Chapter 3 Exercise Set A

1a The bar is the same width as 0-1,000 but twice as tall so 2%

1b 3% (3 times as tall as 0-1,000)

1c 4%

1d 5%

1e 5% × 3 bars = 15%

1f Same size as e so 15%.

2 More in 10,000-11,000 because the graph is taller there than at 15,000-16,000.

3a Block B

3b D is half as big as C, so C is twice as much or 20%.

3c C+D = 10%+20% = 30% so blocks A and B has 100% minus that or 70%.

4a Well over 50% greater percent above 50

4b Well under 50% greater pecent under 50

4c about 50%. About even over 50

5 (b)

6 90-100 because the width of 40-50 & 90-100 is the same but the 90-100 is higher.

7 Group A - (ii)

Group B - (i) This is more spread out due to doubling.

Group C - (iii) This is (ii) shifted right by 10.

* **8** It may have increased but we also know that inflation occurred and income adjusted for that effect
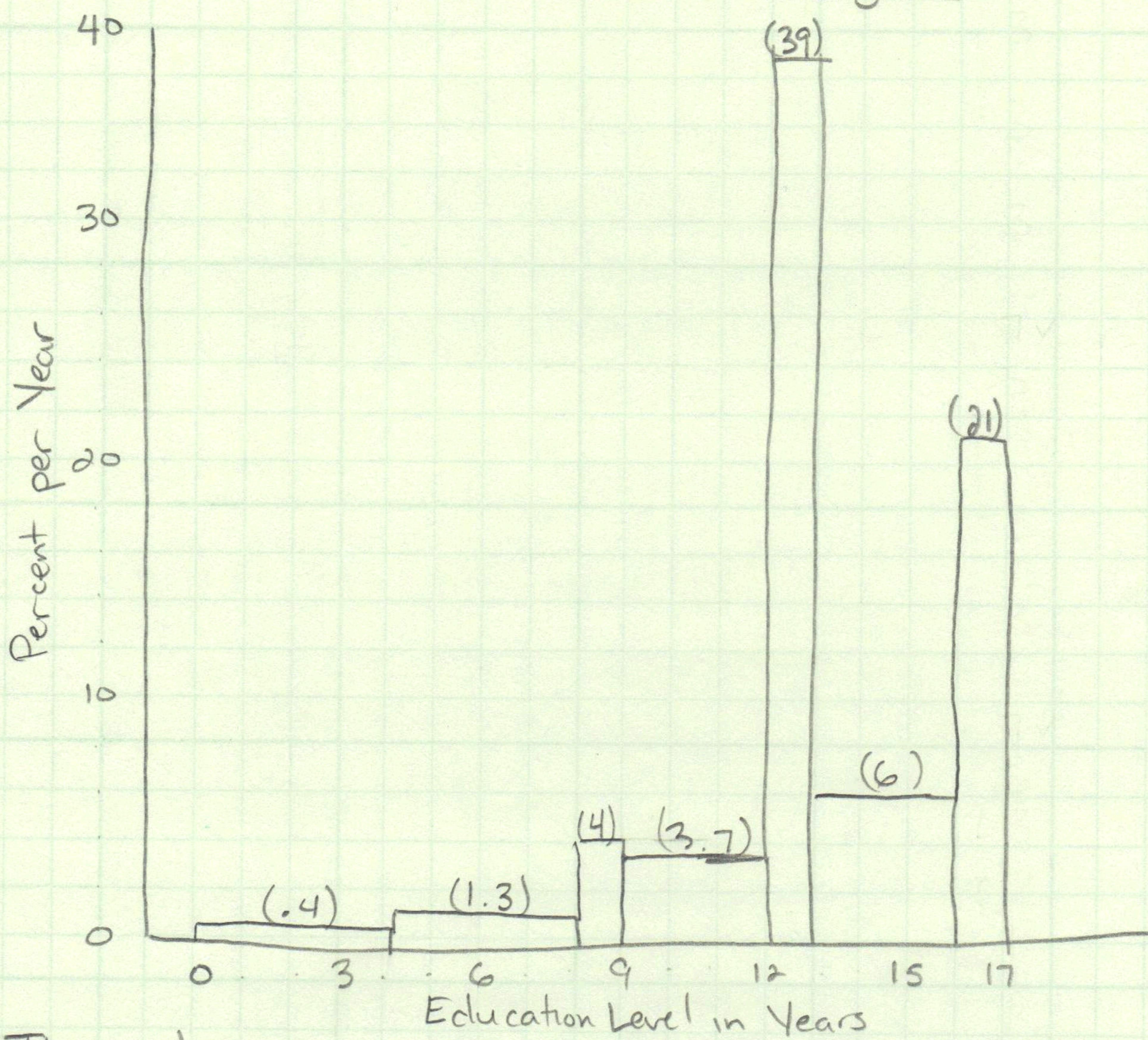
1.

Educational Level (Years)	1991	%	W	H	
0-5	2	2	5	2/5 =	.4
5-8	4	4	3	4/3 =	1.3
8-9	4	4	1	4/1 =	4
9-12	11	11	3	11/3 =	3.7
12-13	39	39	1	39/1 =	39
13-16	18	18	3	18/3 =	6
16-17	21	21	1	21/1 =	21
	99	99 ✓	17 ✓		

$17 - 0 = 17$ —————— (close enough) ⟩

Education Level in Years

The spikes are because most people stop school prior to high school & college and also most people who get a college degree spend 16 years total in education! This explains the spikes as completion points. Most don't go beyond college in 1991
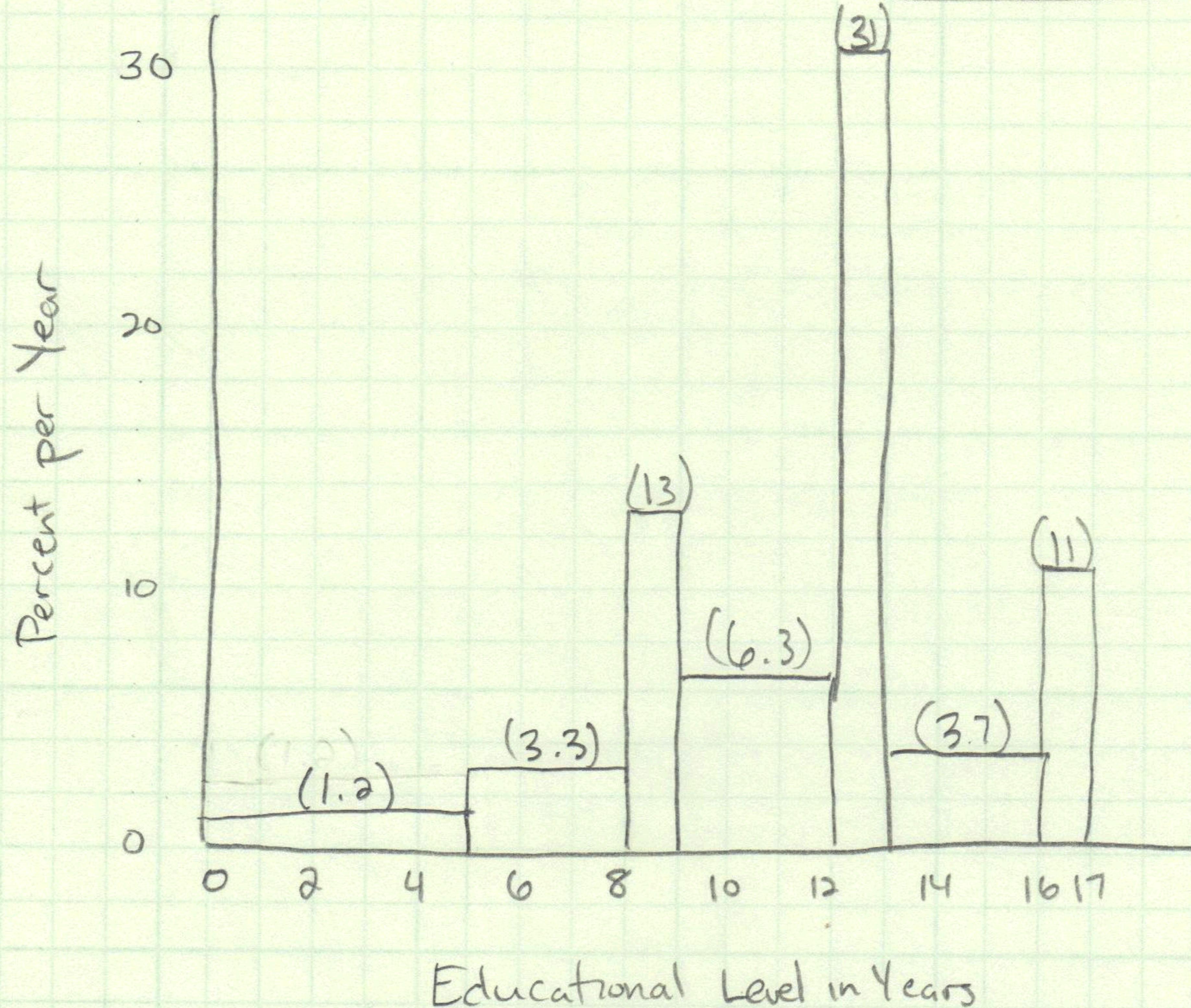
2. 0-8   6   6   8   .75

Columns same as above!

The histogram won't change much it raises the .4 interval to .75 and lowers the 1.3 to .75. The overall look is the same.

3 Educational Level | 1970 | % | W | H

Educational Level	1970	%	W	H
0-5	6	6	5	6/5 = 1.2
5-8	10	10	3	10/3 = 3.3
8-9	13	13	1	13/1 = 13
9-12	19	19	3	19/3 = 6.3
12-13	31	31	1	31/1 = 31
13-16	11	11	3	11/3 = 3.7
16-17	11	11	1	11/1 = 11
	101	101	17	

17 - 0 = 17 ——————————— (close enough) ——→

A bigger spike at grade 8 occurs, and smaller spikes at 12 & 16. More people went to high school in 1970 and less went to college.

4 Overall the percent of people increased so People became more educated; Especially in the college years.

[1] The other intervals are:

$$[(1-0)\times 10] = 10\%$$
$$[(2-1)\times 20] = 20\%$$
$$[(10-5)\times 5] = 25\%$$

Total % shown is 55%. This means we are missing 45%. The horizontal interval missing a bar is from 2 to 5 or 3 units. If the % missing is distributed evenly over these units then 45/3 = 15% per unit. So the missing bar has a height of 15.

[2] i has no density scale written so it is wrong.

[ii] has a density scale of % Per Pound which is correct.

iii has a density scale but it is backwards! It should NOT be lbs per %.

[3] $$175\text{ cm} = 175\text{ cm} \times \frac{10\text{mm}}{1\text{cm}} = 1750\text{ mm}.$$

$$200\text{ cm} = 200\text{ cm} \times \frac{10\text{mm}}{1\text{cm}} = 2000\text{ mm}$$

10% per cm changes to 1% per millimeter. We increased the number of Horizontal Units by 10 so we divide the % by that factor or 10/10 = 1%

5% per cm changes to .5% per millimeter. Same reasoning as above.

[4a] Note the histogram is for cigarettes per day – not packs.

$$10 \times 1.5 = 15\%$$

[4b] $$[(40-20)\times 1.5] = 30\%$$

[4c] $$[(40-20)\times 1.5] + [(80-40)\times .5] = 30\% + 20\% = 50\%$$

[4d] $$[(80-60)\times .5] = 20 \times .5 = 10\%.$$

[4e] Since "Number of Cigarettes" is discrete our horizontal unit is 1 (from 14.5 – 15.4$\overline{9}$)
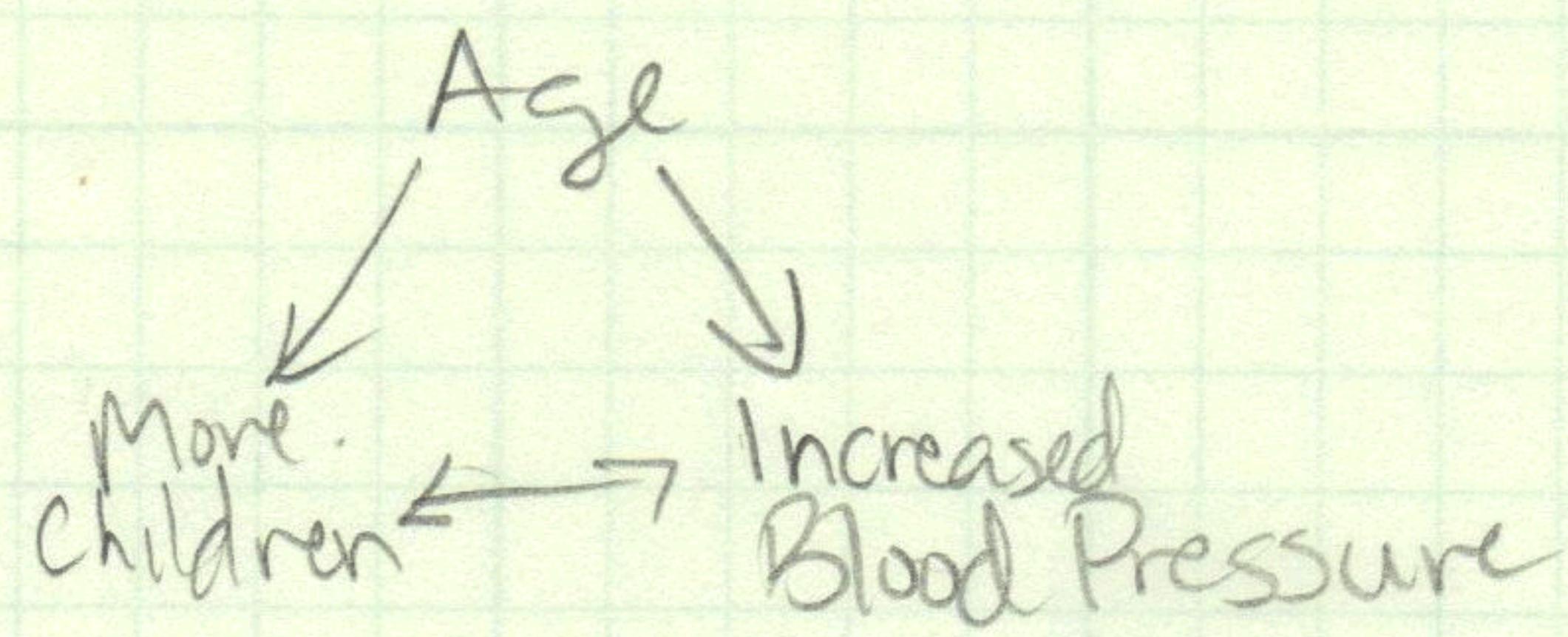
$$1 \times 3.5 = 3.5\%.$$

Chapter 3 Exercise Set E

1 - The group with 4 children has higher blood pressure.

- No! Association does not equal causation! Stress

- A confounding factor could be involved.

Age
More Children ← → Increased Blood Pressure

The older women have more children & blood pressure increases with age too.

2 The left Histogram is the one that 10 mm was added because it is a direct shift to the right.

The right Histogram changed shape which indicates the percentages changed, So it is the increase of 10%.
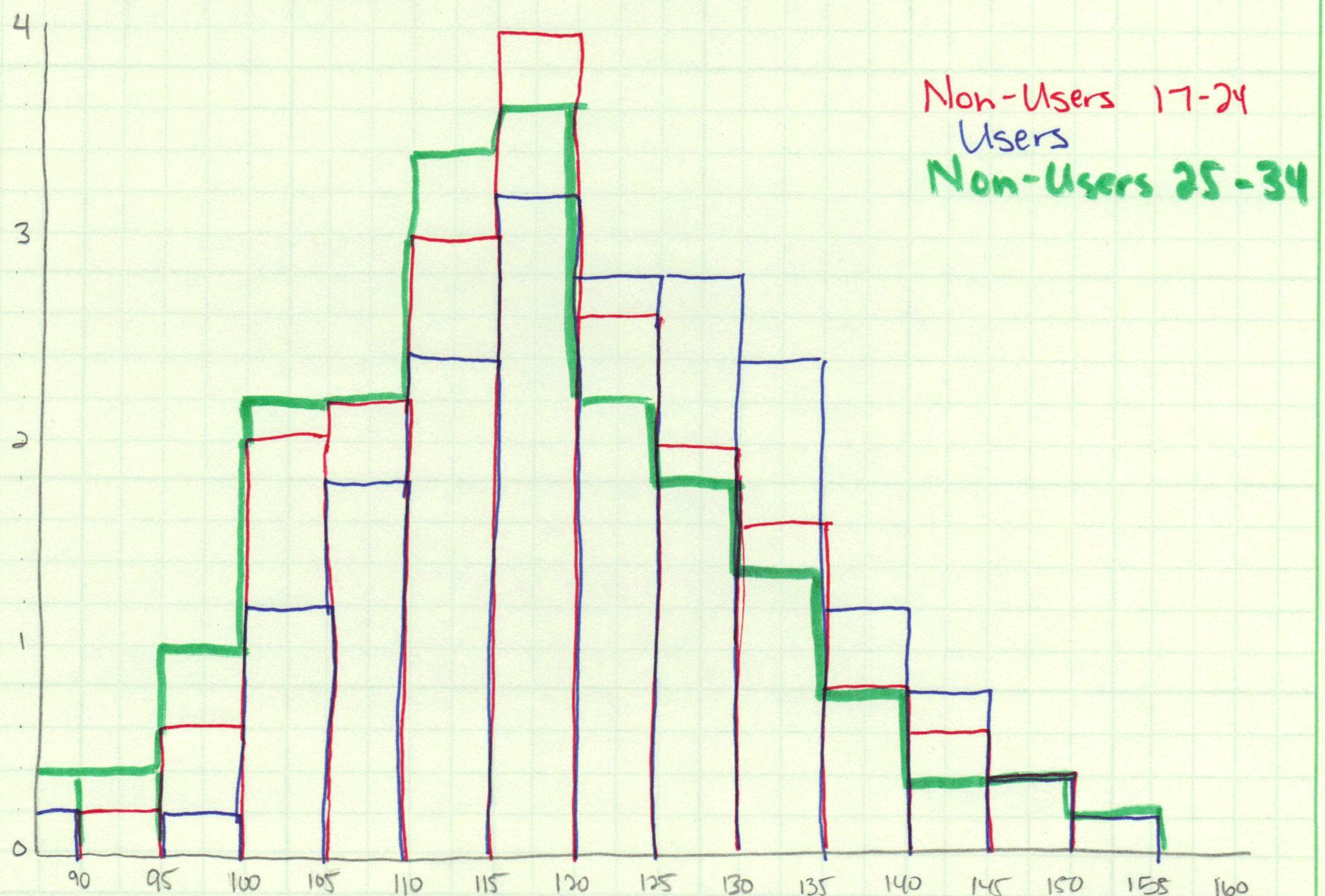
1a) $4 + 2 + 1 = 7\%$

1b) $3 + 2 = 5\%$

1c) This is a smaller number, but confounding factors will still be present so the small difference is still not enough to conclude in either direction.

2)

Bp	Non	Users	W	Non H	User H
under 90	-	1	5	-	.2
90-95	1	-		.2	-
95-100	3	1		.6	.2
100-105	10	6		.2	1.2
105-110	11	9		2.2	1.8
110-115	15	12		3	2.4
115-120	20	16		4	3.2
120-125	13	14		2.6	2.8
125-130	10	14		2	2.8
130-135	8	12		1.6	2.4
135-140	4	6		.8	1.2
140-145	3	4		.6	.8
145-150	2	2		.4	.4
150-155	-	1		-	.2
155-160	-	-		-	-
160 and over	-	-		-	-

Non-Users 17-24
Users
Non-Users 25-34

I conclude that the pill could be raising blood pressure.
Because the greater percentage of higher blue bars
is toward the right on the graph, is. higher blood pressure.

3.

Bp	Non (25-34)	H
>90	1	.2
90-95	1	.2
95-100	5	1
100-105	11	2.2
105-110	11	2.2
110-115	17	3.4
115-120	18	3.6
120-125	11	2.2
125-130	9	1.8
130-135	7	1.4
135-140	4	.8
140-145	2	.4
145-150	2	.4
150-155	1	.2
155-160	-	-
>160	-	-
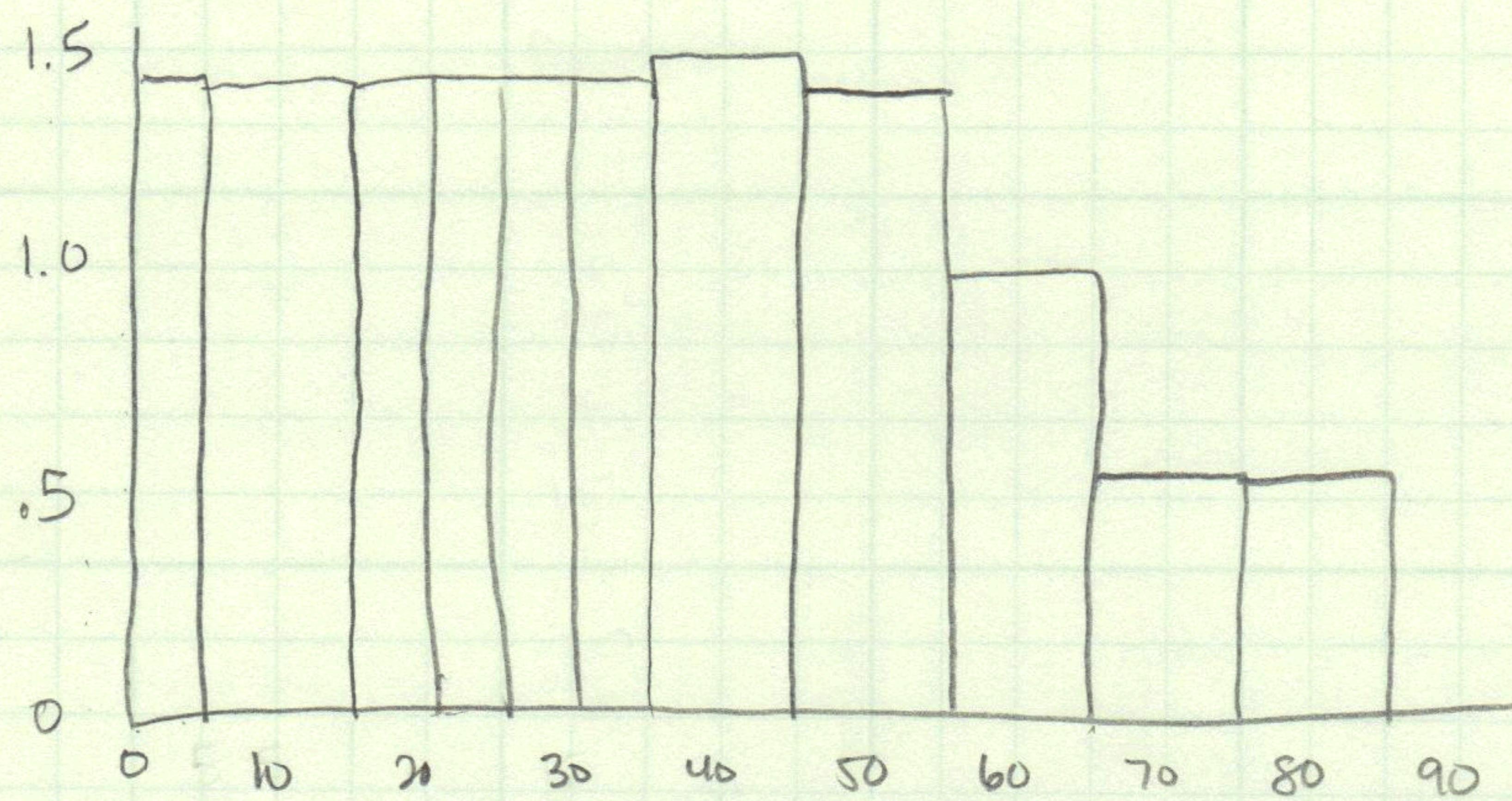
Women Age 25-34 have lower blood pressures
could be a conclusion.

| 1 | 66 & 72 |

2

Age	Percent	W	H
0-5	7	5	1.4
5-15	14	10	1.4
15-20	7	5	1.4
20-25	7	5	1.4
25-30	7	5	1.4
30-35	7	5	1.4
35-45	15	10	1.5
45-55	14	10	1.4
55-65	10	10	1.0
65-75	6	10	.6
75-85	6	10	.6

2a Children age 1
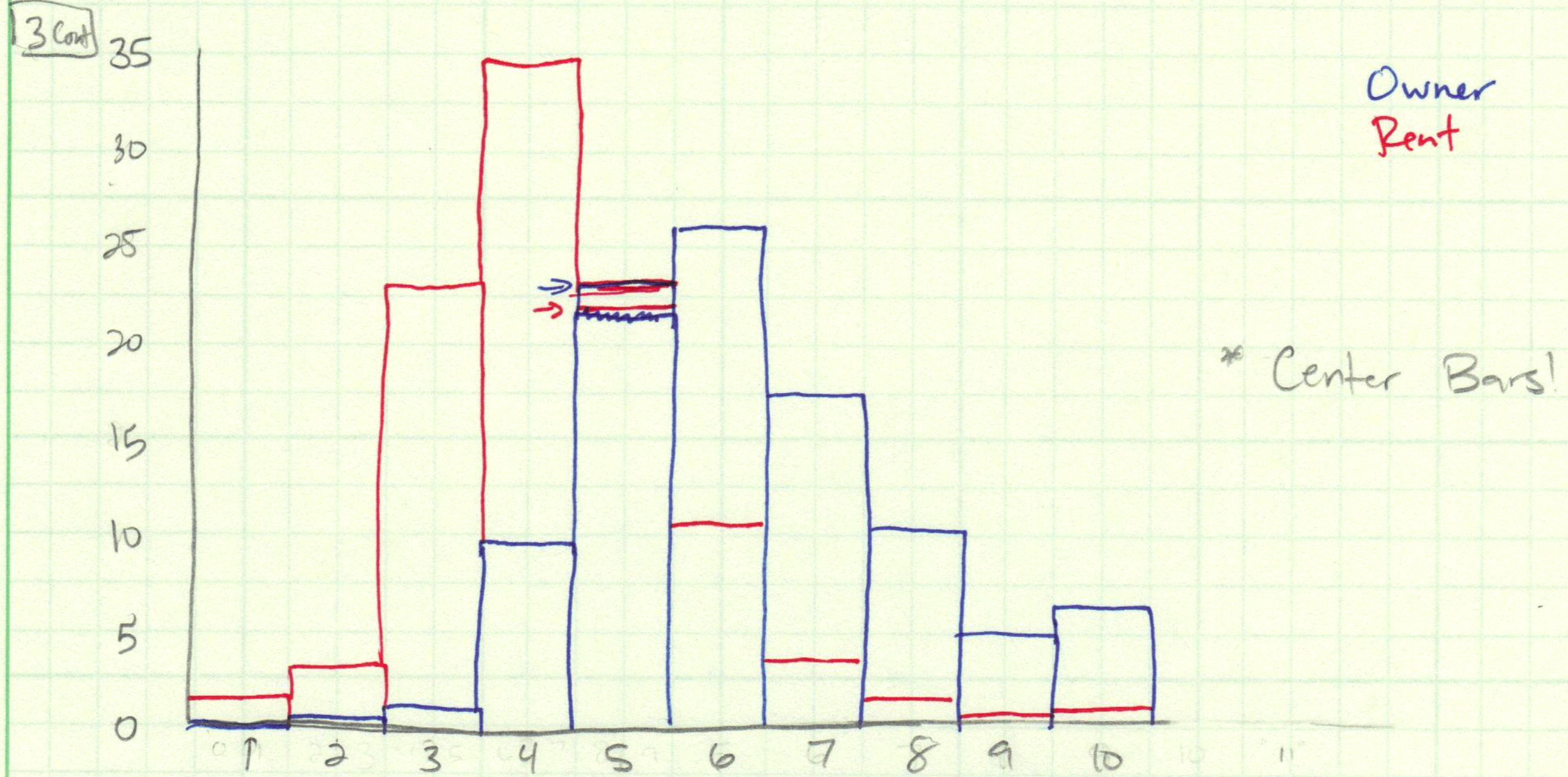
2b 21 year olds

2c $(4 \times 1.4) = \underline{5.6} \ (0-4) \ (4 \times .6) = \underline{2.4} \ (65-69)$
so 0-4 years old.

2d 50%, half the data is above and half are below.

3 # Rooms   Owner %   Renter %

Note: since this is a discrete table all of
our widths are one! So when we divide
%/width we get % back. No
calculations are necessary.

3 Cont

Owner
Rent

* Center Bars!

3a Rounding. 100.2% is not that different from 100% so we won't worry.

3b No. We are looking at %ages so the total numbers of owner/renter occupied doesn't matter. Rental Units just tend to be smaller.

3c Owner occupied.

4a 25%

4b 99% (almost everything)

4c Even though the 140-150 is less high it is twice as wide. I think they look about even area wise.

4d 135-140 , crowded = high density

4e $((130-125) \times 2.1) = 5 \times 2.1 = 10.5\%$

4f 102-103 is taller and the widths are the same so it is more crowded

4g 115-120 (Any interval in this span works)

5 $[(100-90) \times 1] = 10 \times 1 = 10\%$.

[6] i) works because 25% of people fall in the 67" & 69" ranges and 50% are in the 68" range.

ii) $66\frac{3}{4}$ rounds to 67   10 people
$67\frac{1}{4}$ rounds to 67   15 people
                                   25 people!

So this works the same way as i does.

iii) does not work because it has 30% in the 67" & 69" ranges & 40% in the 68" range.

[7] i) is from natural death because the more area is to the right and more people die naturally of old age.

ii) is from trauma because trauma related deaths are related more to early adults, where the area is

[8a] True. Look at the intervals vs. heights ☺

[8b] False
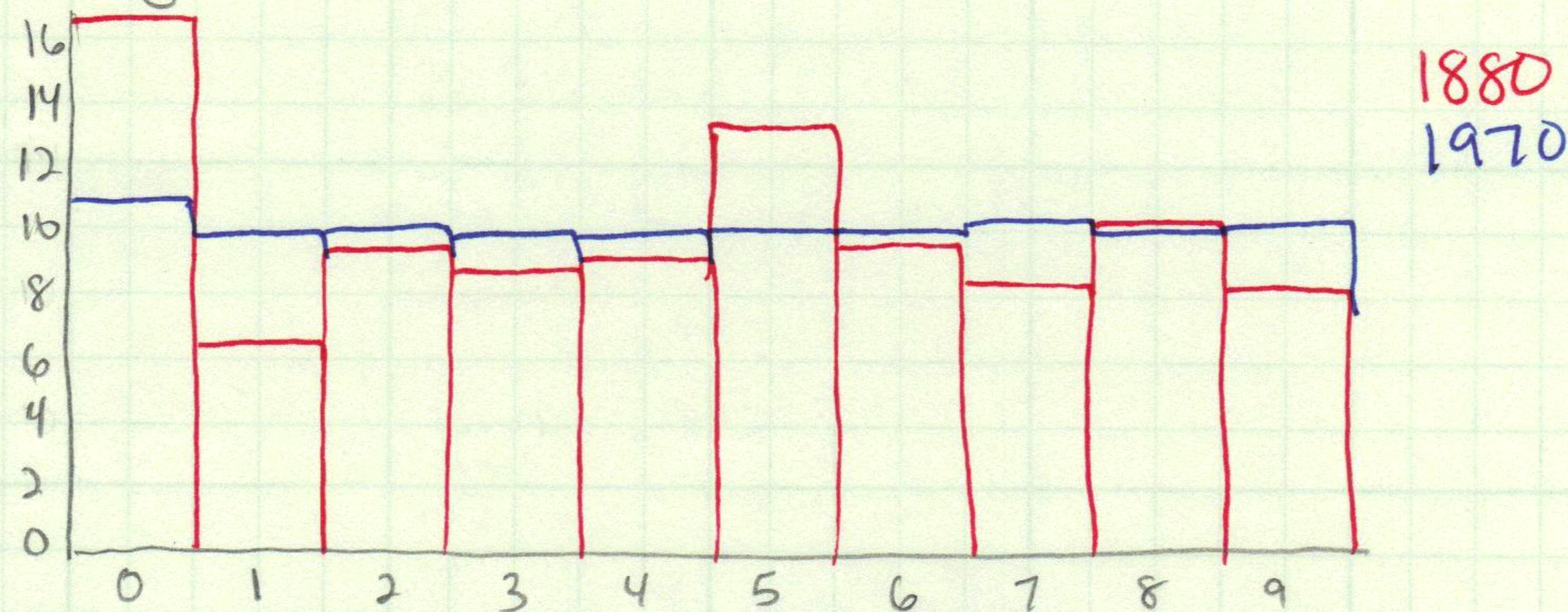
[8c] No! The intervals are not consistent but the picture makes it look like they are!

[9a] True.

[9b] True

[9c] Most People probably round to 2 if they are close since it's a cut off point.

[10a] Again, since the intervals are discrete the width is one Dividing the % by 1 gives the %. Therefore the Histogram looks like: (no calculations necessary)

1880
1970

10b I don't expect you to know this but at this period of time people didn't keep track of age close and probably rounded to the nearest 5.

10c People knew their age exactly more at this time.

10d 1880 : Preference is to even (kind of all #'s are really close).

1970 : No preference can be seen.

11 The gap between 84 and 90 is way too suspicious and is cause for concern of rigging.

12 False. 85° is a nice temperature to protest in. :) 85° is also a common temperature for the U.S.