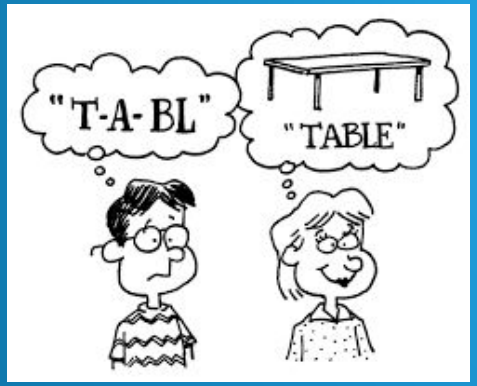
Phonetics (pho-net-ics)

By Luke & Matt



Introduction

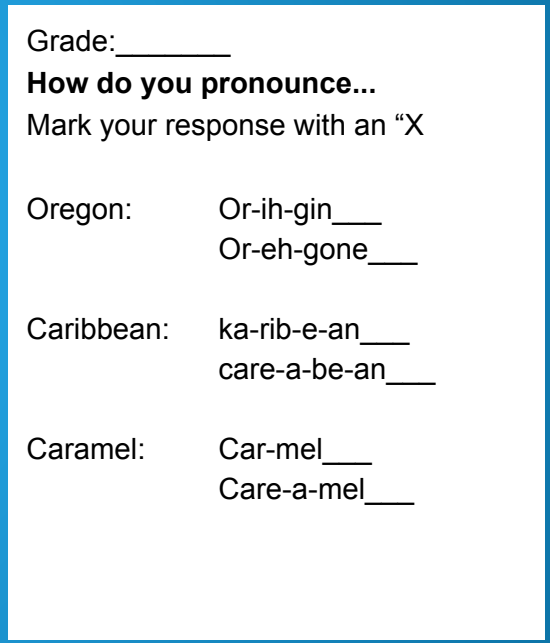
Topic: We are trying to figure out if there is an association between the way words are pronounced and grade in school.

Null Hypothesis: There is not an association between word pronunciation and grade level.

Alternate Hypothesis: There is an association between word pronunciation and grade level.

Data Collection Method

We took a SRS of the kids in Washburn High School by looking at the math classes (since every kid takes a math class). We put each name of a math teacher with a class 3rd hour (11 teachers in total) & assigned a number to them (from 1-11). We then used line 123 from the RDT, pulling the first 4 teachers without replacement. These teachers would have a random assortment of grades ranging from 9-12th graders. We then created a survey and handed it to every kid in the randomly selected classes.



Grade:_____

How do you pronounce...

Mark your response with an “X

Oregon:	Or-ih-gin___
	Or-eh-gone___
Caribbean:	ka-rib-e-an___
	care-a-be-an___
Caramel:	Car-mel___
	Care-a-mel___

This is what the survey looked like

Assumptions

Random:
We took a simple random sample of 4 math classes ✓

Independent:
10% condition. We took a sample of 83 students total and at washburn there are over 1,600 students. (83 x 10 = 830 → 830 < 1,600) ✓

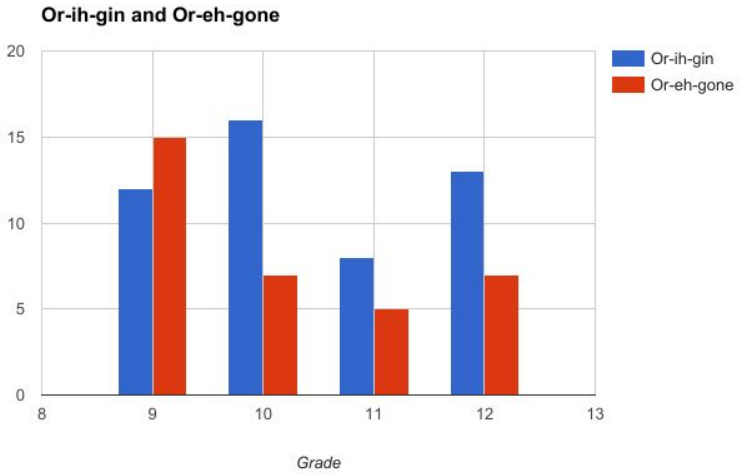
Large Counts Condition:
All expected counts were at least 5 (except for one which was 4.86) ✓

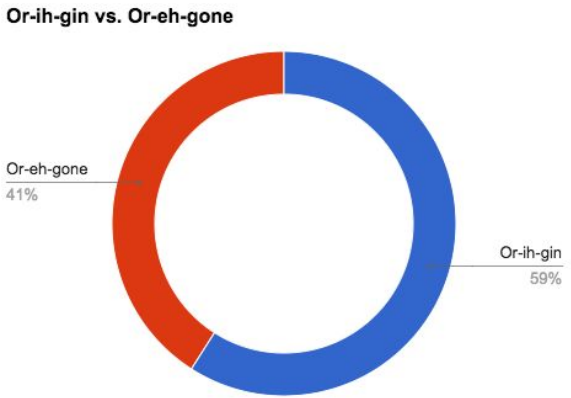
Raw Data

Observed / Expected

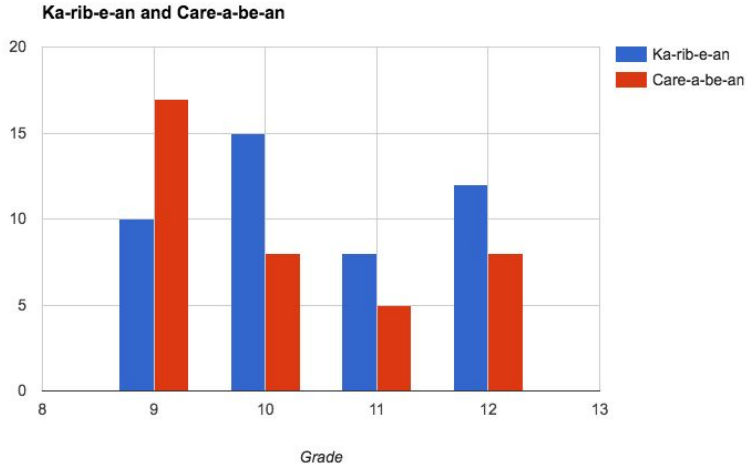
Grade	Or-ih-gin	Or-eh-gone	Total
9	12/15.9	15/11.1	27
10	16/13.5	7/9.42	23
11	8/7.67	5/5.33	13
12	13/11.8	7/8.19	20
Total	49	34	83
Grade	Ka-rib-e-an	Care-a-be-an	Total
9	10/14.6	17/12.4	27
10	15/12.4	8/10.5	23
11	8/7.05	5/5.95	13
12	12/10.8	8/9.16	20
Total	10/14.6	17/12.4	83
Grade	Car-mel	Care-a-mel	Total
9	17/16.9	10/10.1	27
10	14/14.4	9/8.59	23
11	9/8.14	4/4.86	13
12	12/12.5	8/7.47	20
total	17/16.9	10/10.1	83

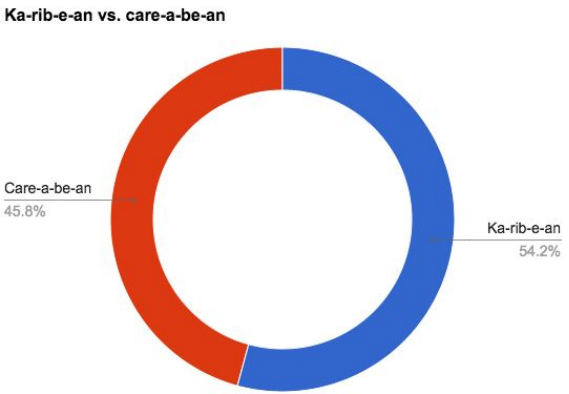
Oregon Pronunciation



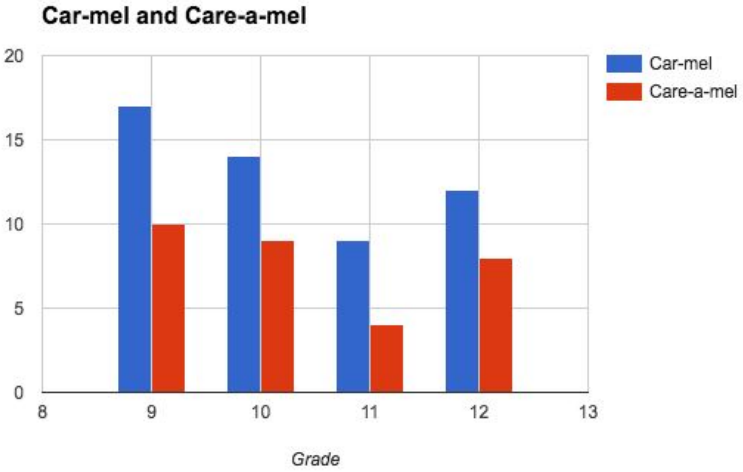


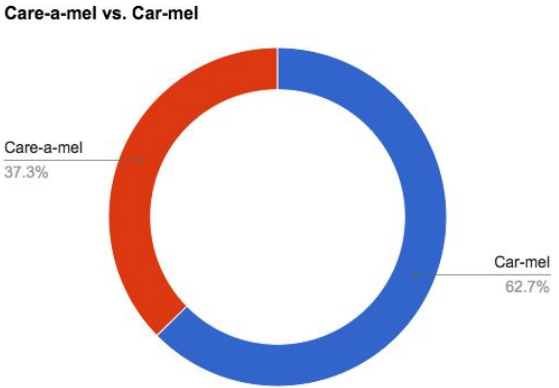
Caribbean Pronunciation





Caramel Pronunciations





Inference Procedure: Chi-Square Association

$\chi^2 = \sum (O - E)^2 / E$

Oregon procedure:

$\chi^2 = ((12-15.9)^2 / 15.9) + ((16-13.5)^2 / 13.5) + \ldots$
$\chi^2 = 3.7593$

Caribbean procedure:

$\chi^2 = ((10-14.6)^2 / 14.6) + ((15-12.4)^2 / 12.4) + \ldots$
$\chi^2 = 4.8819$

Caramel procedure:

$\chi^2 = ((17-16.9)^2 / 16.9) + ((14-14.4)^2 / 14.4) + \ldots$
$\chi^2 = 0.3329$

Degrees of freedom for all

Df = (r-1)(c-1)

Df = (4-1)(2-1)

Df= (3)(1)

Df= 3

P-Values

Oregon:
P=.28865

Caribbean:
P=.18065

Caramel:
P=.95371

Findings

According to our findings, there is **no association** between age and pronunciation for the words Oregon, Caribbean, or Carmel at Washburn High School. Our P-values proved to be **insignificant** at the $\alpha = 0.1$ level in trying to **support our alternative hypothesis** that there was an association between age and pronunciation.

Sources of error

- One expected values is < 5
- Non participation