

# Evaluation of Newborn Screening Production Processes

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(for all of Utah Newborn Screening)

How does the system perform?

How can we improve?

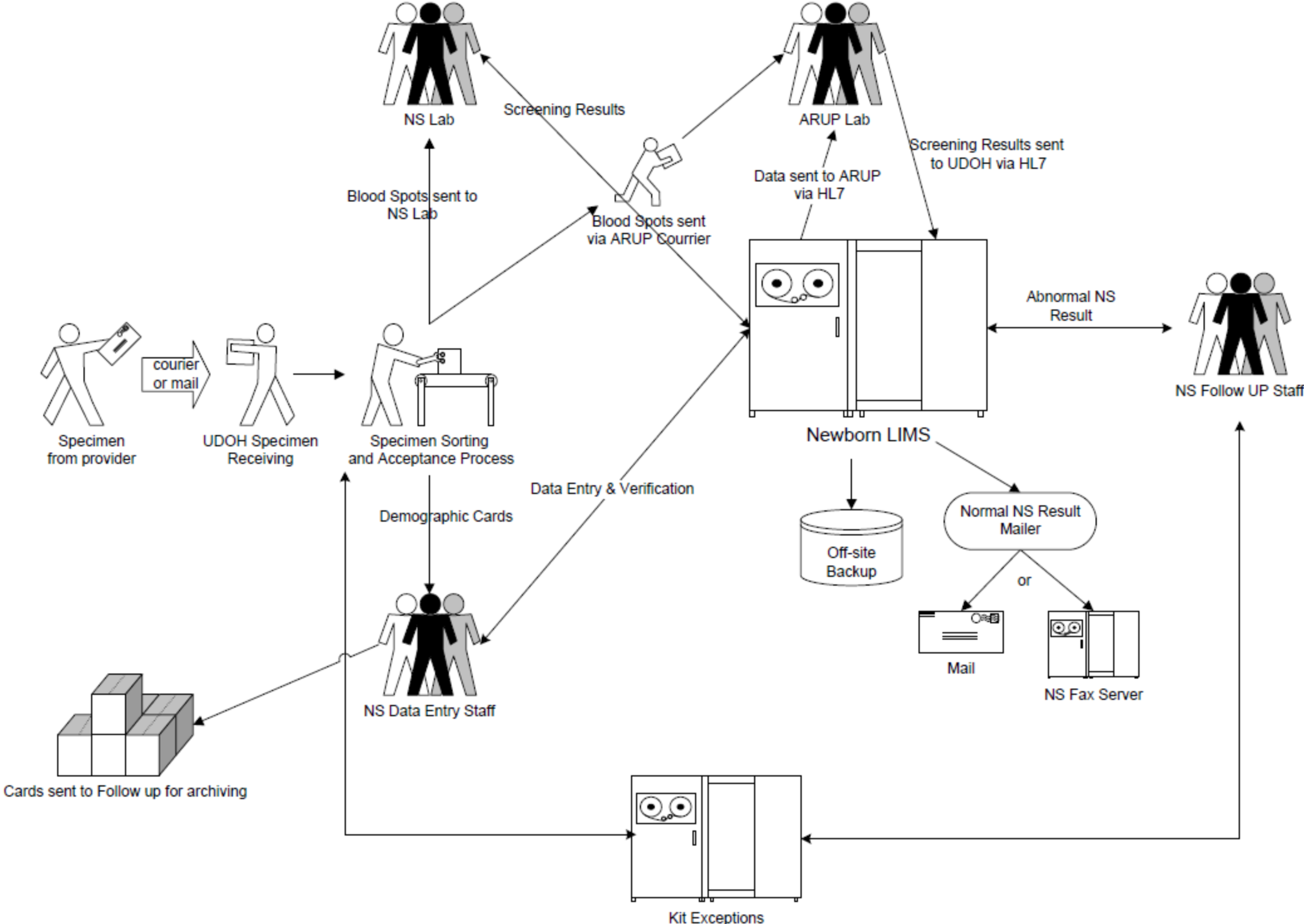
Can we grow and if so, how?

How can we advance – technology perspective?

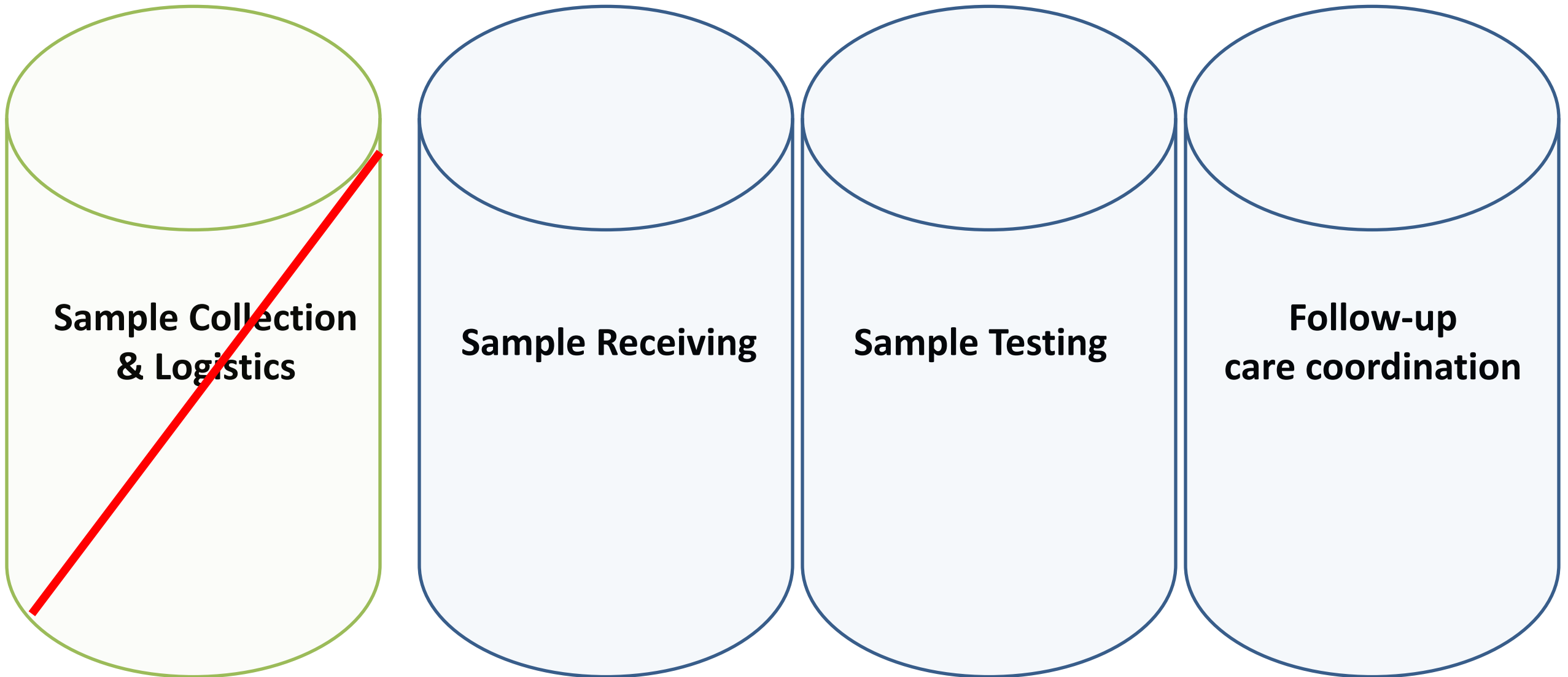
# Why is this important?

- **On-time testing is critically important**
- High scrutiny as a public service provider
- Competition
- Scientific advancement is the basis for new service offerings
- New testing mandates emerge constantly (SCID, CCHD, LSDs, XALD)

# NBS Processes – (typical) incomplete perspective



# Incomplete perspective – continued



# Beyond Silos: A customer centric system approach

Who is really the customer? What exact value do we provide?

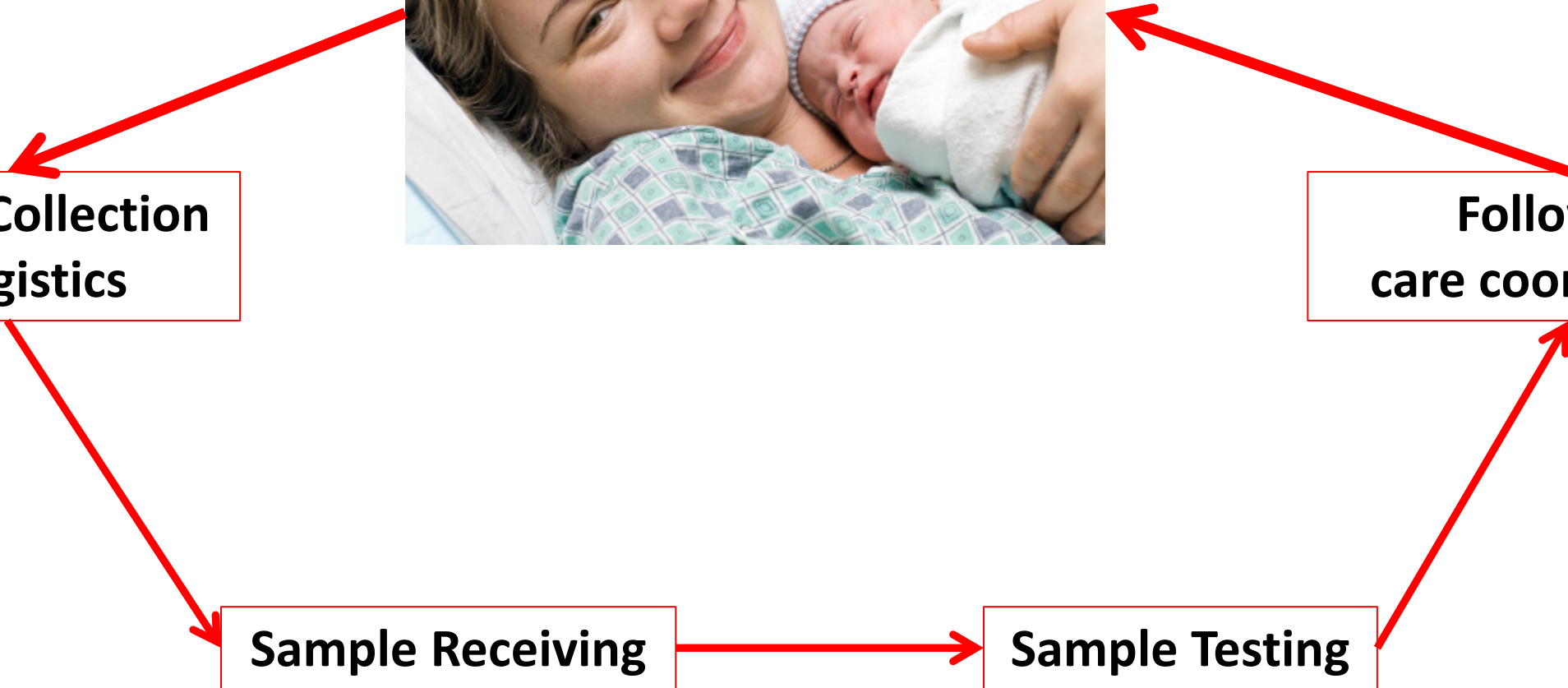


**Sample Collection & Logistics**

**Follow-up care coordination**

**Sample Receiving**

**Sample Testing**



1. Eliminate Silo-Perspective, adopt system view
2. Assess all steps and their respective utility in the overall process together with all parties involved (sample receiving, lab, follow-up, IT, finance)
3. Redesign Processes across silos

# 4 Sub-Processes

**Sample Collection  
& Logistics**

**TAT:**  
0.8 – 6 days

Bottleneck

**Sample Receiving**

**TAT:**  
0.1 – 1.25 days

Bottleneck

**Sample Testing**

**TAT:**  
0.8 – 1.3 days

No bottleneck  
Close to capacity limit  
Mondays

**Reporting/Follow-up  
coordination**

**TAT:**  
> 1day

No bottleneck  
Close to capacity limit  
Mondays

Overall process: outside CDC recommendations for >40% customers



# Process Improvements & Focus on the Biggest Problem

# Logistics: Where and Why so long?

- Tabulate TATs
- Convert zip codes into relative distances
- Convert corporate status into variable
- Multiple regression analysis/ANOVA

Hospital (2013 data)	avg transit time (days)	target TAT	% volume	birth no.	CORPORATION	birth volume	distance
	5.81	2	5.1%	442	Lifepoint	M	177
	5.78	2	1.6%	138	Independent	L	111
	5.69	2	1.9%	167	Independent	L	130
	5.67	2	0.3%	30	IHC	L	250
	5.54	2	1.4%	127	Independent	L	346
	5.29	2	0.8%	80	Independent	L	305
	5.11	2	6.3%	627	Independent	M	52
	5.06	2	0.5%	51	Independent	L	316
	5.05	2	1.0%	96	Independent	L	255
	4.54	2	2.9%	320	Lifepoint	M	129
	4.29	2	0.6%	72	Independent	L	208
	3.87	2	13.7%	1789	IASIS	H	41
	3.36	2	15.0%	2263	IASIS	H	23
	3.22	2	3.1%	484	Independent	M	50
	2.59	2.59	1.1%	210	IHC	L	180
	2.58	2.58	4.4%	863	IHC	M	258
	2.48	2.48	2.3%	473	IASIS	M	20
	2.43	2.43	10.9%	2261	IHC	H	310
	2.18	2.18	1.3%	310	IHC	M	21
	2.07	2.07	0.2%	43	IHC	L	170
	1.88	1.88	14.3%	3841	Independent	H	14
	1.76	1.76	0.3%	95	IHC	L	92
	1.68	1.68	7.9%	2393	IHC	M	31
	1.63	1.63	2.2%	682	IHC	M	67
	1.61	1.61	0.3%	96	IHC	L	112
	1.51	1.51	8.9%	2967	MountainStar	H	13
	1.49	1.49	0.4%	138	MountainStar	M	24
	1.47	1.47	7.5%	2578	IHC	H	100
	1.37	1.37	0.4%	144	IHC	L	55
	1.36	1.36	0.9%	321	MountainStar	M	81
	1.28	1.28	0.4%	168	IHC	L	11
	1.24	1.24	6.0%	2463	IHC	H	14
	1.24	1.24	10.4%	4235	IHC	H	52
	1.23	1.23	9.7%	4007	IHC	H	47
	1.22	1.22	1.5%	629	IASIS	M	14
	1.19	1.19	4.3%	1831	MountainStar	M	46
	1.03	1.03	0.9%	445	MountainStar	M	27
	0.97	0.97	5.8%	3051	IHC	H	37
	0.93	0.93	4.1%	2224	MountainStar	H	44
	0.9	0.9	2.2%	1214	IHC	M	46
	0.86	0.86	2.3%	1372	IHC	H	19
	0.84	0.84	0.1%	89	IHC	L	137
	0.82	0.82	7.8%	4794	IHC	H	17

# High pay-off solution: FedEx Partnership Courier Service for Hospitals with > 3days TAT

## Transport time

$$t = f(\text{distance, corporate status}); p < 0.005$$

**TAT: from 4.14 days to 2.9 days; costs \$19,832**



# Special Delivery

FedEx offers the world-class solutions our important packages deserve.

The Utah Department of Health is pleased to announce that FedEx is now a carrier for samples shipped to our facility located in Taylorsville, UT, effective May 2014.

All newborn screening samples sent to the Utah Department of Health must now be shipped via FedEx Priority Overnight®.

All shipping labels must be created using FedEx Ship Manager® at fedex.com with Shipping Administration.

A separate invitation has been sent via e-mail from the Utah Department of Health with a log-in user name and password.

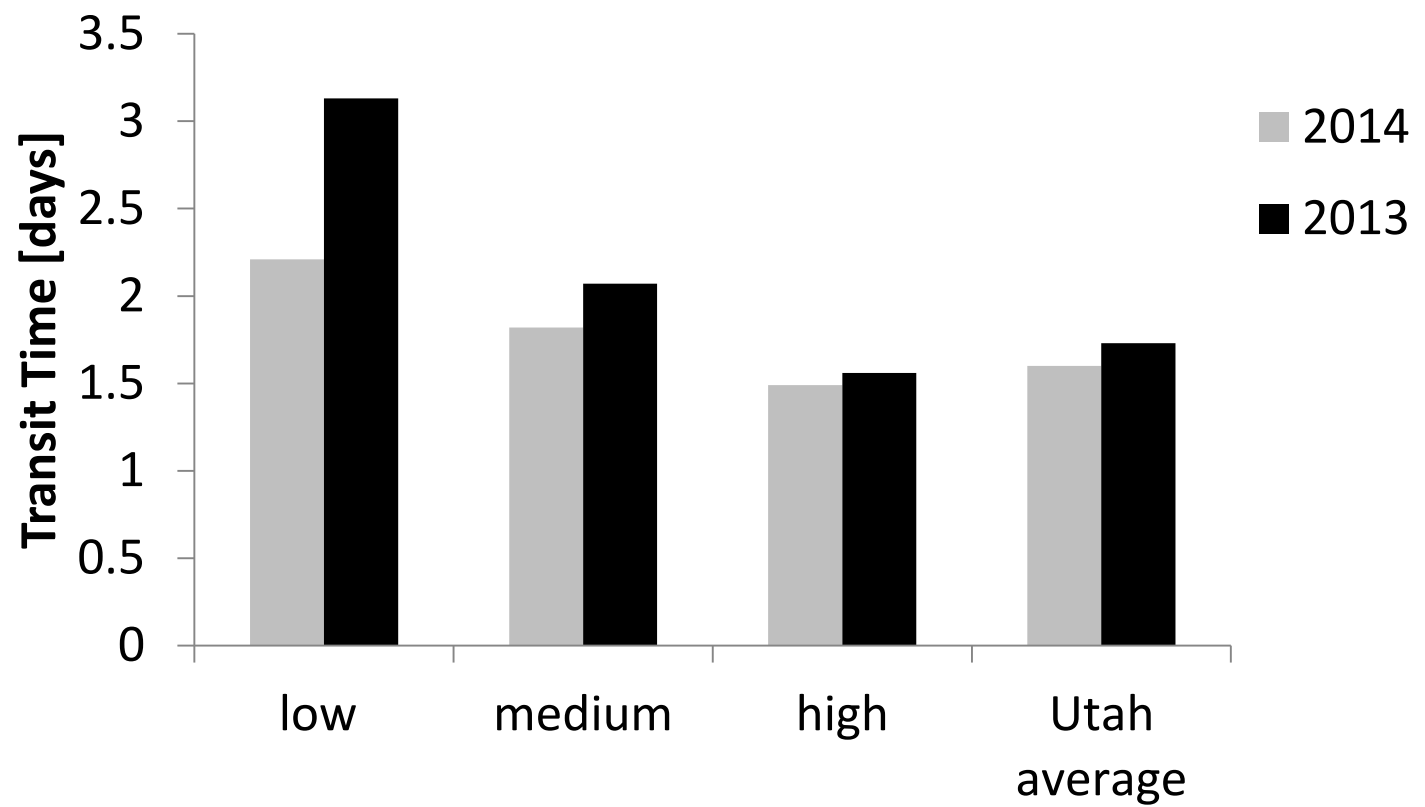
Use this login to create a shipping label for FedEx Express® shipments. The shipping label will auto-populate the billing, recipient address and service for you. Simply print the shipping label on 8½ x 11 white paper using a laser printer, insert the sample into FedEx Express packaging, seal the package, fold the label and insert it into the plastic sleeve, and ship.

This simple-to-use online shipping program allows you to quickly create a shipping label and track the status of the shipment. Refer to "Shipping Details" in this PDF for more information.



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Utah Public Health Laboratory



**Hospital Category by Birth Volume**