✓ *Student Loans*

Materials Required

☐ Question 1 tailored to one's institution
☐ iOS app downloaded and installed or deployed on all devices
☐ Handouts (i.e., course material) for each participant

Distribute all handouts, and as you do, discuss:

> *Six months after students graduate college, they will be required to start repaying their student loans, if any, and to do so monthly. We will focus on helping students to start thinking about that. If you are not a student, either imagine that you are one, or consider the scenario that you are paying your child's tuition. We will work on keeping track of how much money you may be borrowing from the government and planning how you can repay what you borrowed.*

Skim questions 1 through 6; mention to your audience that it need not use real numbers, only numbers that are reasonable. Share some quick examples of "reasonable" numbers. The audience is permitted to use calculators, work in groups of two and round its results. State:

> *Please get started. If you have any questions or concerns, please feel free to ask or inform me, and I will be here to help. Questions 7 through 15 are optional.*

Wait 10 to 15 minutes, then say:

> *After you complete the set of questions, you are welcome to keep them. You are welcome to keep the app, too. If you, instead, would like to return the set of questions to me, I will be happy to provide you feedback.*

If any participants complete bonus questions 7 and 8, mention that you hope he or she will identify the answer to question 6 as a "sweet spot." If anyone completes questions 9 to 14, mention that you hope they will find the questions more compelling, and that they try to raise their monthly payment more.
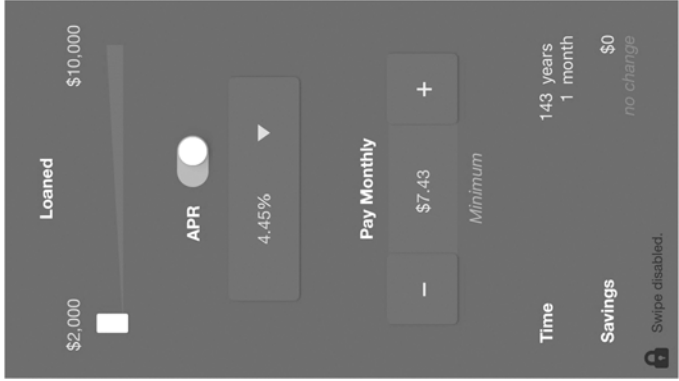
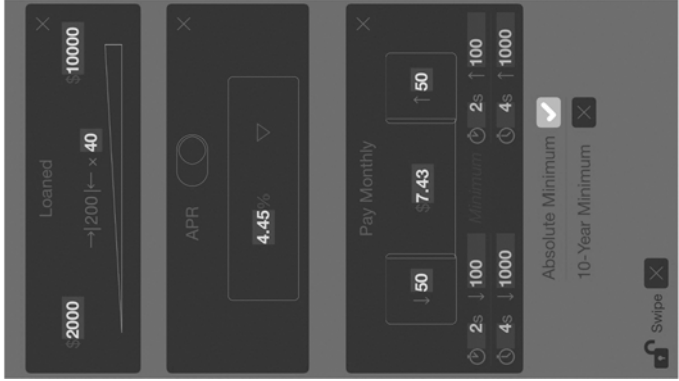# iOS App Overview for Instructors' Personal Reference
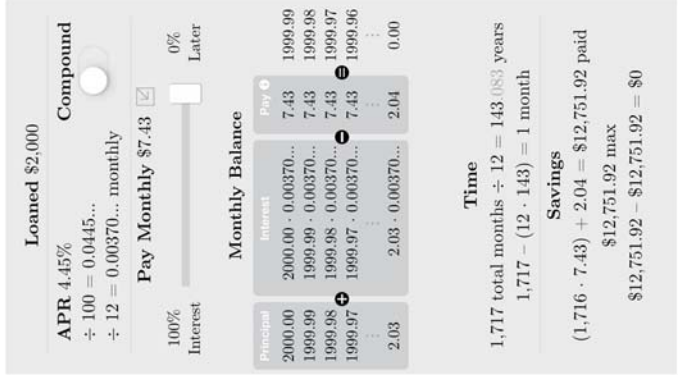
Screenshots

Video Introduction

How to Use App

0:01   -1:10

Main Screen

Loaned

$2,000 $10,000

APR

4.45%

Pay Monthly

− $7.43   +

Minimum

Time   143 years / 1 month

Savings $0 / *no change*

Swipe disabled.

Main Screen (Editing Mode)

$2000   Loaned   →|200|← × 40 $10000

APR   4.45%

Pay Monthly

↓50 $7.43   ↑50

Minimum

2s ↓100   2s ↑100

4s ↓1000   4s ↑1000

Absolute Minimum

10-Year Minimum

Swipe

Mathematics Screen (Swipe Enabled)

Loaned $2,000

APR 4.45%

$\div 100 = 0.0445...$

$\div 12 = 0.00370...$ monthly

Compound   0% Later

Pay Monthly $7.43

100% Interest

Monthly Balance

Principal	Interest	Pay
2000.00	$2000.00 \cdot 0.00370...$	7.43
1999.99	$1999.99 \cdot 0.00370...$	7.43
1999.98	$1999.98 \cdot 0.00370...$	7.43
1999.97	$1999.97 \cdot 0.00370...$	7.43
⋮	⋮	⋮
2.03	$2.03 \cdot 0.00370...$	2.04

1999.99
1999.98
1999.97
1999.96
⋮
0.00

Time

1,717 total months $\div 12 = 143.083$ years

$1,717 - (12 \cdot 143) = 1$ month

Savings

$(1,716 \cdot 7.43) + 2.04 = \$12,751.92$ paid

$12,751.92 max

$\$12,751.92 - \$12,751.92 = \$0$

Once the app loads, it plays a video that illustrates how one can utilize the app. Close the video to access the main screen. In the main screen, one can move the thumb of the Loaned slider, press on the thumb of the APR switch, select a different percentage, or click on either the minus or plus button. Whenever one does so, the Pay Monthly, Time, Savings and change in Savings amounts are computed automatically. One can reset the amounts by either pressing and holding the minus button or–in editing mode–entering 0 for the Pay Monthly amount. Press on the padlock icon to enter the editing mode. In editing mode, one can also edit the slider, percentage, increment timers, and minimum payment; one can enable the ability to swipe leftward, too. By default, the minimum payment is the minimum for repaying student loans within ten years.

If swiping is enabled, one can swipe leftward–regardless if one is in editing mode–to view how estimates were calculated (i.e., to access the mathematics screen). In the mathematics screen, one can also examine how Time and Savings amounts would vary, depending if interest was compounded and on the percentage of interest one paid monthly. By default, interest is not compounded and one pays 100% interest monthly. Minimize the Pay Monthly amount, at any time, by pressing ☑. Swipe rightward to return to either the main screen or main screen in editing mode. 4.45% is the Direct Loan rate for July 1, 2017 to June 30, 2018. The current interest rate is 4.53%. The app's build is 2.7.3 (141), where "2.7.3 (141)" stands for major version 2, minor version 7, revision 3 and build 141.

Directions: please answer the following questions WITHOUT using the app.

1. What is your yearly cost of tuition? (excluding fees) $_____

Feel free to use the following chart to help you:

[SCHOOL NAME] TUITION RATES (as of [Season] [Year])	**Full Time** 12-18 credits/ equated credits	**Part-Time**
Residents of New York City who are:		
Matriculated Students	$2400 per semester	$210 per credit
Non-Matriculated Students	$265 per credit	$265 per credit
Non-Residents of New York City who are:		
Residents of New York State with B-81 on file	$2400 per semester	$210 per credit
Residents of New York State without B-81 on file	$320 per credit	$320 per credit
Out-of-State Residents	$320 per credit	$320 per credit
International Students	$320 per credit	$320 per credit
Non-Matriculated Students	$420 per credit	$420 per credit

Source: [URL, tailor the chart too]

"Matriculated" means to be enrolled in a degree program.
"B-81" is a Certificate of Residence.

Assume you borrow money from the government to pay for your degree. Six months after you graduate college, you will be required to start paying the government back monthly.

2. How much money can you afford to pay back each month? $_____
   A reasonable guess is fine.

3. How long will it take to pay the government back? (**excluding** interest)

                                        _____ year(s)   _____ month(s)

Examples:
5,000 ÷ 200 = 25 months   25   = 2 years 1 month
7,650 ÷ 250 = 30.6 months   ↑31 = 2 years 7 months
3,132 ÷ 300 = 10.44 months   ↑11 = 11 months

4. How long will it take to pay the government back? (**including** interest)
Ignore savings, for now.

_____%   _____ year(s)   _____ month(s)

Tips to help you get started:
- ❖ Move the thumb of the slider, to select an estimated cost nearest to yours.
- ❖ Press ▼ to select the interest rate of your loan.
  - If you have more than one type of loan <u>or</u> you have multiple loans, select the rate for the biggest one.
  - If you are unsure about your rate, choose 4.53% since Direct Loans are more common.
- ❖ Press − or + to select a monthly payment nearest to yours.
- ❖ To edit the slider, interest rate or monthly payment, press the padlock icon. After editing them, relock.

5. Compared to #3, is your result for #4 reasonable? Why or why not?

(yes/no) _____

(explain) _____
Feel free to consult a partner.

6. Increase your monthly payment gradually. How much *should* you pay monthly, so that your repayment does not take so long?
Many answers are possible. $_____
A single amount, or range of amounts, is fine.

If you ever struggle to make payments, you <u>can</u> contact your lenders and negotiate with them.

Bonus Questions – app$^{\sqrt{}}$

Directions: please answer the following questions USING the app.

Questions 7 through 8 reinforce question 6.

7. Reduce your monthly payment to the minimum. From the minimum, press ⊞ once. How much money can you save?

    To see how the app calculates savings, press the padlock icon;   **$**_____
    enable the ability to swipe; and swipe leftward.

8. Press ⊞ some more times. Does paying *a lot* more make much difference?   *(yes/no)* _____

    Hint: the difference in savings will decrease exponentially. Observe the bottom-right number.

Press the padlock icon, and change the minimum to absolute. Press the icon to relock it.

Note: The 10-year minimum is the minimum for repaying student loans within ten years, NOT for repaying student loans for at least ten years.

9. Reduce your monthly payment to the absolute minimum. Look at how long it will take to pay the government back. Do you see why lenders set time limits, typically 10 years?

                                                   (yes/no) _____

10. Repeat #7 and #8. How much money can you save? Does paying *a lot* more make much difference?

                          $_____   *(yes/no)* _____

11. How would you answer #6, now? (Would you pay more?)   *(yes/no)* _____

Press the padlock icon; enable the ability to swipe; and swipe leftward.

12. Reduce your monthly payment to the absolute minimum, again. Pay less interest each month. In other words, pay more principal. Do you save any money? Why or why not?

    (yes/no) _____

    (explain) _____
    Press and hold monthly balance numbers, to magnify them. Click on ⓘ for a breakdown of each payment.

13. Repeat #12, but compound the interest. Do you save any money? Less or more money?

    (yes/no) _____

    (explain) _____

14. Knowing, overall, how interest affects your ability to pay the government back, how would you answer #6 now? (Would you pay more?)

                                                    (yes/no) _____

Question 15 is asked purely to provoke discussion.

15. Do you save any money, if you pay more than the minimum but are not charged interest?
    Return to the main screen, and turn the APR *switch off.*

                                                    (yes/no) _____