Anubha Bhargava – Machine Learning Homework 5

Problem 1:

| t=10	t=100	t=1000	t=2500
Mount Union	Mount Union	Alabama	Alabama
St Thomas	Alabama	Clemson	Clemson
NW Missouri St	NW Missouri St	Mississippi	Mississippi
Alabama	St Thomas	Ohio State	Ohio State
Marian IN	Clemson	Oklahoma	Oklahoma
Linfield	Mississippi	Stanford	Stanford
UW-Whitewater	Ohio State	Michigan St	Michigan St
Clemson	Oklahoma	Houston	Houston
Wabash	Marian IN	Michigan	Michigan
UW-Oshkosh	Stanford	TCU	Iowa
North Dakota St	Michigan St	Iowa	TCU
West Georgia	Houston	Florida	Florida
Morningside	St Francis IN	LSU	LSU
Shepherd	Linfield	Arkansas	Arkansas
St Francis IN	Michigan	Notre Dame	Notre Dame
Wheaton	Iowa	NW Missouri St	Florida St
Wesley	TCU	Florida St	Tennessee
Thomas More	Wesley	Tennessee	Baylor
Ohio State	Emporia St	Mount Union	Utah
Mary Hardin-Baylor	Florida	Baylor	Navy
Johns Hopkins	LSU	Utah	Oklahoma St
Slippery Rock	Arkansas	Navy	Northwestern
Stanford	Notre Dame	Oklahoma St	North Carolina
Amherst	UW-Whitewater	Northwestern	Wisconsin
Grand Valley St	Florida St	North Carolina	Oregon

Plot $||w_t - w_{infinity}||_1$
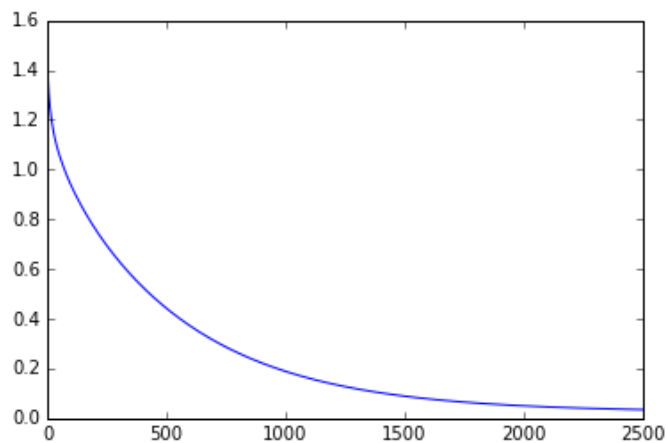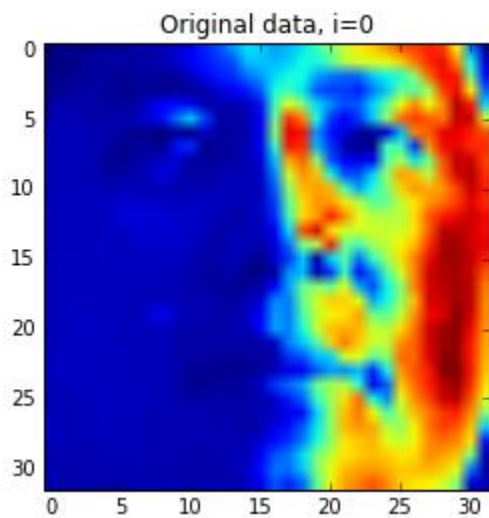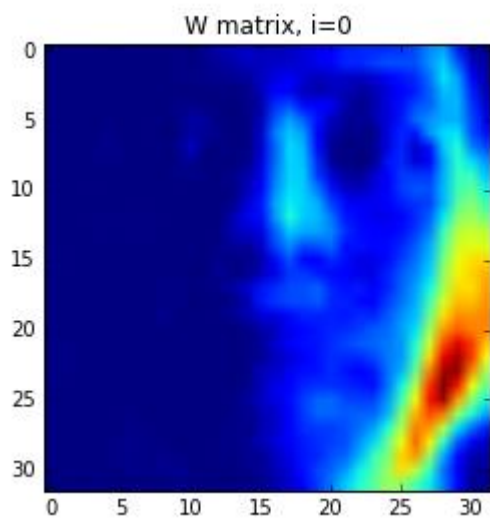

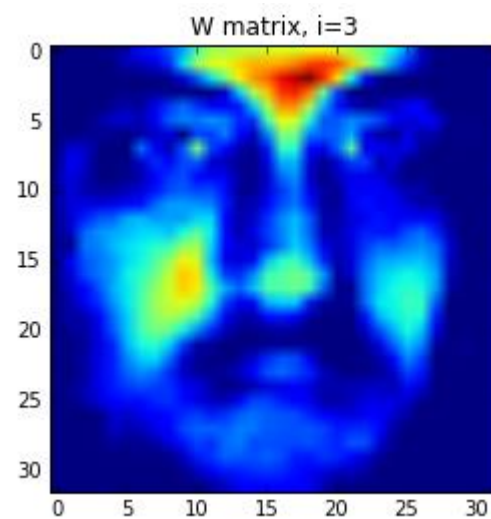What is the value of $||w_{2500} - w_{infinity}||_1$? : 0.0347

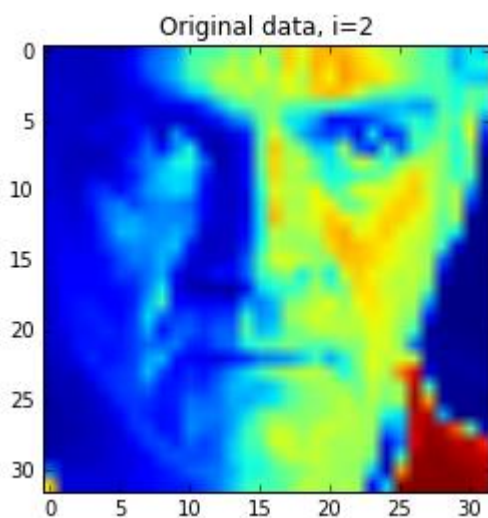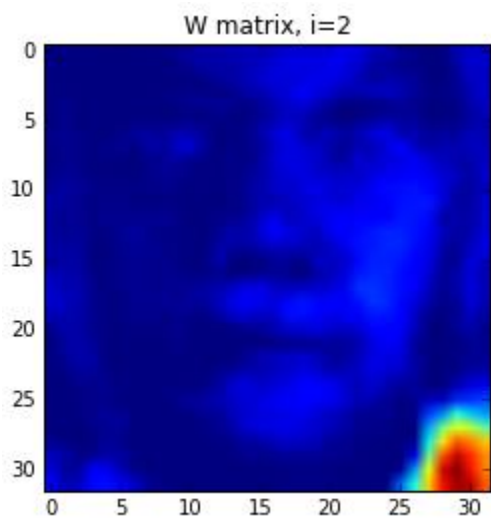Problem 2
Part 1:
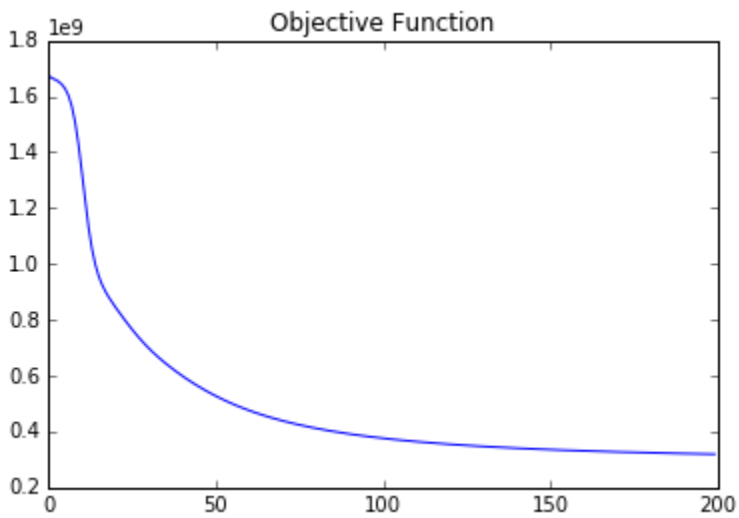
Display W as 32 x 32 images (left) and X as 32 x 32 images (right). I selected indices from 0 to 9.

W matrix, i=1
Original data, i=1
W matrix, i=2
Original data, i=2
W matrix, i=3
Original data, i=3

W matrix, i=4   Original data, i=4

W matrix, i=5   Original data, i=5

W matrix, i=6   Original data, i=6
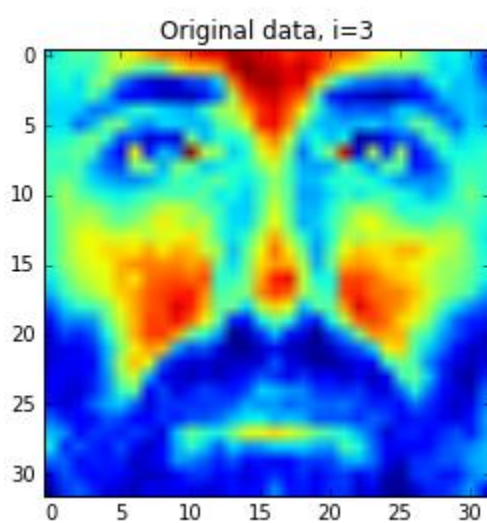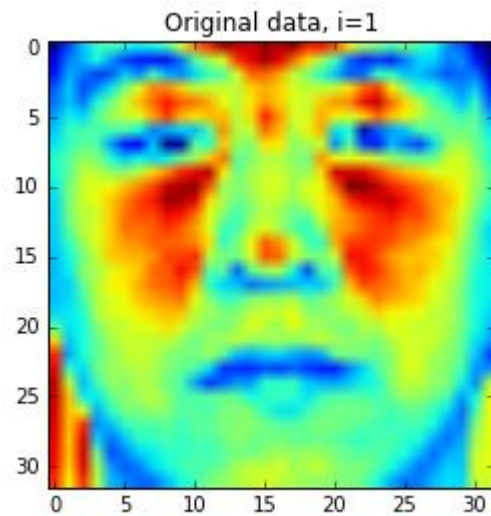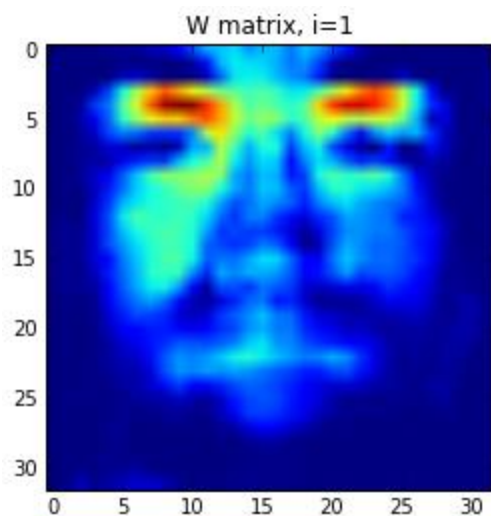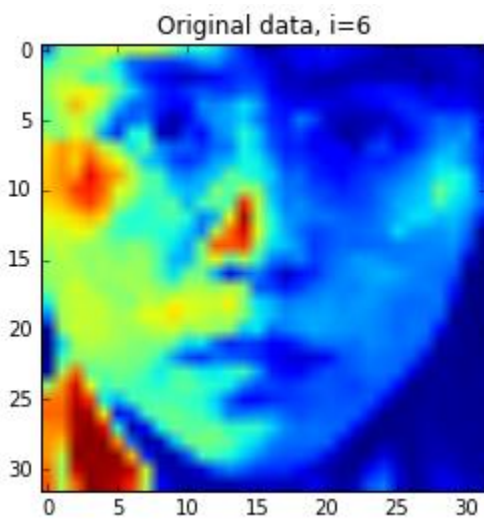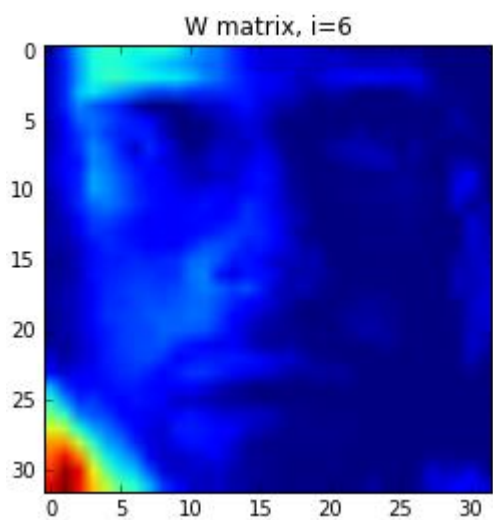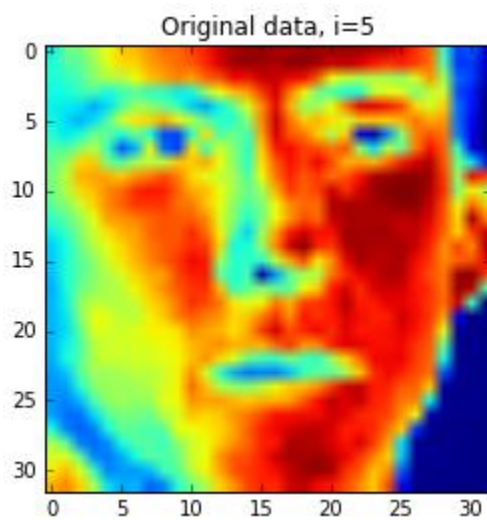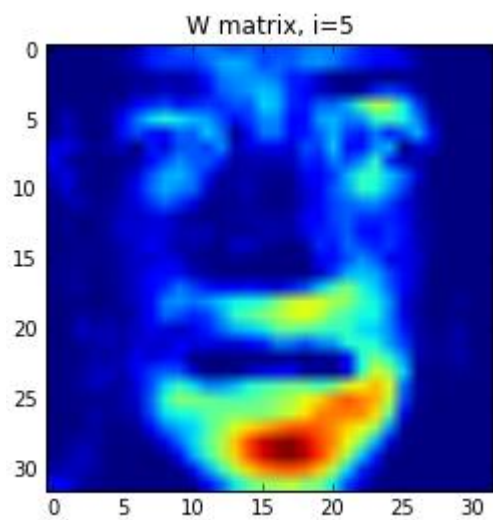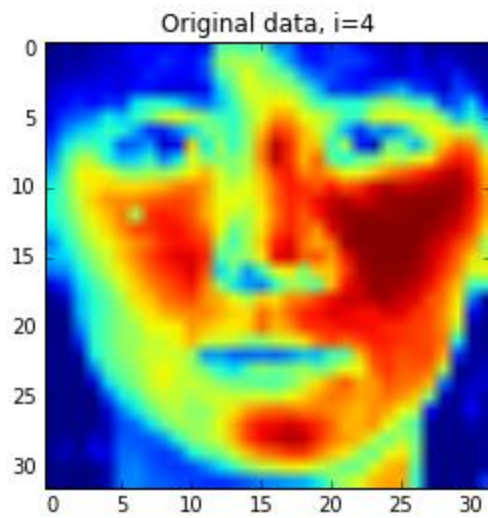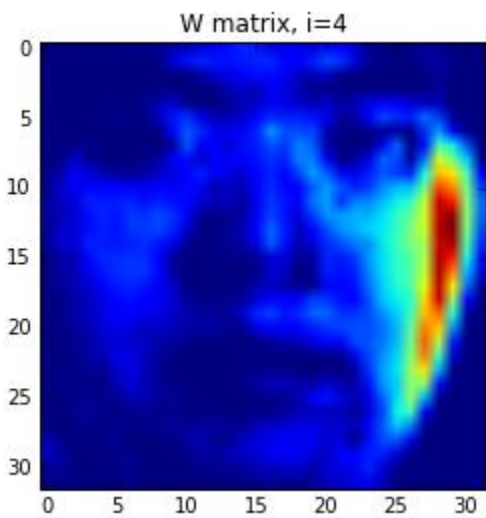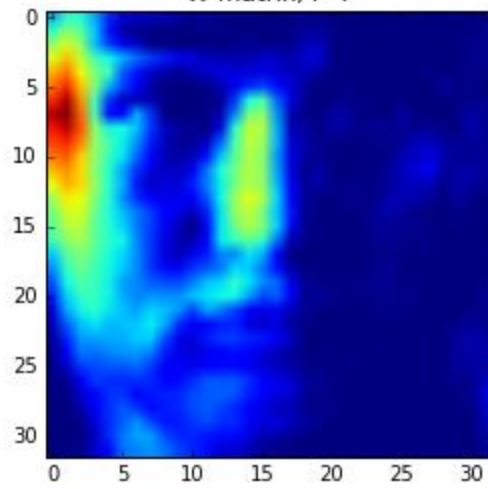
W matrix, i=7   Original data, i=7

W matrix, i=8   Original data, i=8

W matrix, i=9   Original data, i=9

Part 2:

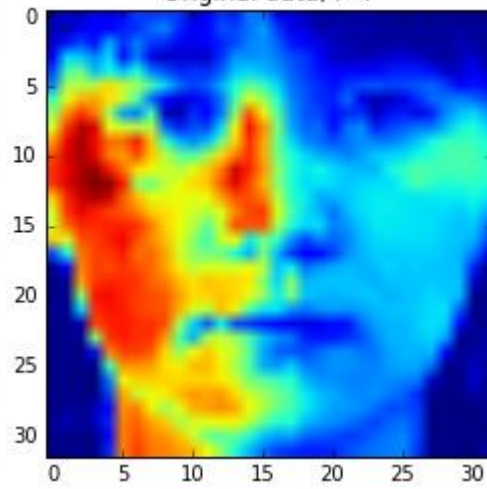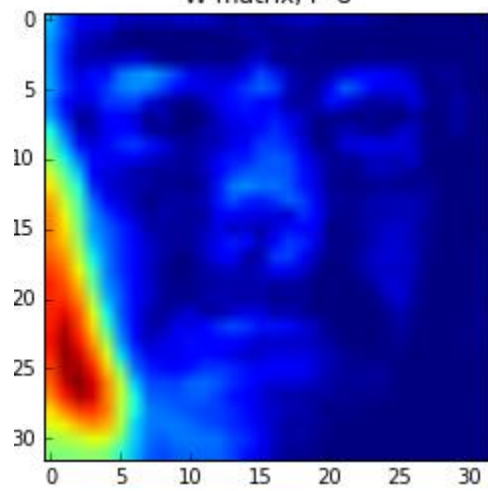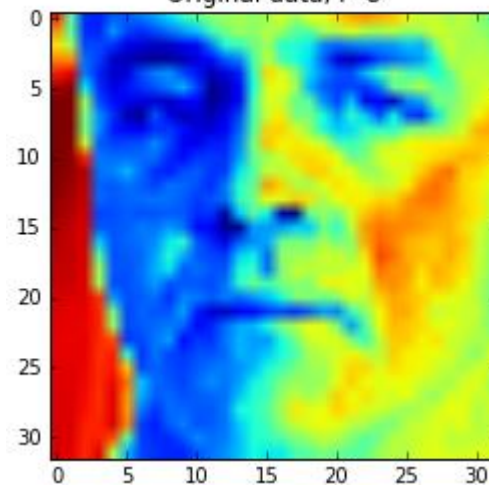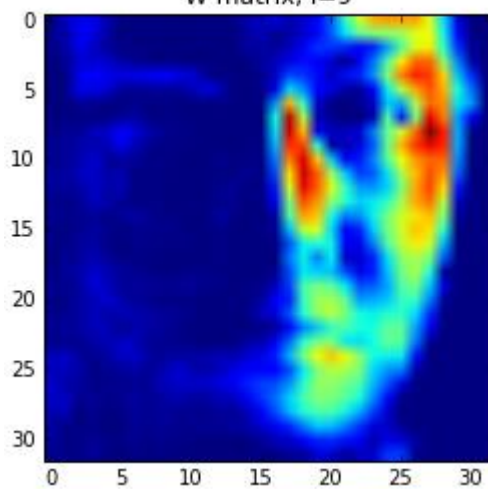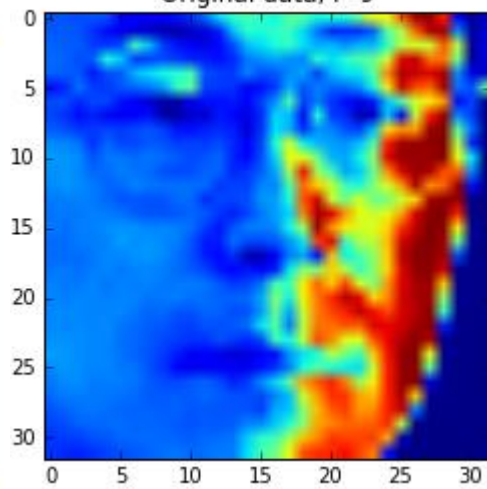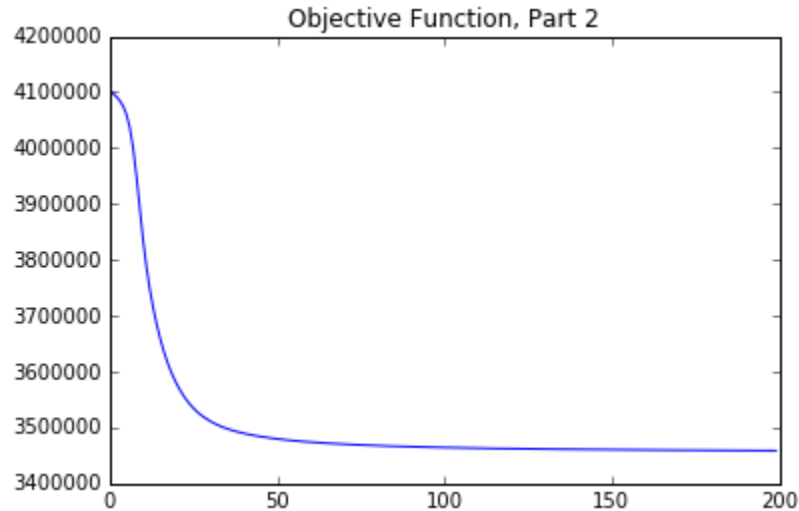Objective Function, Part 2

Weights	Corresponding Words
'0.00493633315244' '0.00505928535796' '0.00539577803374' '0.00573489920688' '0.00579504321554' '0.00604598634767' '0.00627159972376' '0.00750124065998' '0.00791814064738' '0.0123991196523'	'view' 'family' 'woman' 'great' 'sense' 'society' 'history' 'social' 'man' 'life'
'0.0093628637127' '0.0104697111889' '0.010530645308' '0.0106972810654' '0.0115175090642' '0.0123918441032' '0.0128762235123' '0.0152756702942' '0.0155936047421' '0.0156456193115'	'increase' 'plan' 'cost' 'bill' 'tax' 'budget' 'program' 'pay' 'state' 'money'
'0.00902756756347' '0.00904457291268' '0.00927885905403' '0.00928597790041' '0.00940031463576' '0.00979692706617' '0.0104133130798' '0.0109417048863' '0.0155291289367' '0.0237551436193'	'statement' 'office' 'public' 'member' 'letter' 'issue' 'comment' 'investigation' 'report' 'official'
'0.00887833925285' '0.0095031121069' '0.0102233449564' '0.010448912941' '0.0113868458711' '0.0130232123491' '0.0142689650976' '0.0164594504849' '0.0164936550791' '0.0179905355402'	'buy' 'car' 'states' 'sale' 'market' 'sell' 'industry' 'price' 'cost' 'company'
'0.00795534939854' '0.007984301706' '0.00878566594331' '0.00889926310727' '0.0105790713168' '0.0111519625792' '0.0124041152038' '0.0131165316957'	'leader' 'official' 'american' 'troop' 'peace' 'government' 'attack' 'force' 'military' 'war'

'0.0198100104323' '0.0206662206934'	
'0.011387505229' '0.0115673494101' '0.0119351432023' '0.011996647448' '0.0120129548117' '0.0132019583646' '0.0140200129901' '0.0183946051521' '0.0184604143289' '0.0319630237193'	'report' 'price' 'increase' 'fall' 'growth' 'market' 'economy' 'rise' 'rate' 'percent'
'0.0140098382554' '0.0140510589433' '0.0144464345664' '0.0149974921265' '0.0154480119717' '0.0183810180442' '0.0193570882629' '0.0197883923101' '0.0332598965376' '0.038228782257'	'announce' 'yesterday' 'job' 'name' 'vice' 'director' 'chief' 'contract' 'executive' 'president'
'0.0104054573641' '0.0105518517481' '0.011574202701' '0.0117216869002' '0.0124879401569' '0.0152550979937' '0.016804406556' '0.0178763260731' '0.0212382114414' '0.0365996915889'	'car' 'fire' 'charge' 'yesterday' 'crime' 'arrest' 'kill' 'officer' 'man' 'police'
'0.0188925451702' '0.0203778326727' '0.0208798033951' '0.0241411745487' '0.0298281207944' '0.0311473176553' '0.0357894641562' '0.0370623017877' '0.0396094289488' '0.0520285139424'	'parent' 'mother' 'college' 'daughter' 'son' 'graduate' 'father' 'mrs' 'student' 'school'
'0.00941610382706' '0.00956875031646' '0.00994868248369' '0.0100044426628' '0.0108550089554' '0.0109272814777' '0.0131604638828' '0.0139604700426' '0.0145914478254' '0.017194938234'	'tour' 'program' 'child' 'free' 'white' 'church' 'member' 'event' 'black' 'group'