

College Students and Time Management

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Introduction

Time management is one of the most prominent problems adults at any age face in life. With only twenty-four hours in the day, one must decide whether to devote his or her time to labor or leisure. Different people place different values on the two and allocate their time based on what they think is best. Though this is a lifelong challenge for the majority of people, many college students may find time management particularly difficult as the concept is relatively new. This pilot study focuses on this demographic.

On average, eight hours of the day are spent sleeping, accounting for a third of one's time. If, hypothetically, one was given these eight hours back, it would be interesting to see what he or she would do with this time. They may use it for a variety of activities, both labor and leisure. This study explores this concept by asking students in an introductory statistics course what they would do given an additional eight hours in the day.

Variables

Each of the variables was created to encompass the most common options; in particular, the options are closely related to the resources provided on campus.

	Levels	1	2	3	4
Labor/Leisure time split	3	75% / 25%	50% / 50%	25% / 75%	
Type of Leisure	4	Social Media and TV	Gaming	Art	Outdoor Activities
Type of Labor	3	School	School AND work	Work	

Design

This study used a mixed level discrete choice design with three factors: time split, type of labor, and type of leisure. Time split was divided by two hours of labor and six hours of leisure, six hours of labor and two hours of leisure, and four hours of both. Types of labor included school, work, or school and work.

Survey

To collect data, surveys were administered to an introductory statistics course at California State University at Long Beach. In addition to demographic variables, nine questions were asked in which students were asked to choose between two options, each allocating different times to a specific type of labor and a specific type of leisure. JMP was used to determine the optimal questions to ask, which was a simple process. Using the Design of Experiment function, a custom design was created with mixed factors and 18 runs in blocks of 2. SAS was used for discrete choice analysis.

Demographics

The study consists of 126 participants, with ages ranging from 17 to 26. The median age was 19 and the mode was 18. After looking at the overall results, individual examinations were done for gender and residency. The gender ratio was roughly equal, with 62 females and 64 males. Most students (84) lived off-campus with family; 24 lived off-campus and independently, while 21 lived on-campus. A breakdown of the demographics is shown below:

Age:

<18: 0.79%	20: 15.87%
18: 39.68%	21: 8.73%
19: 29.37	>21: 5.56%

Gender:

Female: 49.21%

Male: 50.79%

Residence:

Off-Campus, independently: 19.05%

Off-Campus, with family: 64.29%

On-Campus: 16.67%

Ethnicity:

Chicano/Latino: 38.10%

Caucasian: 19.84%

Asian/Pacific Islander: 30.16%

Other: 11.9%

Working hours (per week):

None: 43.65%

16-20: 15.87%

1-10: 11.90%

21-30: 14.29%

11-15: 11.11%

>30: 3.17%

Results

Overall

MLE of Parameter Estimates: Overall

Obs	Parameter	DF	Estimate	StdErr	ChiSq	ProbChiSq	HazardRatio	Label
1	Ratio1	1	0.20234	0.09166	4.8728	0.0273	1.224	1
2	Ratio2	1	0.49371	0.08997	30.1119	<.0001	1.638	2
3	Ratio3	0	0	.	.	.	.	3
4	Leisure1	1	-0.29809	0.10861	7.5328	0.0061	0.742	1
5	Leisure2	1	-0.83610	0.12404	45.4367	<.0001	0.433	2
6	Leisure3	1	-0.84753	0.11630	53.1098	<.0001	0.428	3
7	Leisure4	0	0	.	.	.	.	4
8	Labor1	1	0.24440	0.12431	3.8655	0.0493	1.277	1
9	Labor2	1	0.28992	0.09215	9.8980	0.0017	1.336	2
10	Labor3	0	0	.	.	.	.	3

Based on the overall results, all factors are significant ($p < 0.05$ in all cases). Students generally prefer to split their time evenly between labor and leisure, and prefer to spend more time on leisure if forced to choose between the two. These preferences are statistically significant. The most popular type of leisure is outdoor activities, followed by social media and television. Gaming and art are the least popular options, with gaming having a statistically insignificant lead over art. Students prefer to spend their labor time on either school and work or solely on school, with the former having a statistically insignificant lead. Both, however, had a statistically significant lead over only work.

Gender

MLE of Parameter Estimates: Female

Obs	Parameter	DF	Estimate	StdErr	ChiSq	ProbChiSq	HazardRatio	Label
1	Ratio1	1	0.19187	0.13743	1.9494	0.1626	1.212	1
2	Ratio2	1	0.59710	0.12947	21.2698	<.0001	1.817	2
3	Ratio3	0	0	.	.	.	.	3
4	Leisure1	1	-0.01666	0.15793	0.0111	0.9160	0.983	1
5	Leisure2	1	-1.22050	0.18881	41.7836	<.0001	0.295	2
6	Leisure3	1	-0.61483	0.16666	13.6092	0.0002	0.541	3
7	Leisure4	0	0	.	.	.	.	4
8	Labor1	1	0.27063	0.18902	2.0500	0.1522	1.311	1
9	Labor2	1	0.24777	0.13640	3.2996	0.0693	1.281	2
10	Labor3	0	0	.	.	.	.	3

Breaking the results down by gender, there is no statistically significant difference in how females prefer to spend their labor time, but significant differences in time split and leisure. They prefer to split their time evenly between labor and leisure, with a statistically insignificant preference for labor. In regard to leisure, outdoor activities are the most popular, with a statistically significant lead over art and gaming, but not over social media or television. Between art and gaming, art has a statistically significant lead.

MLE of Parameter Estimates: Male

Obs	Parameter	DF	Estimate	StdErr	ChiSq	ProbChiSq	HazardRatio	Label
1	Ratio1	1	0.22665	0.12757	3.1564	0.0756	1.254	1
2	Ratio2	1	0.42095	0.12805	10.8063	0.0010	1.523	2
3	Ratio3	0	0	.	.	.	.	3
4	Leisure1	1	-0.55767	0.15437	13.0500	0.0003	0.573	1
5	Leisure2	1	-0.52604	0.17216	9.3360	0.0022	0.591	2
6	Leisure3	1	-1.10386	0.16710	43.6418	<.0001	0.332	3
7	Leisure4	0	0	.	.	.	.	4
8	Labor1	1	0.28705	0.17514	2.6862	0.1012	1.332	1
9	Labor2	1	0.37015	0.13116	7.9644	0.0048	1.448	2
10	Labor3	0	0	.	.	.	.	3

Looking at time split, males prefer to split their time evenly between labor and leisure, but do not have a statistically significant preference for one over the other. They have a statistically significant preference for outdoor activities. Gaming has an insignificant lead over social media

or television and both have a significant lead over art. In regards to labor, men prefer to spend their time on school and work. Interestingly, the preference is statistically significant over solely work; although it is not significantly preferred over only school and only school is not significantly preferred over only work.

Residence

MLE of Parameter Estimates: On-Campus

Obs	Parameter	DF	Estimate	StdErr	ChiSq	ProbChiSq	HazardRatio	Label
1	Ratio1	1	-0.12813	0.23851	0.2886	0.5911	0.880	1
2	Ratio2	1	0.46391	0.22790	4.1437	0.0418	1.590	2
3	Ratio3	0	0	.	.	.	.	3
4	Leisure1	1	-0.76054	0.28871	6.9396	0.0084	0.467	1
5	Leisure2	1	-1.25337	0.32899	14.5145	0.0001	0.286	2
6	Leisure3	1	-1.23116	0.30438	16.3610	<.0001	0.292	3
7	Leisure4	0	0	.	.	.	.	4
8	Labor1	1	0.24446	0.31172	0.6150	0.4329	1.277	1
9	Labor2	1	0.42833	0.23215	3.4043	0.0650	1.535	2
10	Labor3	0	0	.	.	.	.	3

With respect to residence, students who live on-campus have significant preferences with regard to time split and leisure, but not to labor. They prefer to split their time evenly among school and work, with no statistically significant preference for one over the other. Looking at leisure, they prefer to spend their time on outdoor activities, having a statistically significant lead over all others. Social media is significantly preferred over gaming and art; art is insignificantly preferred over gaming.

MLE of Parameter Estimates: Off-Campus, With Family

Obs	Parameter	DF	Estimate	StdErr	ChiSq	ProbChiSq	HazardRatio	Label
1	Ratio1	1	0.20287	0.11332	3.2051	0.0734	1.225	1
2	Ratio2	1	0.40531	0.11134	13.2513	0.0003	1.500	2
3	Ratio3	0	0	.	.	.	.	3
4	Leisure1	1	-0.23496	0.13378	3.0847	0.0790	0.791	1
5	Leisure2	1	-0.73789	0.15345	23.1223	<.0001	0.478	2
6	Leisure3	1	-0.77694	0.14339	29.3573	<.0001	0.460	3
7	Leisure4	0	0	.	.	.	.	4
8	Labor1	1	0.18064	0.15388	1.3781	0.2404	1.198	1
9	Labor2	1	0.29470	0.11343	6.7506	0.0094	1.343	2
10	Labor3	0	0	.	.	.	.	3

Students who live off-campus with family prefer to split their time evenly between labor and leisure, but have no statistically significant preference for one over the other. Outdoor activities was the most popular choice, significantly greater than art and gaming, but not significantly greater than social media or television. In regard to labor with these students, school and work was the most preferable option, statistically insignificantly greater than solely school, but significantly greater than solely work. Spending time on only school was insignificantly more preferable than only work.

MLE of Parameter Estimates: Off-Campus, Independently

Obs	Parameter	DF	Estimate	StdErr	ChiSq	ProbChiSq	HazardRatio	Label
1	Ratio1	1	0.46339	0.21746	4.5407	0.0331	1.589	1
2	Ratio2	1	0.83472	0.21120	15.6203	<.0001	2.304	2
3	Ratio3	0	0	.	.	.	.	3
4	Leisure1	1	-0.16269	0.25505	0.4069	0.5236	0.850	1
5	Leisure2	1	-0.89863	0.29250	9.4386	0.0021	0.407	2
6	Leisure3	1	-0.82493	0.27519	8.9863	0.0027	0.438	3
7	Leisure4	0	0	.	.	.	.	4
8	Labor1	1	0.45107	0.29710	2.3050	0.1290	1.570	1
9	Labor2	1	0.18344	0.22287	0.6775	0.4105	1.201	2
10	Labor3	0	0	.	.	.	.	3

Among students who live off-campus and independently, splitting time evenly between labor and leisure was again the most preferable; however, while this option was statistically significantly greater than leaning toward work, it was not significantly greater than leaning toward school.

Leaning toward school was significantly more preferable than leaning toward work. Outdoor activities and social media were the most popular choices, with outdoor activities insignificantly leading. Both were statistically significantly preferable to art and gaming; art was insignificantly preferable to gaming..

Limitations

This study focuses solely on young adults taking an introductory statistics course at CSU Long Beach and is not representative of all college students, or even all students at CSULB. There were also a number of variables not taken into account. While recorded, age and ethnicity were not accounted for in the statistical analysis, so their effects, if any, were missed. Age, in particular, may be a significant factor as older students may have different time management skills and more experience in regard to work.

Furthermore, students were forced to choose between fixed options, so it is unknown how strongly students preferred one over the other when making their choices. Certain choices may have been irrelevant or difficult to judge for some students, for example those with no interest in art or gaming, or those who have little experience in the workforce.

The survey was also given with no in-depth universal explanation for each of the options, so the choices were left to the students' interpretation. For example, when selecting labor activities, there was no clear allocation of time for the combination of school and work option, so preference for one over the other may be underestimated. Each of the activities (work, school, art, gaming, etc.) encompass a wide variety of activities which could not be captured with the limited design, so specific interests could not be explored.

Conclusions

Across all demographics, students had a strong preference for splitting their time equally between labor and leisure, with a slight preference for leisure (with the exception of on-campus residents who lean toward labor over leisure, but this was statistically insignificant). This suggests students tend to be moderate in how they spend their time.

Outdoor activities were always the most preferred form of leisure activity. However, there were differences among gender for ordering the other three. Females preferred social media, then art, then gaming, while males preferred gaming, then social media, then art. This suggests more male gamers than female. There were no significant differences in leisure preferences with respect to residence.

Regarding labor, the combination of work and school was generally the most preferred option, with the exception of females and off-campus independent residents who preferred school; although, both cases were statistically insignificant

SAS Code

```
proc import datafile="Documents\Raw Data.csv"
    out=temp
    dbms=csv
    replace;

    getnames=no;
run;

/* Input survey data */
data LL_res;
    set temp (firstobs=2);
    rename VAR1 = Subj
           VAR2 = Age
           VAR3 = Gender
           VAR4 = Residence
           VAR5 = Ethnicity
           VAR6 = WHPW
           VAR7-VAR15 = q1-q9;
run;

title "Frequency table of Demographics";
proc freq data = LL_res;
    tables Age Gender Residence Ethnicity WHPW;
run;

proc delete data = temp;
run;

/* Inputting our LL design */
data LL_des;
input Set Ratio Leisure Labor;
cards;
1 1 2 1
1 3 4 2
2 3 2 3
2 1 1 2
3 2 1 3
```

```
3 1 3 2
4 3 4 1
4 2 1 2
5 1 2 2
5 2 3 1
6 3 1 1
6 2 3 1
7 3 3 2
7 1 4 3
8 2 4 2
8 3 1 3
9 2 2 1
9 1 3 3
```

```
;  
run;
```

```
proc format;
```

```
    value Ratio    1 = '75% / 25%'  
                  2 = '50% / 50%'  
                  3 = '25% / 75%';  
    value Leisure  1 = 'Social Media and TV'  
                  2 = 'Gaming'  
                  3 = 'Art'  
                  4 = 'Outdoor Activities';  
    value Labor    1 = 'School'  
                  2 = 'School AND work'  
                  3 = 'Work';
```

```
run;
```

```
/* Overall */
```

```
%mktmerge(design=LL_des, data=LL_res,  
out=LL_res2, nsets=9, nalts=2, setvars=q1-q9);
```

```
proc transreg design=5000 data=LL_res2 nozeroconstant norestoremissing;  
model class(Ratio Leisure Labor/ zero=none order=formatted) /lprefix=0;output  
out=LL_coded(drop=_type__name__ intercept);  
id subj gender set c;  
run;
```

```

ods graphics off;
ods exclude all;
proc phreg data=LL_coded brief;
model c*c(2) = &_trgind / ties=breslow;
strata subj set;
ods output ParameterEstimates=outMLE_overall;
run;
ods exclude none;

title "MLE of Parameter Estimates: Overall";
proc print data=outMLE_overall;
    * where ProbChiSq ^=. & ProbChiSq < 0.05; * Modify to change significance level;
run;

/* Gender: Female */
data LL_female;
    set LL_res;
    where Gender='Female';
run;

%mktmerge(design=LL_des, data=LL_female,
out=LL_female2, nsets=9, nalts=2, setvars=q1-q9);

proc transreg design=5000 data=LL_female2 nozeroconstant noestoremissing;
model class(Ratio Leisure Labor/ zero=none order=formatted) /lprefix=0;output
out=LL_female_coded(drop=_type__name__ intercept);
id subj gender set c;
run;

ods graphics off;
ods exclude all;
proc phreg data=LL_female_coded brief;
model c*c(2) = &_trgind / ties=breslow;
strata subj set;
ods output ParameterEstimates=outMLE_female;
run;
ods exclude none;

```

```

title "MLE of Parameter Estimates: Female";
proc print data=outMLE_female;
    * where ProbChiSq ^=. & ProbChiSq < 0.05; * Modify to change significance level;
run;

```

```

/* Gender: Male */
data LL_male;
    set LL_res;
    where Gender='Male';
run;

```

```

%mktmerge(design=LL_des, data=LL_male,
out=LL_male2, nsets=9, nalts=2, setvars=q1-q9);

```

```

proc transreg design=5000 data=LL_male2 nozeroconstant norestoremissing;
model class(Ratio Leisure Labor/ zero=none order=formatted) /lprefix=0;output
out=LL_male_coded(drop=_type__name_ intercept);
id subj gender set c;
run;

```

```

ods graphics off;
ods exclude all;
proc phreg data=LL_male_coded brief;
model c*c(2) = &_trgind / ties=breslow;
strata subj set;
ods output ParameterEstimates=outMLE_male;
run;
ods exclude none;

```

```

title "MLE of Parameter Estimates: Male";
proc print data=outMLE_male;
    * where ProbChiSq ^=. & ProbChiSq < 0.05; * Modify to change significance level;
run;

```

```

/* Residence: On-Campus */
data LL_onC;
    set LL_res;
    where Residence='On-Campus';
run;

```

```

%mktmerge(design=LL_des, data=LL_onC,
out=LL_onC2, nsets=9, nalts=2, setvars=q1-q9);

proc transreg design=5000 data=LL_onC2 nozeroconstant noestoremissing;
model class(Ratio Leisure Labor/ zero=none order=formatted) /lprefix=0;output
out=LL_onC_coded(drop=_type__name_ intercept);
id subj gender set c;
run;

ods graphics off;
ods exclude all;
proc phreg data=LL_onC_coded brief;
model c*c(2) = &_trgind / ties=breslow;
strata subj set;
ods output ParameterEstimates=outMLE_onC;
run;
ods exclude none;

title "MLE of Parameter Estimates: On-Campus";
proc print data=outMLE_onC;
    * where ProbChiSq ^=. & ProbChiSq < 0.05; * Modify to change significance level;
run;

/* Residence: Off-Campus, With Family */
data LL_offF;
    set LL_res;
    where Residence='Off-Campus, With Family';
run;

%mktmerge(design=LL_des, data=LL_offF,
out=LL_offF2, nsets=9, nalts=2, setvars=q1-q9);

proc transreg design=5000 data=LL_offF2 nozeroconstant noestoremissing;
model class(Ratio Leisure Labor/ zero=none order=formatted) /lprefix=0;output
out=LL_offF_coded(drop=_type__name_ intercept);
id subj gender set c;
run;

```

```

ods graphics off;
ods exclude all;
proc phreg data=LL_offF_coded brief;
model c*c(2) = &_trgind / ties=breslow;
strata subj set;
ods output ParameterEstimates=outMLE_offF;
run;
ods exclude none;

title "MLE of Parameter Estimates: Off-Campus, With Family";
proc print data=outMLE_offF;
    * where ProbChiSq ^=. & ProbChiSq < 0.05; * Modify to change significance level;
run;

/* Residence: Off-Campus, Independently */
data LL_offI;
    set LL_res;
    where Residence='Off-Campus, Independently';
run;

%mktmerge(design=LL_des, data=LL_offI,
out=LL_offI2, nsets=9, nalts=2, setvars=q1-q9);

proc transreg design=5000 data=LL_offI2 nozeroconstant norestoremissing;
model class(Ratio Leisure Labor/ zero=none order=formatted) /lprefix=0;output
out=LL_offI_coded(drop=_type__name__ intercept);
id subj gender set c;
run;

ods graphics off;
ods exclude all;
proc phreg data=LL_offI_coded brief;
model c*c(2) = &_trgind / ties=breslow;
strata subj set;
ods output ParameterEstimates=outMLE_offF;
run;
ods exclude none;

title "MLE of Parameter Estimates: Off-Campus, Independently";

```

```
proc print data=outMLE_offF;  
    * where ProbChiSq ^=. & ProbChiSq < 0.05; * Modify to change significance level;  
run;
```

The purpose of this survey is to collect data on CSULB students about their overall time spent on labor and leisure. The data collected will be a source of evidence on whether CSULB is meeting the needs of students. With your participation, we can ensure future CSULB students are provided the best college experience possible.

Please mark one box per question unless noted otherwise.

Demographics

a. What is your age? _____

b. What is your gender?

☐ male

☐ female

c. What is your residence?

☐ off-campus, with family

☐ off-campus, independently

☐ on-campus

d. What is your ethnicity? (Check all that apply)

☐ American Indian

☐ African American

☐ Asian/Pacific Islander

☐ Chicano/Latino

☐ Caucasian

☐ Other: please specify _____

e. How many hours per week do you work in a job?

☐ none

☐ 1-10

☐ 11-15

☐ 16-20

☐ 21-30

☐ 31-39

☐ 40 or

more

Now, imagine having an extra eight hours in the day. For each set of scenarios (nine scenarios total), please select which of the two options is most preferable to you. Your responses are anonymous, so please answer honestly.

Scenarios Set 1

1. Spend 2 hours gaming and 6 hours on school ☐
2. Spend 6 hours doing outdoor activities and 2 hours on school or work ☐

Scenarios Set 2

1. Spend 6 hours gaming and 2 hours at work ☐
2. Spend 2 hours on social media or watching TV and 6 hours on school or work ☐

Scenarios Set 3

1. Spend 4 hours on social media or watching TV and 4 hours at work ☐
2. Spend 2 hours on artistic pursuits and 6 hours on school or work ☐

Scenarios Set 4

1. Spend 6 hours on outdoor activities and 2 hours on school ☐
2. Spend 4 hours on social media or watching TV and 4 hours on school or work ☐

Scenarios Set 5

1. Spend 2 hours gaming and 6 hours on school or work ☐
2. Spend 4 hours on artistic pursuits and 4 hours on school ☐

Scenarios Set 6

1. Spend 6 hours on social media or watching TV and 2 hours on school ☐
2. Spend 4 hours on artistic pursuits and 4 hours on school ☐

Scenarios Set 7

1. Spend 6 hours on artistic pursuits and 2 hours on school or work ☐
2. Spend 2 hours doing outdoor activities and 6 hours at work ☐

Scenarios Set 8

1. Spend 4 hours on outdoor activities and 4 hours on school or work ☐
2. Spend 6 hours on social media or watching TV and 2 hours at work ☐

Scenarios Set 9

1. Spend 4 hours gaming and 4 hours on school ☐
2. Spend 2 hours on artistic pursuits and 6 hours at work ☐

Thank you for taking this survey!!