

Supporting Information for: *Reading between the Emails: Gendered Patterns of Communication in Local Government*

Matthew Denny *, James ben-Aaron †, Hanna Wallach † ‡, and Bruce Desmarais *

*Penn State University, †University of Massachusetts Amherst, and ‡Microsoft Research NYC

Department-to-Department Email

Table 1 displays the aggregate number of times each department manager was a recipient of an email sent by a manager of each other department.

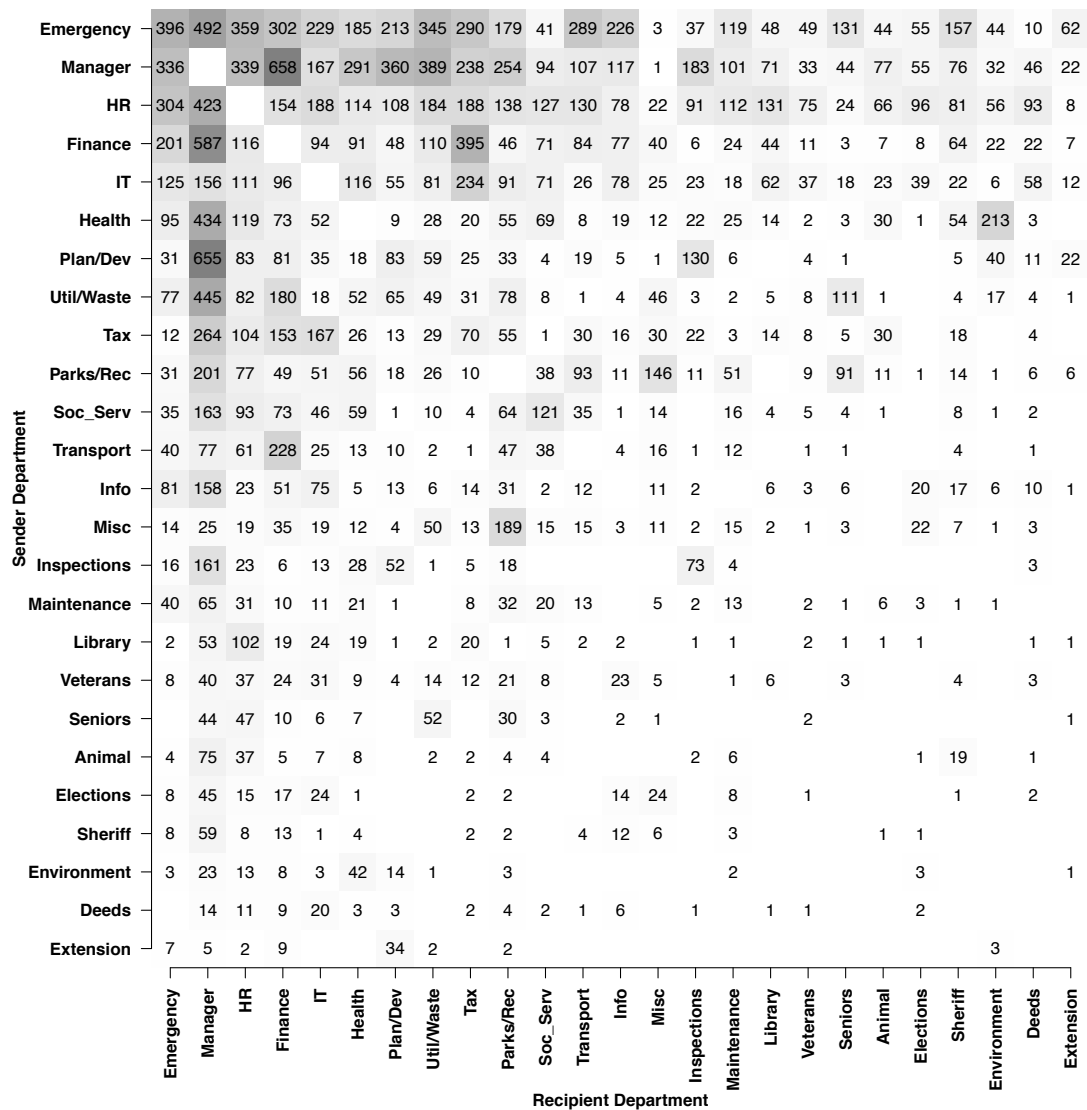


Fig. 1. Heat map depicting the total number of emails sent from the managers of each department to the managers of each other department, aggregated across counties. Departments are ordered by the total number emails their managers sent.

A Model for Email Data

The message content is assumed to be generated via LDA. Under this model, we assume that all unique words in our vocabulary are associated to varying degrees with each of T latent topics. Each topic is then a distribution over unique words (or *word types*), $\phi^{(t)}$. For example *doctor*, *virus*, and *medicine* might all have high probability in a topic about hospitals, while *cat* and *music* might have low probability in that topic. We further assume that each topic distribution is drawn from a Dirichlet prior:

$$\phi^{(t)} \sim \text{Dirichlet}(\beta, \mathbf{n}) \text{ for } t = \{1, \dots, T\} \quad [1]$$

where the base measure \mathbf{n} is the mean of the distribution, and the concentration parameter β controls how concentrated typical draws are around that mean.

To generate each of the D documents (messages) in our corpus, we first draw a document-specific distribution over topics:

$$\theta^{(d)} \sim \text{Dirichlet}(\alpha, \mathbf{m}) \text{ for } d = \{1, \dots, D\} \quad [2]$$

Once we have drawn our document-specific distribution over topics we can then generate each of N tokens (words) in the document via a two step process. First we draw the latent topic assignment for that token from the document specific distribution over topics.

$$z_n^{(d)} \sim \theta^{(d)} \text{ for } n = \{1, \dots, N\} \quad [3]$$

Then we draw the word type of that token from the topic specific distribution over word types.

$$w_n^{(d)} \sim \phi^{(z_n^{(d)})} \text{ for } n = \{1, \dots, N\} \quad [4]$$

We proceed in this manner for all tokens in all documents.

In our extension of TPME, we further assume each topic is uniquely associated with one of C clusters, drawn from a discrete uniform distribution.

$$C_t \sim \text{U}(1, \dots, C) \text{ for } t = \{1, \dots, T\} \quad [5]$$

The intuition is that different broad content areas of communication (e.g. *planning*, *sports*, *meeting planning*) -each of which is a collection of more specific topics- will imply a different pattern of communication. Importantly, under this model, a message can be about a number of topics, and these topics can be associated with different clusters. Since each cluster is associated with a different pattern of communication, the probability that any actor is a recipient of that particular message depends on an admixture of their probabilities of being a recipient under those different communication patterns. For example, if a department manager in an organization sent an email message to schedule a budget meeting, they would likely include both staff whose job includes setting up meetings, and staff who needed to provide input on the budget as recipients.

Finally, for a given cluster c , the probability that an actor is selected as a recipient of a particular message is specified by the LSM [?]. Under this model, we assume there is some baseline propensity to include message recipients on any email, which is governed by a scalar intercept parameter.

$$b^{(c)} \sim \text{Normal}(\mu, \tau^2) \quad [6]$$

For example, messages about sensitive HR matters will probably include fewer recipients than messages announcing a department party. Second, some attributes X , of the sender and potential recipient (which we assume are observed) may also affect the probability of that actor being a recipient. The effects that each of these L different attributes have on the probability of an actor being included as a message recipient can then be parameterized by a vector:

$$\gamma_l^{(c)} \sim \text{M. V. Normal}(\lambda, \eta^2) \text{ for } l = \{1, \dots, L\} \quad [7]$$

These covariate effect parameter vectors may vary in size depending on whether the effect is only associated with the attribute of the email sender (only requiring a single parameter), or with the combination of covariate values for the sender and recipient. For example, there is a great deal of social science literature demonstrating gender homophily in communication. Our model could generate a gender-homophilous email communication pattern by drawing positive parameters for male-male and female-female sender-recipient dyads, and negative parameters for female-male and male-female sender-recipient dyads.

The additional variation in the probability that a message is sent between two actors is governed by how close they are in a k dimensional *latent social space*. To generate these latent positions, each actor a is assumed to have some position in the k -dimensional latent space

$$\mathbf{s}_a^{(c)} \sim \text{M. V. Normal}(0, \sigma^2) \text{ for } a = \{1, \dots, A\} \quad [8]$$

and the probability that they send a message to a recipient $r \neq a$ is decreasing in their latent distance from r . Thus the probability of actor r being a recipient of a message from actor a under this model is:

$$P(y_{a,r}^{(c)} = 1) = \text{logistic sigmoid} \left(b^{(c)} + \sum_L [\mathbf{X}_{a,r} \gamma_l^{(c)}] - |\mathbf{s}_a^{(c)} - \mathbf{s}_r^{(c)}| \right) \quad [9]$$

Edge values for an individual message are then drawn from a Bernoulli distribution. However, the probability that $y_{a,r} = 1$ for a given message d may be dependent on multiple latent spaces (because documents can be about multiple topics). The weight given to $P(y_{a,r}^{(c)})$ for each cluster is determined by the proportion of tokens in the message that are assigned to topics associated with cluster c .

$$P(y_{a,r}^{(d)} = 1) = \sum_C P(y_{a,r}^{(c)} = 1) \times * \quad [10]$$

where $*$ is the proportion of tokens in document d assigned to topics associated with cluster c . In this way, we condition the probability that any given actor r is a recipient of an email (document) from actor a on the content of that email, thus linking LDA and the LSM in the generative process.

Corpus Descriptive Statistics

Table 1. County email corpus descriptive statistics. Note that **Words Removed** indicates the the number of unique words that appeared in only one email in a given county, and were therefore removed in text preprocessing. **0 Token Emails** indicates the number of emails in each county that contain no tokens after text cleaning.

	# Emails	# Unique Words	# Tokens	Tokens per Email	Words Removed	0 Token Emails
Alexander	907	1595	15437	17.0	975	13
Caldwell	121	94	287	2.4	107	20
Chowan	2027	3038	39635	19.6	1213	14
Columbus	920	1326	13763	15.0	1719	6
Dare	2247	2907	38174	17.0	1549	37
Duplin	1914	2380	83162	43.4	1742	6
Hoke	1106	1397	19409	17.5	1511	10
Jackson	1499	2493	34290	22.9	2118	7
Lenoir	560	1340	19780	35.3	1790	13
Lincoln	573	1458	13754	24.0	2050	4
McDowell	326	1178	8863	27.2	1535	6
Montgomery	679	1137	11166	16.4	1216	18
Nash	1147	2214	31629	27.6	1731	4
Person	1491	2618	29153	19.6	1977	11
Randolph	87	227	1432	16.5	493	0
Transylvania	1857	3157	57431	30.9	2262	12
Vance	185	620	4070	22.0	670	2
Wilkes	303	510	5594	18.5	571	1
Averages:	997.2	1,475.4	18,696.7	17.3	1,275	16.7

Table 2. Words and counts for the 200 most frequently used words in aggregate, across all emails in all counties. Compiled after preprocessing.

1–50		51–100		101–150		151–200	
word	count	word	count	word	count	word	count
will	8322	state	765	open	525	amount	399
director	4179	confidential	760	benefit	522	center	398
fax	4085	wrote	752	emails	522	agenda	396
box	3103	employee	749	personal	519	sign	395
email	2894	staff	732	computer	513	area	395
phone	2685	human	726	contract	513	web	389
meeting	2588	account	720	wanted	508	delete	387
office	2522	fyi	718	approval	506	file	386
time	2335	check	717	hope	501	business	386
class	1860	notice	717	visit	499	correspondence	385
good	1553	system	709	additional	494	enforcement	376
received	1480	finance	703	add	491	distribution	376
message	1464	going	698	original	491	free	373
work	1421	parties	693	response	488	place	371
plan	1399	project	682	coverage	488	flexible	368
attached	1395	suite	682	officer	484	question	367
budget	1375	law	681	service	482	support	365
employees	1291	water	680	pay	481	find	364
department	1269	update	679	process	479	receive	363
manager	1241	site	671	provide	478	best	362
address	1238	number	669	complete	478	keep	362
junk	1226	meet	658	job	477	and/or	361
call	1224	copy	656	schedule	474	document	360
contact	1162	disclosure	654	room	464	discussed	358
planning	1162	read	651	leave	463	access	354
subject	1118	description	646	policy	458	agreement	354
health	1114	care	642	required	458	listed	353
questions	1088	survey	641	letter	450	general	353
review	1071	mail	638	medical	449	morning	352
benefits	1032	cost	634	form	447	management	352
report	981	training	628	safety	447	street	351
building	956	insurance	621	notify	443	items	347
cell	919	board	612	order	442	presentation	347
summary	907	ext	604	discuss	440	fire	346
help	905	local	595	messages	440	website	346
great	894	services	585	reply	435	administrator	339
tax	888	position	585	library	431	issues	337
request	879	payment	575	requisition	424	application	336
public	871	disclosed	575	copies	423	scheduled	336
intended	865	commissioners	568	asked	420	assistance	335
attachments	849	change	565	security	419	reminder	332
working	838	program	558	documents	412	talk	330
note	831	forward	556	needed	411	equipment	330
well	800	including	556	list	411	considered	326
send	792	prohibited	548	community	410	completed	323
changes	790	enrollment	539	grant	409	ready	321
property	783	electronic	536	notification	407	requested	321
resources	774	attend	532	info	406	lunch	320
sure	769	error	532	funds	403	meetings	319
recipient	766	sender	526	issue	402	bill	317

Table 3. Most common exclusive words in topic clusters associated with three gender mixing patterns.

MM = MF = FM = FF	MM > MF/FM > FF	FF > MF/FM > MM
will, director, public, law, street, email, message, fax, department, recipient, system, records, state, address, box, e-mail, requisition, received, office, munis, approval, intended, confidential, error, year, north, pending, washington, carolina, program, general, days, documents, subject, fiscal, accompanying, description, meeting, prohibited, user, notify, entered, delete, phone, commodity, required, sgt, junk, marion, deputy, summary, october, attachments, latest, emails, court, services, directory, manager, dashboard, east, jail, report, good, budget, cutover, john, visit, bid, read, advised, wrote, water, messages, kinston, work, administration, deleted, chuck, facilities, craft, third, standard, hey, attached, suite, parties, young, personal, utilities, availability, disclosed, listed, tuesday, finance, coming, login, center, provided, code, spam, senior, requested, project, accessed, blocked, correspondence, award, document, planning, officer, number, generated, retrieve, maple, action, note, full, reply, username/password, lunch, copies, unmonitored	will, director, phone, time, meeting, office, fax, email, health, street, public, box, planning, received, year, board, library, description, law, mail, e-mail, wrote, intended, records, insurance, good, church, suite, subject, carolina, third, address, tax, parties, attached, water, class, benefits, marion, operations, budget, manteo, work, electronic, jail, fort, project, emergency, finance, employees, pool, plan, april, full, center, marshall, department, cashiers, message, book, ext, collins, enrollment, books, north, cpa, property, including, story, works, note, code, recipient, march, chuck, phase, lines, drive, staff, kinston, court, development, west, resources, dual, thursday, force, human, error, free, executive, system, phr, coverage, reading, tourism, letter, employee, authority, sheriff, monday, benefit, week, contact, correspondence, tuesday, disclosed, request, services, manager, disclosure, east, communications, copy, morning, buildings, taps, enp, renewal, corner, washington, review	will, director, office, fax, time, meeting, phone, finance, attached, department, public, budget, manager, year, box, email, street, good, read, password, tax, health, east, work, report, review, request, emergency, north, fyi, cell, carolina, transportation, mail, water, insurance, washington, electronic, troy, administrator, contact, zee, worker, comp, message, main, ipad, debt, learn, planning, records, officer, gay, change, great, actions, call, check, center, day, inspire, legion, well, utilities, library, disclosure, supply, dream, law, policy, animal, dss, form, increase, matt, services, reminder, item, record, shelter, audit, salary, board, general, send, funds, cost, refunding, attorney, facilities, site, fund, hey, requests, airport, response, balance, help, property, timesheet, state, received, recreation, today, address, loss, questions, week, defensive, monday, attachments, unaccounted, notice, days, media, cprp, expenditure, subject, wrote
(11/64 Topic Clusters)	(11/64 Topic Clusters)	(11/64 Topic Clusters)

Table 4. Top words in topics associated with MM = MF = FM = FF.

County	Topic Top Words
Hoke	voice, eoc, box, raeford, communications, emergency, director, central, call, will
Hoke	services, veterans, check, appeal, mail, files, letterhead, computer, attachments, tech
Hoke	junk, box, summary, emails, report, standard, will , email, days, personal
Hoke	training, read, leaf, golden, door, funding, projects, potential, hospital, lock
Hoke	pharmacist, good, will , send, morning, schedule, day, services, time, forward
Hoke	description, cell, director, works, public, fax, raeford, office, road, palmer
Hoke	council, director, executive, reading/literacy, timeclock, time, oct, attend, insurance, :-rrb-
Hoke	html, message, original, view, capable, originally, formatted, client, version, will
Hoke	will , october, office, day, contact, monday, response, automated, attention, starting
Hoke	iphone, description, current, phone, will , email, contacts, password, account, appointment
Hoke	meeting, will , read, website, department, call, office, committee, redesign, october
Hoke	will , time, services, pharmacist, budget, info, grant, hours, contact, number
Hoke	well, school, armory, august, audit, park, cut, review, year, memo
Hoke	box, director, fax, work, address, will , payroll, time, attached, employee
Hoke	director, communications, box, raeford, emergency, central, status, check, open, blackberry
Hoke	junk, box, summary, emails, will , login, email, report, days, personal
Lenoir	will , time, meeting, department, work, issue, dss, folks, message, going
Lenoir	wrote, dec, tax, office, martha, finance, martin, nov, oct, jack
Lenoir	pay, manager, step, will , action, plan, help, employees, hey, worker
Lenoir	office, wrote, carolina, kinston, box, north, fax, tax, will , ext
Lenoir	law, kinston, box, e-mail, subject, department, office, third, records, social
Lenoir	good, progression, staff, center, time, message, kinston, pay, fyi, hope
Lenoir	e-mail, received, intended, confidential, error, state, notify, documents, accompanying, delete
Lenoir	calendar, dec, tue, invitation, transit, meeting, receiving, advisory, committee, event
Lenoir	-lsb-, -rsb-, retirement, ncdirect, employee, request, rule, received, staff, attached
Lenoir	e-mail, intended, confidential, error, received, recipient, prohibited, documents, accompanying, delete
Lenoir	state, north, survey, carolina, years, fiscal, well, help, october, story
Lenoir	law, e-mail, public, correspondence, records, subject, including, address, third, disclosure
Lenoir	department, post, work, office, services, phone, social, kinston, fax, street
Lenoir	project, experience, qualifications, preliminary, firms, communications, years, send, emergency, required
Lenoir	e-mail, received, intended, confidential, error, documents, law, records, state, message
Lenoir	development, economic, will , director, kinston, executive, attached, support, copy, fyi
Lenoir	nov, week, xlsx, fyi, grant, total, info, title, working, ipad
Lenoir	office, wrote, oct, finance, martha, martin, kinston, box, fax, sheriff
Lenoir	will , meeting, wrote, oct, stew, fish, staff, well, sure, dss
Lenoir	office, finance, martha, martin, budget, amendment, will , sign, car, fsp
McDowell	ambulance, will , call, work, good, style, color, font-size, engine, div
McDowell	presentation, will , center, senior, lunch, prebor, meeting, tuesday, monday, road
McDowell	marion, maintenance, fax, court, office, street, east, bid, facility, vessel
McDowell	facility, water, will , april, service, well, universal, week, -rsb-, weekend
McDowell	question, will , discount, day, problem, hospital, print, keeping, numbers, karen
Montgomery	public, director, utilities, facilities, letter, testing, attached, send, year, tomorrow
Montgomery	matt, call, job, inspection, office, cell, commissioners, address, morning, good
Montgomery	water, state, will , project, matt, customer, press, tax, atlanco, funds
Montgomery	dmv, attached, levy, interest, dss, color, review, april, temperature, question
Montgomery	work, will , list, computer, question, reports, harris, associated, department, help
Montgomery	will , animal, shelter, work, system, email, health, estimate, matt, week
Montgomery	will , report, employee, bill, written, position, plan, fire, schedule, warning
Montgomery	budget, read, salary, position, amendments, experience, will , year, month, years
Montgomery	board, meeting, member, revise, read, attached, list, dss, sure, commissioners
Montgomery	troy, box, finance, officer, lisa, read, rolan, budget, letter, tax
Montgomery	recipient, attachments, services, director, distribution, copies, federal, action, authorized, sender
Montgomery	facilities, director, public, utilities, attached, maintenance, will , water, time, info
Montgomery	items, services, questions, ductwork, child, support, administration, human, accounts, restricted
Montgomery	recipient, attachments, services, budget, email, phone, safe, troy, street, state
Montgomery	read, compliance, microfund, update, child, auditors, care, assessed, reminder, form
Nash	carolina, email, north, public, washington, law, address, parties, office, records
Nash	public, phone, nashville, fax, engineer, director, buildings, utilities, mobile, sincerely
Nash	tomorrow, will , review, meet, time, don, point, office, morning, mount
Nash	email, law, officer, finance, nashville, note, address, parties, street, public

Table 5. Top words in topics associated with MM > MF/FM > FF.

County	Topic Top Words
Alexander	will , good, services, director, exercise, department, taylorsville, social, ipad, fax
Alexander	hey, report, info, fax, contact, surplus, thursday, working, message, calendar
Alexander	insurance, renewal, liability, fax, director , phone, ext, finance, cpa, april
Alexander	jail, project, purchase, building, payments, xerox, reimburse, hope, items, spreadsheet
Alexander	finance, director, fax, phone, ext, cpa, letter, water, center, budget
Alexander	budget, sheriff, amendment, item, office, meeting, vehicles, request, training, will
Alexander	imaging, budget, will , year, bill, paid, cost, project, advanced, cuts
Alexander	email, retirement, form, employees, system, maintenance, rescue, letterhead, sign, squad
Alexander	library, director, computers, taylorsville, thing, public, mouse, tech, fax, hope
Alexander	library, rfp, purchasing, policy, toshiba, copier, fol, program, copy, email
Alexander	call, will , phone, number, times, time, dss, machine, friday, meeting
Dare	dss, weekly, services, report, adult, older, director, manteo, box, good
Dare	email, call, law, change, emergency, public, manager, told, misdemeanor, north
Dare	box, planning, director, manteo, permit, building, collector, fee, michelle, tax
Dare	board, meeting, planning, seafood, will , hearing, public, request, review, amendment
Dare	library, fax, start, place, librarian, regional, discovery, manteo, system, best
Dare	meeting, will , list, island, -lsb-, hatteras, board, park, dinner, update
Dare	will , office, call, -lsb-, time, johnson, technology, cheryl, email, september
Dare	will , tomorrow, monday, area, offices, iphone, time, inlet, south, october
Dare	recipient, attachments, services, state, social, law, required, secure, document, and/or
Dare	report, monthly, damage, attached, rodanthe, assessment, attachments, file, reports, august
Dare	storm, sandy, high, coastal, tides, night, hurricane, strong, late, potential
Dare	director, marshall, phone, manteo, collins, box, fax, drive, resources, phr
Dare	will , outcomes, council, healthy, agreement, advisory, members, veterans, events, health
Dare	manteo, box, director, marshall, collins, drive, fax, resources, human, phr
Dare	will , meeting, director, box, manteo, office, tuesday, monday, tomorrow, time
Dare	will , track, winds, system, forecast, atlantic, east, obx, coast, shore
Dare	status, update, boat, today, weather, people, ago, tyler, will , time
Duplin	class, will , benefits, plan, insurance, enrollment, benefit, care, year, account
Duplin	planning, library, kenansville, phone, box, middleton, lane, department, fax, cemetery
Duplin	will , tax, kenansville, good, director, fax, box, street, conservation, area
Duplin	osha, standard, hearing, read, unemployment, time, inspection, asha, herring, program
Duplin	carolina, north, will , human, resources, director, open, attend, phone, enrollment
Duplin	meeting, will , department, agenda, head, attached, commissioners, lepc, room, reimbursement
Duplin	survey, employees, department, working, employee, complete, today, local, north, carolina
Duplin	budget, employees, coverage, included, health, position, cost, currently, compensation, plan
Jackson	will , leave, work, week, time, pay, years, good, health, working
Jackson	tax, budget, capital, funds, revenue, project, forward, occupancy, move, amount
Jackson	will , cashiers, zoning, permit, application, fees, towns, applications, codes, budget
Jackson	cashiers, will , meeting, office, manager, cell, center, chad, sod, payment
Jackson	building, house, enforcement, permitting, elders, director, property, code, copy, office
Jackson	work, computer, excellent, company, branch, will , time, sutton, opportunity, great
Jackson	will , office, position, staff, good, code, vehicle, order, enforcement, permitting
Jackson	contact, code, property, questions, lease, call, local, question, electrical, crescent
Jackson	road, director, tax, sales, phone, free, webinar, payment, sylvia, cove
Jackson	electronic, mail, intended, error, received, recipient, files, phone, email, message
Jackson	health, water, road, will , sylvia, creek, public, director, scotts, department
Jackson	will , office, work, time, meeting, today, monday, session, manager, going
Jackson	water, pump, motor, metal, director, code, committee, search, access, require
Jackson	property, offer, accounts, will , call, tax, office, check, bids, mountain
Jackson	dual, will , order, card, hard, air, stand, compressor, dell, drives
Jackson	electronic, mail, intended, email, message, recipient, received, error, phone, files
Jackson	will , office, email, time, staff, meeting, work, good, hope, public
Jackson	health, will , department, project, email, code, garden, attached, well, community
Lenoir	jail, will , mobile, inmates, ago, money, jails, hours, tax, mac
Lenoir	time, years, day, ago, request, place, send, total, check, minutes
Lenoir	law, including, records, disclosure, subject, address, director, third, kinston, box
Lenoir	doozy, link, card, cardtoon, board, web, charge, address, send, report
Lenoir	site, candidates, needed, state, call, public, plan, video, required, attached
Lenoir	medical, work, experience, years, pay, support, care, emergency, paramedic, north

Table 6. Top words in topics associated with FF > MF/FM > MM.

County	Topic Top Words
Alexander	will , time, transfer, phones, map, request, ipad, week, exercise, phone
Alexander	budget, will , park, year, taylorville, salaries, water, bethlehem, rocky, request
Alexander	health, ipad, wrote, department, will , director, call, turnmire, tomorrow, mar
Alexander	will , health, card, meeting, director, credit, budget, taylorville, ave, bsn
Alexander	will , dss, office, time, cost, allocation, finance, meeting, plan-maximus, phone
Alexander	april, training, insurance, renewal, employee, department, application, orientation, liability, tuesday
Alexander	password, change, reminder, expires, account, days, login, contact, instructions, questions
Alexander	chad, site, link, channel, peg, election, reporting, links, office, social
Alexander	item, supplies, transfer, amendment, flag, holders, office, email, ginger, increase
Alexander	description, breakfast, country, church, store, dss, child, e-mail, baptist, will
Alexander	insurance, renewal, company, list, equipment, spreadsheet, excel, inventory, liability, application
Alexander	day, great, timesheet, office, supply, attached, tomorrow, revised, form, orders
Alexander	budget, will , phone, finance, media, ext, department, children, request, form
Alexander	password, change, reminder, days, expires, account, login, delete, questions, staff
Alexander	ping, time, file, report, timesheet, cott, drops, application, comp, local
Alexander	will , meeting, going, fyi, tricaster, health, project, studio, taylorville, sure
Alexander	training, -lsb-, -rsb-, practice, services, children, issues, iphone, materials, notes
Alexander	order, time, good, april, attached, requests, office, copy, questions, friday
Chowan	will , edenton, box, ext, phone, loans, year, updated, health, screening
Chowan	tax, will , delinquent, zee, permanent, time, month, vehicle, plates, year
Chowan	debt, box, edenton, fax, finance, policies, contract, audit, shelter, animal
Chowan	edenton, box, director, fax, department, recreation, edenton-chowan, cprp, cysa, will
Chowan	edenton, fax, will , finance, box, tax, refunding, zee, attached, printer
Chowan	time, edenton, will , internet, class, leave, balance, fax, move, request
Chowan	will , meeting, box, edenton, fax, finance, attached, resolution, time, fund
Chowan	equity, fax, zee, debt, refunding, edenton, time, finance, call, psc
Chowan	fax, edenton, box, finance, attached, good, edenton-chowan, working, director, department
Chowan	zoning, map, tax, agreement, zee, office, planning, will , kep, site
Columbus	will , time, salary, schedule, change, truck, invoice, email, card, centurylink
Columbus	washington, street, finance, actions, inspire, ext, dream, director, fax, leader
Columbus	fax, will , ext, whiteville, phone, finance, director, street, washington, learn
Columbus	whiteville, director, will , phone, cell, services, fax, emergency, weather, transportation
Columbus	learn, leader, director, washington, dream, actions, inspire, finance, whiteville, phone
Columbus	transportation, public, director, whiteville, legion, read, expenditure, statement, indirect, cost
Columbus	read, defensive, driving, airport, training, safety, annual, e-mail, will , meeting
Columbus	director, whiteville, phone, report, fax, emergency, services, cell, read, july
Columbus	read, year, fiscal, worker, audit, comp, increase, salary, letter, court
Columbus	list, department, increase, employees, salary, will , budget, attached, street, finance
Columbus	bill, invoice, copy, centurylink, read, airport, service, contract, dss, time
Columbus	read, office, tire, payment, pay, tax, leaf, golden, check, amount
Columbus	read, request, travel, vehicle, ptd, approval, ltr, agreement, reminder, policy
Columbus	read, canteen, will , time, tomorrow, september, paid, items, development, support
Columbus	email, address, good, extension, talk, finally, family, toner, copier, carolina
Dare	director, box, manteo, will , planning, phone, fax, resources, human, hours
Dare	will , cellular, android-powered, device, ferry, hatteras, wrote, emergency, system, board
Dare	meeting, will , center, call, storm, emergency, discuss, time, -lsb-, today
Dare	will , monday, fund, hurricane, island, water, winds, good, hatteras, sandy
Dare	update, hurricane, good, sandy, wrote, oct, release, updated, approval, bridge
Dare	director, box, office, planning, finance, fax, building, will , cell, program
Dare	law, order, email, evacuation, statute, box, manteo, department, north, carolina
Dare	tax, manteo, box, collector, michelle, evans, will , data, week, conversion
Dare	will , call, contact, conference, cell, day, medicaid, well, number, saturday
Dare	public, email, manager, manteo, box, board, attorney, law, address, records
Lincoln	will , library, property, people, time, list, contract, fall, hvac, unrelated
Lincoln	director, letter, bill, will , copy, years, audrey, june, position, time
Lincoln	public, mail, electronic, message, will , time, review, records, well, director
Montgomery	budget, read, will , included, work, numbers, expenditures, costs, departments, items
Montgomery	recipient, services, attachments, intended, email, required, copies, federal, action, documents
Montgomery	fyi, cost, copier, tax, plan, -lsb-, -rsb-, indirect, read, year
Montgomery	model, laptop, mouse, will , agreement, called, point, replacement, link, power

