#### DOCUMENT RESUME

ED 130 868 SE 021 591

TITLE Plans of Indiana High School Seniors; Are Those Who

Plan to Become Engineers Different? [Manpower

Monograph 76-1.]

INSTITUTION Purdue Univ., Lafayette, Ind. Office of Manpower

Studies.

PUB DATE 3 Hay 76

NOTE 19p.: Not available in hard copy due to marginal

legibility of original document

AVAILABLE FROM Professor J. P. Lisack, Purdue University, SCC-A,

West Lafayette, Indiana 49707 (\$1.00)

EDRS PRICE MF-\$0.83 Plus Postage. MC Not Available from EDRS.

DESCRIPTORS \*Career Choice: \*Educational Planning: \*Engineering

Education; Engineers; \*High School Students;

\*Occupational Surveys; Science Education; \*Surveys

IDENTIFIERS \*Indiana

#### ABSTRACT

This survey presents tabulated data of the responses of 50,000 Indiana high school seniors to a questionnaire designed to determine the characteristics and plans of those intending to become engineers after graduation. Characteristic highlights include the following: Engineering aspirants were 92% male; 65% were in college preparatory courses; 22% were A average students; and seniors from large population cities were slightly more inclined to become engineers. Plans highlighted included the following: 49% of the engineering aspirants planned to continue their education full time; 46% had no preference for employment locale; job activities and money were the predominant reasons for choosing engineering as a career; parents and other relatives were the primary help in making a career choice; and the college of choice was chosen primarily for program offerings and prestige. Tables including these data are presented. (SL)



### FOREWORD

PLANS OF INDIANA HIGH SCHOOL SENIORS AFTER GRADUATION;
ARE THOSE WHO PLAN TO BECOME ENGINEERS DIFFERENT?



Last year, the Purdue University Office of Manpower Studies conducted a major survey of Indiana high school seniors in the class of '75. The project was designed to (1) provide meaningful information and materials to students in order to help them make reasoned occupational choices and related educational plans, and (2) provide data for reports such as this one.

About 50,000 of the 82,000 Indiana seniors participated in the survey. Their characteristics and plans after graduation from high school--with a discussion of some selected highlights-are presented in the report. The data have been broken down to show the differences or similarities between all seniors and those who identified "Engineer" as their choice of future occupation or career (4.3% of the total respondents).

Full details about this class are reported in Manpower Report 75-1, Educational and Employment Plans and Occupational Choices of Indiana High School Seniors; Results of a Survey of Indiana's High School Seniors in the Class of '75, pp. 145.

This type of survey was accomplished for the classes of 1966, '69, '72 and '75. For a detailed report of the changes of high school seniors and their plans over this decade, see Manpower Report 76-1, Changing Trends in the Plans of High School Seniors; Comparisons of the Educational, Employment and Occupational Plans of Seniors in Indiana High School Classes of 1966, 1969, 1972 and 1975, pp. 107.

Copies of these reports are available from Professor J. P. Lisack, Purdue University, SCC-A, West Lafayette, Indiana 47907 for \$2.50 each. MONOGRAPHS, such as this one, are available for \$1.00.



3HLIGHTS OF THE CHARACTERISTICS OF HIGH SCHOOL SENIORS (See Table 1 on facing page for data)

## SEX DISTRIBUTION

There was less than 1% difference between male and female high school seniors participating in the survey. On the other hand, as can be seen in the facing table, 92.3% of seniors who hope to become engineers were male and 7.7% were female.

## RACE DISTRIBUTION

Of considerable interest in responses to this question is the fact that Black and Spanish American seniors apparently have the same aspirations to become engineers (proportionately) as do all seniors. However, this may reflect the results of extensive efforts on the part of Purdue University recruiters to interest qualified Blacks and other minority group members in engineering.

Proving that some of our seniors still have a sense of humor, there was a reported Lilliputian and a Martian who participated!!

Note: Although the total Black population in the State of Indiana is slightly higher than the distribution reported here, the response distribution does approximate the race distribution of Blacks in the high school senior population.

### MAJOR AREA OF STUDY (Course Concentration)

There is a significant difference in the major areas of study of those seniors who hoped to become engineers and all seniors. Nearly two thirds of the engineer-bound group were enrolled in a college preparatory type program (less than 37% of all seniors in the State were in a college prep type program). Further there were slightly more students who hoped to become engineers who were in vocational education programs and significantly smaller proportions (as might well be expected) were enrolled in business education or general education courses.

### OGRADE AVERAGE

Again, there were significant differences for seniors who hope to become engineers, in that nearly twice as many were A average and fewer were C or lower average compared with all seniors. It is interesting to note however that nearly 28% of the seniors who planned to become engineers were C average grade level students.

### SIZE OF HOME COMMUNITY

As a rule, it appears that seniors who come from the larger size population cities were slightly more inclined to become engineers than the high school senior population as a whole.



# CHARACTERISTICS OF HIGH SCHOOL SENIORS

,	Percer	ntage	
•	Distribution	of Responses	
		Engineer	•
	All Seniors	Aspirants	
Cnaracteristic	N=82,654	N=3,604	
SEX DISTRIBUTION I com:			•
Male	50.8%	92.3%	
Female	49.2	7.7	
Totals	100 %	100 %	
RACE DISTRIBUTION I con:	<u> </u>		
Black	5.3%	5.7%	
Caucasian (White)	87.2	87.5	
Spanish-American	1.0	1.1	
Other -	1.3	1.4	
Non-response	5.2	4.3	
Totals	100 %	100 %	
MAJOR AREA OF STUDY My major a	rea of study (	course concentrat	ion)
College Preparatory	36.98°	65.2%	
Business Education	20.3	3.5	
Vocational Education	14.6	15.2	
General Education	19.6	10.6	,
- Other	8.6	5.5	
Totals	100 %	100 %	
GRADE AVERAGE My high school g	rade overage i	s closest to:	
A	11.6%	22.5%	
8	43.8	45.3	
<u>C</u>	38.6	27.8	
D	2.5	2.1	
Unknown	3.5	2.3	
Totals	100 %	100 %	
SIZE OF HOME COMMUNITY The popular	ulation of the	town, city on at	hom

SIZE OF HOME COMMUNITY The population of the town, city or other place in which I live is:

Rural - less than 1000	16.6%	15.5%
Between 1000 and 5000	15.0	13.7
Between 5000 and 25,000	26.4	26.1
Between 25,000 and 50,000	12.4	14.0
50,000 or higher	23.0	26.2
Unknown	6.6	4.5 100 %



# HIGHLIGHTS OF SENIORS' PLANS AFTER GRADUATION (See Table 2 on facing page for data)

## SENIORS' CHOSEN PLAN

The most significant difference between the engineering aspirants and all seniors is that nearly 50% of the former group planned to continue their education full time within six months after graduating from high school compared with fewer than 31% of all seniors. The engineer aspirant group was far less likely to plan to work at a full time job immediately after graduation from high school with no further education planned, or to get married within six months after graduation, or to delay continuing education.

Further, smaller proportions of the engineer aspirants reported they did not know what their plans were within six months after graduation. Although a greater proportion of engineer aspirants reported they planned to enter military service, it should be noted that males are much more likely to make this choice, and the engineer group is made up of more than 92% males.

## DEFINITIVENESS OF PLANS

Although seniors aspiring to become engineers appeared to be slightly more definite in their career choice and educational plans than were all seniors; nearly 27% were still indefinite.

### HOPED FOR EMPLOYMENT LOCALE

In general, students opting to become engineers were less likely to have a specific preference for their employment locale than were all seniors; in fact, more than 46% of this group said they had no preference. Proportionately fewer of these engineer aspirants hoped to be employed in Indiana.







## TABLE 2 SENIORS' PLANS AFTER GRADUATION

	Distribution	Distribution of Responses		
Response	All Seniors N=82,654	Engineer Aspirants N=3,604	,	
SENIOR'S CHOSEN PLAN Within six mor	the after I gra	duate, I plan	to:	
Work at a full-time job, no further education planned at this time	18.9%	9.6%		
Work at a full-time job first, then further my education	14.5	12.2		
Continue my education full-time	30.6	49.1	• •	
Go to school part-time, work part-time	13.3	11.9		
. Go into military service	4.3	6.1	٠.	
Get married, no further education planned at this time	3.4	.7		
Get married first, then further my education	2.0	.6		
l don't know	7.0	4.9	•	
0ther	3.5	3.0		
Non-response	2.4	1.7	٠	
iotais	100 %	100 %		

DEFINITIVENESS OF PLANS My present educational	occupation or ca plen <b>s</b> are:	reer choice and
Quite definite	21.7%	21.23
Almost definite	44.5	51.3
Indefinite	32.7	26.9
Non-response Totals	1.1	100

HOPED FOR EMPLOYMENT LOC	ALE I hope	to be employed:	•
In my city or county		31.5%	22.13
Elsewhere in Indiana		10.5	9.8
Outside of Indiana		20.2	20.8
No preference		35.5	46.1
ਮਹਾ-response	Totals	2.3 100 %	1.2

# CHOOSING A CAREER OR OCCUPATION (TIME OF FIRST INTEREST AND DECISION) (See Table 3 on facing page for data)

# WHEN FIRST "INTEREST" IN CHOSEN CAREER OR OCCUPATION WAS FIRST NOTED AND WHEN "DECISION" ON CHOSEN CAREER WAS MADE

The data indicate that interests in a certain career or occupation were first noted by students throughout all school year levels, however, most such activity occurred between the 7th grade and the junior year in high school in particular.

Deciding on a certain occupation, however, was largely deferred to the senior year in high school--or it was decided in the junior year by many others.

The patterns for all seniors and those of engineer aspirants are quite similar. There might be a slight trend for interest in an occupation to be first noted a little later for the engineer aspirants (with the peak still occurring during the high school junior year).

It also appears that more seniors choosing engineering are making this decision a little later than are all seniors. The majority of them are in fact waiting until their senior year.



# TABLE 3 CHOOSING A CAREER OR OCCUPATION (Time of First Interest and Decision)

	Percen	tage
	Distribution	of Responses
Response	All Seniors N=82,054	Engineer Aspirants N=3,604
when first interest in chosen interest in my chosen co		
Elementary grades (1-6)	10.4%	8.6%
Junior high grades (7-8)	15.5	14.9
High school freshman	14.9	14.5
High school sophomore	17.8	718.2
High school junior	26.7	30.4
High school senior	14.7 1s 100 %	13.4

ΟΡΙΝΟΤΊ ΜΕ ΑΝΕΙΝΑΝΙΚΑ ΚΑΙ	
occupation or career in:  Elementary grades (1-6) 1.8% 1.2%	
Junior high grades (7-8) 4.0 3.1	
High school freshman 7.0 5.6	
High school~sophomore 10.6 8.7	
Eigh school junior 27.8 29.7	
High school senior 48.8 51.7	

7

# HIGHLIGHTS OF REASONS GIVEN FOR CHOOSING A PARTICULAR CAREER OR OCCUPATION (See Table 3 continued on facing page for data)

#### MOST IMPORTANT REASON

The most popular reason for choosing a particular career or occupation was "Activities on the job;" this was the choice of about 42% of all seniors--and more than 53% of the engineer aspirants. The most significant differences were:

- 1. Whereas nearly 15% of all seniors chose "Kinds of people I'll work with," this was the choice of fewer than 4% of the engineer aspirants.
- 2. Ten percent of all seniors said "Serving society" was the most important reason for their occupational selection-however, fewer than 4% of the seniors planning to become engineers made this choice.
- 3. Money was the most important reason for more than 21% of the engineer aspirants, but only for 17% of all seniors.
- 4. Engineering aspirants were slightly more inclined to choose "Parents' opinion of job," "Status or prestige of job," and "Like to work outdoors."

No question about the fact that many students chose engineering for different reasons than did students choosing other occupations.

#### SECOND MOST IMPORTANT REASON

- 1. The second most important reason for choosing a particular occupation for nearly a third of all seniors was "Money. This item was notably more popular with engineer aspirants, having been chosen by 44% of them.
- 2. "Kinds of people I'll work with" was not as important to engineer aspirants (8.5% making this choice) as it was with all seniors (> 18%).
- 3. Consistent with the pattern described earlier, proportionately more engineer aspirants identified "Parents' opinion of job," "Like to work outdoors," and "Status or prestige of job."

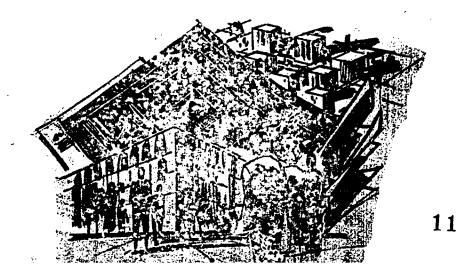
\*\*\*

In general, fewer engineer aspirants identified "Like to work indoors." Finally, "Friends' opinion of job" was not too important to either group.



# TABLE 3 Continued CHOOSING A CAREER OR OCCUPATION

•	Percentage Distribution of Responses		
Reason	All Seniors N=82,654	Engineer Aspirants N=3,604	
MIST IMPORTANT REASONS FOR CHOOSING	PARTICULAR CARE	R	
1st Most Important:	M.4	<del>-</del>	
Activities on the job	42.18	53.2%	
Friends' opinion of job	1.3	1.2	
Kinds of people 1'll work with	14.8	3.6	
Like to work indoors	2.0	1.5	
Like to work outdoors	6.8	7.3	
Money	17.2	21.4	
Parents! opinion of job	1.8	3.3	
Status or prestige of job	4.0	4.9	
Serving Society Totals	10.0	3.6 100 %	
2nd Most Important:			
Activities on the job	17.18	13.28	
Friends' opinion of job	3.4	3.3	
Kinds of people I'll work with	18.2	8.5	
Like to work indoors	3.4	2.2	
Like to work outdoors	5.1	7.3	
Honey	32.2	44.0	
Parents opinion of job	4.3	6.4	
Status or prestige of job	7.3	8.6	
Serving society	9.0	6.5	





HIGHLIGHTS OF SOURCES OR PERSONS MOST HELPFUL TO SENIORS IN CHOOSING AN OCCUPATION OR CAREER (See Table 3 continued on facing page for data)

#### SOURCES OR PERSONS "MOST" HELPFUL

More seniors said their parents or other relatives were most helpful to them in making their career choice. (Undoubtedly this will come as a pleasant shock to many parents who doubted their communications lines were still open.) However, the rank order of importance charged after that first item as shown below; the percentage differences are also presented.

#### RANK ORDER OF TOP CHOICES

Source or Person Most Helpful	All Seniors	Engineers Aspirants	* A * Engrs/All
Parents or other relatives	lst	lst	+ 2.3%
Friends	2nd	4th	- 3.0%
Previous work experience	3rd	6th	- 2.2%
High school courses	4th	2nd	+ .5%
High school teachers	5th	7th	- 2.7%
Other .	6th	5th	+ 3.5%
Printed materials	7th	3rd	+ 3.5%

\*i.e., 37.7% of engineer aspirants made this choice compared with the 35.4% of all students, .. the + 2.3% difference.

Major differences between these two groups included:

- 1. Students planning to become engineers were more inclined (than were all seniors) to identify the following sources or persons as being most helpful;
  - a. Parents or relatives,
  - b. Printed materials,
  - c. School guidance counselor and
  - d. Carper information system.
  - 2. All students were more likely to identify
    - a. Friends,
    - b. High school teachers and
    - c. Previous work experience.

### SECOND MOST HELPFUL SOURCE OR PERSON

Interestingly--the <u>same</u> differences in rank orders between these two groups for this set match exactly the changes reported above--which reinforce the differences as shown.



# CHOOSING A CAREER AREA OR OCCUPATION

	Percentage		
	Distribution of Response Engineer		
	All Seniors	Aspirants	
Response	N=82,654	N=3,604	
SOURCES OR PERSONS MOST HELPFUL IN	MAKING CHOICE		
1st Most Helpful:			
Parents or other relatives	35.4%	37.7%	
Friends	. 11.4	8.4	
High school teachers	8.9	6.2	
School guidance counselor	4.0	5.5	
School programs	3.7	3.4	
Printed materials	5.0	8.5	
TV and radio	2.5	2.1	
Previous work experience	10.2	8.0	
High school courses	10.1	10.5	
Career information system	1.1	1.6	
Other	7.8	8.1	
Totals	100 %	100 %	
2nd Most Helpful:		•	
Parents or other relatives	19.2%	19.3%	
Friends	18.4	15.0	
High school teachers	9.2	7.8	
School guidance counselor	7.3	8.8	
School programs	4.3	4.0	
Printed materials	8.6	11.9	
TV and radio	4.0	3.1	
Previous work experience	11.3	10.7	
High school courses	10.7	10.8	
Career information system	2.2	3.2	
Other	5.3	5.4	
Totals	100 %	100 %	



<u>HIGHLIGHTS</u> OF REASONS FOR CHOOSING A PARTICULAR SCHOOL (See Table 4 on facing page for data)

#### MOST IMPORTANT REASON

"Offers what I want to study" was the most popular reason given by all seniors for choosing a certain postsecondary school; this was an even more popular choice of the engineering bound group. From that point on, however, there was disagreement between the two groups; e.g. the reputation of or prestige of a school was more important to a far greater proportion of engineer aspirants, whereas location of school was not. The change in rank order, and the percentage differences are shown below:

#### RANK ORDER OF TOP CHOICES

Reason for Selection	All Seniors	Engineer Aspirants	% △ Engrs/All
Offers what I want to study	lst	lst	+ 7.1%
Location near home	2nd	3rd	- 6.0%
Reputation or prestige of school	3rd	2nd	+ 4.7%
Amount of tuition	4th	. 5th	- 2.0%
Other reason	5th	4th	- 1.6%
Size of school	6th	6th	6%

#### SECOND MOST IMPORTANT DIFFERENCE

Consistent with the above pattern, more engineer aspirants reported their second most important reason for choosing a certain institution, was the reputation of the school; however, the location of the school was not as important. It also appears that the counselor or teacher's suggestion was more important to some of the engineer aspirants; the fact that friends or classmates planned to attend the same school was not deemed to be as important to engineer aspirants as it was to all seniors.





# TABLE 4 REASONS FOR CHOOSING A PARTICULAR POST-SECONDARY SCHOOL

	Percentage		
	Distribution of Responses		
	All Seniors	Engineer	
_	nt'g. Their Educ.	Aspirants	
Reason	N=42,807	N=3,604	
	a school for vocat ining is based upo		
Location near home	17.9%	11.9%	
Friends or classmates plan			
to attend	2.6	2.4	
Amount of tuition	7.3	5.3	
Size of school	4.7	4.1	
Offers what I want to study	48.2	55.3	
Counselor or teacher suggestion	1.8	1.5	
Preference of parent or relative	3.1	2.0	
Reputation or prestige of school	7.4	12.1	
Other reason	7.0	5.4	
Totals	100 %	100 %	
2ND MOST IMPORTANT			
Location near home	17.2%	13.8%	
Friends or classmates plan			
to attend	7.6	6.5	
Amount of tuition	12.9	12.1	
Size of school	9.6	8.8	
Offers what I want to study	15.1	13.1	
Counselor or teacher suggestion	5.6	6.5	
Preference of parent or relative	6.8	6.1	
Reputation or prestige of school	13.8	22.7	
Other reason Totals	11.4	10.4	
iotais	1 100 6	1 (UU A	



# HIGHLIGHTS OF LOCATION OF POSTSECONDARY SCHOOL CHOSEN METHODS PLANNED TO FINANCE EDUCATION (See Tables 5 and 6 on facing page for data)

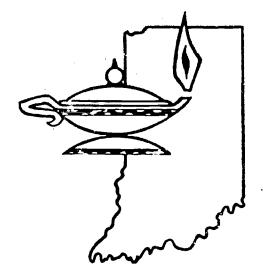
#### LOCATION

The largest single group of seniors identified "Elsewhere in Indiana" as the location of their chosen school (45.8% of all seniors--58% of engineer aspirants); e.g. this choice was made by more than 12% of the engineer aspirants than by all seniors. On the other hand nearly 20% of all seniors indicated the school they planned to enroll in was located "in my city or county"--whereas only 13.5% of the engineer aspirants made this choice. Further nearly 12% of all seniors stated their chosen school was within 25 miles of their home city or county; however, this choice was made by fewer than 9% of the engineer aspirants.

The data indicate that larger proportions of engineer aspirants chose a school outside of their home city or county. One reason for this may be that public supported university programs in engineering are limited to a relative few sites throughout Indiana.

#### METHODS PLANNED TO FINANCE POSTSECONDARY EDUCATION

A review of Table 6 indicates that the most popular choice of both groups (all seniors and engineering aspirants) was "parents or family support" as a method of financing education (33.4% vs. 38.7%). The second most popular choice with both groups was "scholarship or grant" with a great difference between the percentages as only about 20% of all seniors identified this method vs. nearly 31% of the engineer aspirants. It also appears that proportionately more engineering aspirants had accumulated savings they planned to finance their education with (26.5% vs. 18.7%). Engineering aspirants (by approximately a 8% differential) were more inclined to identify full-time employment during summer months than were all seniors, as well as engage in part-time employment while at school. Engineering aspirants were also more likely to identify planning on a loan to help finance their education than vere all enices





# TABLE 5 LOCATION OF SCHOOL CHOSEN

	Distribution of	Percentage Distribution of Responses	
Response	All Seniors ont'g. Their Educ. N=42,807	Engineer Aspirants N=3,604	
LOCATION The school in which I plan	to enroll is locate	ed:	
in my city or county	1 19.6%	13.5%	
Within 25 miles, but outside my home city or county	11.9	8.7	
Elsewhere in Indiana	45.8	58.1	
Outside of Indiana	13.9	_	
Haven't decided yet		11.2	
	8.8 als 100 %	<u>8.5</u> 100 %	

# TABLE 6 METHODS PLANNED TO FINANCE POST-SECONDARY EDUCATION

	Percentage '		
Funds 4	Distribution of Responses		
· <del>-</del>	All Seniors	Engineer	
Multiple Choices Reported*	nt'g. Their Educ. N=42,807	Aspirants N=3,604	
METHODS I plan to finance my educatio	n through:		
Personal savings	18.7%	26.5%	
Parents or family support	33.4	38.7	
Loan from the educational			
institution	5.6	8.3	
Loan from a bank or other source	5.1	6.2	
Part-time employment while at school	15.9	18.8	
Full-time employment during			
summer months	14.8	22.4	
Scholarship or grants	20.2	30.8	
Unknown	5.2	6.0	
0ther	2.6	3.7	

\*Note: Proportionately more seniors who planned to become engineers identified methods of financing their college education.



## HIGHLIGHTS OF PLANS FOR GRADUATE STUDIES AND

CHARACTERISTICS OF HEADS OF HOUSEHOLDS (See Tables 7 and 8 on facing page for data)

#### PLANS FOR GRADUATE OR PROFESSIONAL STUDIES

Those high school seniors who planned to become engineers were more likely to plan to continue their studies after completing their undergraduate college work than were all seniors; however, the difference was only 3.5%. Note that responses were limited to only those seniors who did plan to continue their education after graduation from high school.

#### CHARACTERISTICS OF HEADS OF HOUSEHOLDS

## Relationship of Head of Household

A greater proportion of seniors who planned to become engineers (88%) reported "Father" as their head of household, with proportionately fewer reporting Mother or Other. Also fewer of these engineering bound students did not respond to the question.

Note: Other data indicate that seniors who reported Father as head of household were more likely to plan to continue their education than were others.

## Highest Level of Education Attained by Head of Household

Data in Table 8 show that a higher proportion of students who planned to study engineering came from households where the heads had attained a higher level of education than did heads of households of all seniors. Impressively, 25.6% of the engineer aspirants reported their head of household was a "College or university graduate" and another 16.6% reported their head had "Some college but no degree;" this compares with 18.5% "College graduate" and 15.3% "Some college" for all seniors. Further, proportionately fewer of the engineer aspirants reported that they did not know the educational level of the head of household and fewer did not respond to the question.



PLANS FOR GRADUATE (ADVANCED)
OR PROFESSIONAL STUDIES

Percentage

Distribution of Responses

All Seniors Engineer

Cont'g. Their Educ. Aspirants

N=42,807 N=3 604

GRADUATE (ADVANCED) OR PROFESSIONAL STUDIES

If you plan to attend college, are you considering any graduate or professional training after you complete your undergraduate college work?

Response

Yes	62.5%	66.0%
No	37.5 Totals 100 %	34.0
	iotais 100 g	100 %

# TABLE 8 CHARACTERISTICS OF HEADS OF HOUSEHOLDS Relationship, Educational Level and Occupation

	Percentage Distribution of Responses		
Characteristic  HEAD OF HOUSEHOLD The head of my	All Seniors N=82,654	Engineer Aspirants N=3,604	
Father  Mother Other Non-response	84.0% 10.9 3.8 1.2	88.0% 9.1 2.1 .8	

EDUCATIONAL LEVEL, HOUSEHOLD READ The highest level of education attained by the head of my household is: