BIG DATA AND RISK – "LOOKING FOR FOOD SAFETY IN ALL THE RIGHT PLACES"

TOM FORD

VICE PRESIDENT FOOD SAFETY

April 16, 2018



Big Data: Big Risk or Big Opportunity?



* Based on 1,000 stores











Food Facility Inspection Report

	lealth/Office of Food Protection								06/30/	201
11 W. Hunting Park A	ve,							Time In	10:50	AN
/ww.phila.gov/health/	/environment/foodprotection.html		Number of Corrections 2 Time			Time Out	02:15	PN		
Food Facility Address			Telephone			Establishment Type Food Store: Retail Food			Sub 7	
Licensee	Corporate Officer					Purpose of Inspection		Inspection Inspection	Туре	
	FOODBORNE ILLNESS RISK	FAC	TORS		PUB	LIC HEALTH INTERVENTION	ONS			
INTIN compliance	OUT=not in compliance N/O=not observed		not appli			COS=corrected on-site during		n R=repeativ	deletion	
	COT-not in compliance N/C-not observed				oliar		Inspectio	n R-repears		_
Compliance Status	emenatorian of Knowledge	COS	R	Com	pilar	Ice Status	Time /Te	maaratura	COS	
	emonstration of Knowledge	-	_	40		Potentially Hazardous Food	Time/Te	mperature	-	-
1 IN Certification by or correct respo	accredited program, compliance with Code,			16	IN IN	Proper cooking time & temperature	h n leline n			+
or confect resp	Employee Health	_		18	IN	Proper reheating procedures for hot Proper cooling time & temperature	rolaing		+	+
2 IN Management a	wareness; policy present	T	—		IN	Proper hot holding temperature			+	+
	eporting; restriction & exclusion	-	+	20	IN	Proper cold holding temperature			-	+
	Good Hygienic Practices	-	-		IN	Proper date marking & disposition			+	+
4 IN Proper eating,	tasting, drinking, or tobacco use	T		22	IN	Time as a public health control; proc	cedures 8	k record		\top
	rom eyes, nose, and mouth	-				Consumer Adv	/isory			
	nting Contamination by Hazards	-		23	IN	Consumer advisory provided for raw	v or unde	rcooked foods		Т
	properly washed	T				Highly Susceptible F	Populatio	on		
	contact with RTE foods or approved alternate	2	\square	24	IN	Pasteurized foods used; prohibited				Т
/ IN method proper						Chemical				
8 OUT Adequate hand	lwashing facilities supplied & accessible	X		25	IN	Food additives: approved & properly	y used			Т
	Approved Source				IN	Toxic substances properly identified	, stored &	k used		
	from approved source					Conformance with Appro	ved Pro	cedure		
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What if you could...



Better Understand YOUR FOOD SAFETY AND COMPLIANCE RISKS

See HOW different data streams predict success





IMPROVE SPECIFIC regions or stores



IMPLEMENT through a FIELD TEAM to drive outcomes



MARKETGUARD[®]365

MARKETGUARD APP

Task management app replaces paper logs and sign offs



MARKETGUARD PORTAL

Dynamic dashboards and alerts of critical food safety metrics





IN-STORE SERVICE

SANITATION COMPLIANCE



Remote monitoring of SSOPs and operational compliance

ActiveView HDI



Standardized health department inspections



Benefits of MARKETGUARD 365

Accessible and defendable data



Time savings from electronic audits



Decrease in dry labbing



Verification of the checklists



Insights into dept. operations



SSOP compliance



Tracking of recall notifications





Real world examples



Accessible and defendable data

85% of store associates acknowledge checklists don't get completed correctly



Time savings from electronic audits



75% reduction in the number of checklists with digital collections 2 hours per week spent printing, storing and replacing paper logs



Cost savings from paper checklists



\$10 per store per month paper, pen, clip board savings



Temperature of hot holding too low

Situation

- ▲ Ecolab set up the MARKETGUARD[™] 365 App
- Associates were taking temperatures in the hot holding case

Findings

- Using the Bluetooth thermometer and app the store began to see that the case was not holding food at the right temperature
- Store claimed "This has never happened before"
- Corrective action taken to increase temperature

Results

 With visibility to the true temperatures and a corresponding corrective actions in place the safety of the food was enhanced





Rolling up data on bad product

Situation

- Store weighs rotisserie chickens after cooking to see if they passed the quality standards
- Underweight chickens are tracked and rolled up to corporate
- Roll up was done weekly by department managers manually by reviewing the weekly logs and reporting it to corporate.

Finding

✓ Using the MARKETGUARD[™] 365 App and Portal the customer was able to quickly roll this information up from corporate

Results

- Department mangers saved 30 minutes per week reporting the results from paper logs
- Corporate saves time and countless emails consolidating results.





30 min/week, or \$450 / year / store30 min/week, or \$450 / year / store



Food being overcooked

Situation

▲ Store started to use the MARKETGUARD[™] 365 app to take cooking temperatures

Finding

 Fried chicken wings were being over cooked resulting in poor quality food and increased energy usage

Results

- Stored worked with fryer manufacturer to reset the timer for chicken wings
- Resulting in better quality food and energy savings

Temperature of Fried Chicken









Looking for food safety data in all the right places: using big data and other sources for decision making

Dr. Ben Chapman Dept of Agricultural and Human Sciences NC State University www.barfblog.com www.foodsafetytalk.com @benjaminchapman



Third-Party Audit Data

- Eight grocery store
 companies
 Continental United States
 and Canada
 Data spans 2009-2015
 72,278 unique store visits
 - 11,148,295 data points/observations













U.S. Census Bureau Divisions





Handwashing violations by department

Dept	Bakery	Deli	General	Meat	Produce	Seafood	Other
Pass	55908	58824	55567	77696	96830	41839	19456
Violation	1997	3693	177	2545	3984	1435	457
Prop. of violation	0.034	0.059	0.003	0.032	0.040	0.033	0.023

p = 0



Handwashing violations by day of week

Day	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Pass	94353	103084	104775	100935	76878	908	435
Violation	3358	3770	3618	3594	2626	17	13
Prop. of violation	0.034	0.035	0.033	0.034	0.033	0.018	0.029

p = 0.01



Handwashing violations by geographic location

Division	E. N. Cent.	W. N. Cent.	Mid- Atlan.	N. Eng	E. S. Cent.	S. Atlan.	W. S. Cent.	Mtn.	Pacif.
Pass	4775 0	9841	7486	10132	27739	115337	19216	48014	63793
Violation	2973	377	78	282	1079	2596	765	1653	2056
Prop.	0.062	0.038	0.010	0.028	0.039	0.023	0.040	0.034	0.032

 $p = 1e^{-16}$







Temperature violations by department

Dept	Bakery	Deli	General	Meat	Produce	Seafood	Other
Pass	17627	152831	68418	62665	133830	56095	18320
Violation	47	9473	1482	1255	5613	1018	463
Prop. of violation	0.003	0.058	0.021	0.020	0.040	0.023	0.025

p = 0



Temperature violations by month

Dept	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Pass	38152	47417	52574	46100	46216	50177	58169	61534	70058	75332	65422	44417
Violation	1631	2078	2249	2015	1966	2279	2295	2316	2363	2539	2193	1277
Prop. of violation	0.041	0.042	0.041	0.042	0.041	0.043	0.038	0.036	0.033	0.033	0.032	0.028

$$p = 8.56e^{-83}$$



Temperature violations by time of day

Dept	Morning	Afternoon	Evening
Pass	366092	275237	14239
Violation	13905	10950	346
Prop. of violation	0.037	0.038	0.024

$$p = 1.52e^{-19}$$





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