institutions that offer doctoral degrees and those that do not in average graduation rates.

Difference in Graduation Rates: (Doctoral - No Doctoral)			T-test for Ho: No Difference	
Lower 95% Limit	Mean	Upper 95% Limit	T Statistic	p-value
0.312%	3.273%	6.234%	2.17	0.0304

The difference between graduation rates is insignificant (p-value = 0.0304), we can conclude that there is a significant difference (p-value = 0.0304) in graduation rates of institutions that offer doctoral degrees and those that do not with incoming cohort sizes of at least 500 people by 3.27% +/- 2.96% .

Graduation rates of at least 70%

For institutions with an incoming cohort of at 500, the following table give a test and a confidence interval for the difference in proportion for institutions that offer doctoral degrees and those that do not with graduation rates of 70% or more.

Difference in Proportion with 50%+ Graduation Rates: (Doctoral - No doctoral)			T-test for Ho: No Difference	
Lower 95% Limit	Difference	Upper 95% Limit	Chi-Square Statistic	p-value
-6.390%	1.338%	9.065%	0.1159	0.7335

The difference in the proportion of doctoral vs. non doctoral institutions with graduation rates of over 70% and incoming cohort of at least 500 people is insignificant (p-value = 0.7335), so we cannot conclude there is a difference in graduation rates of institutions that offer doctoral degrees and those that do not with incoming cohort sizes of at least 500 people and graduation rates of over 70%.