



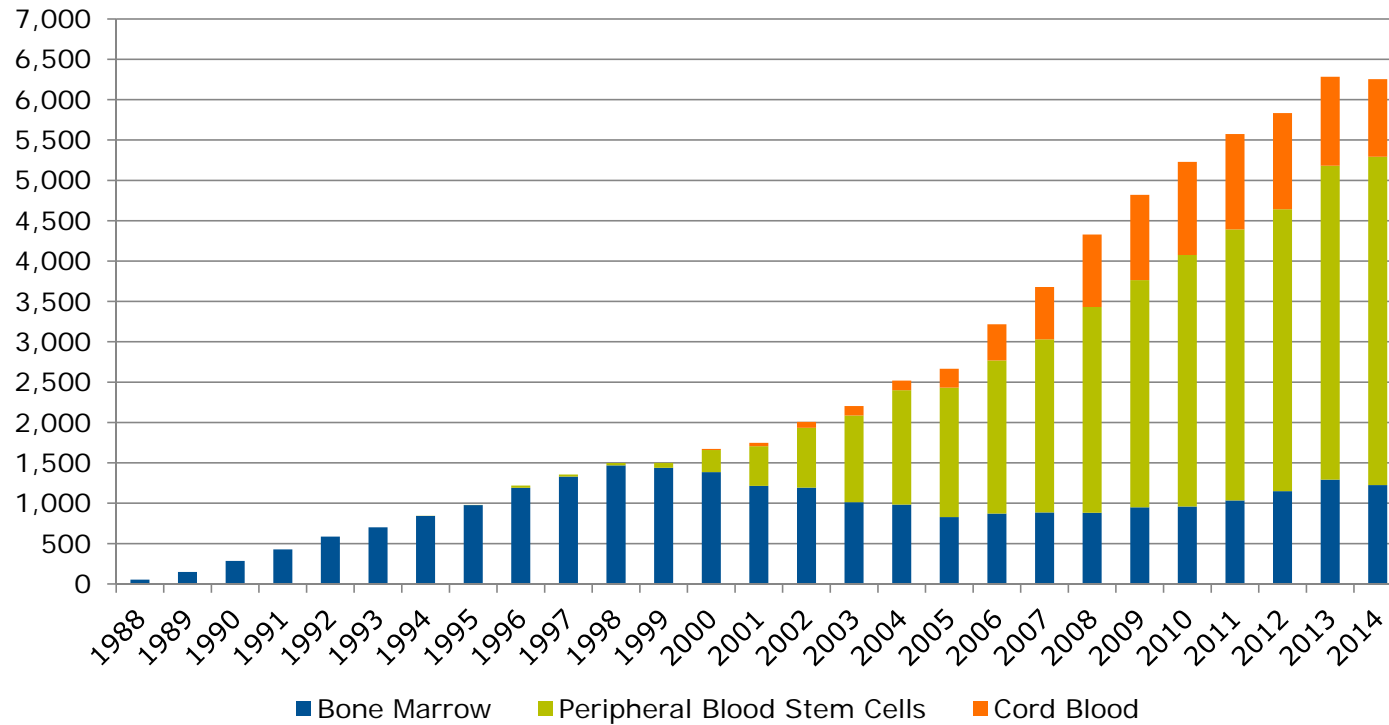
# Economics of Cord Blood Banking

Michael Boo  
NMDP – Be The Match  
September 11, 2015

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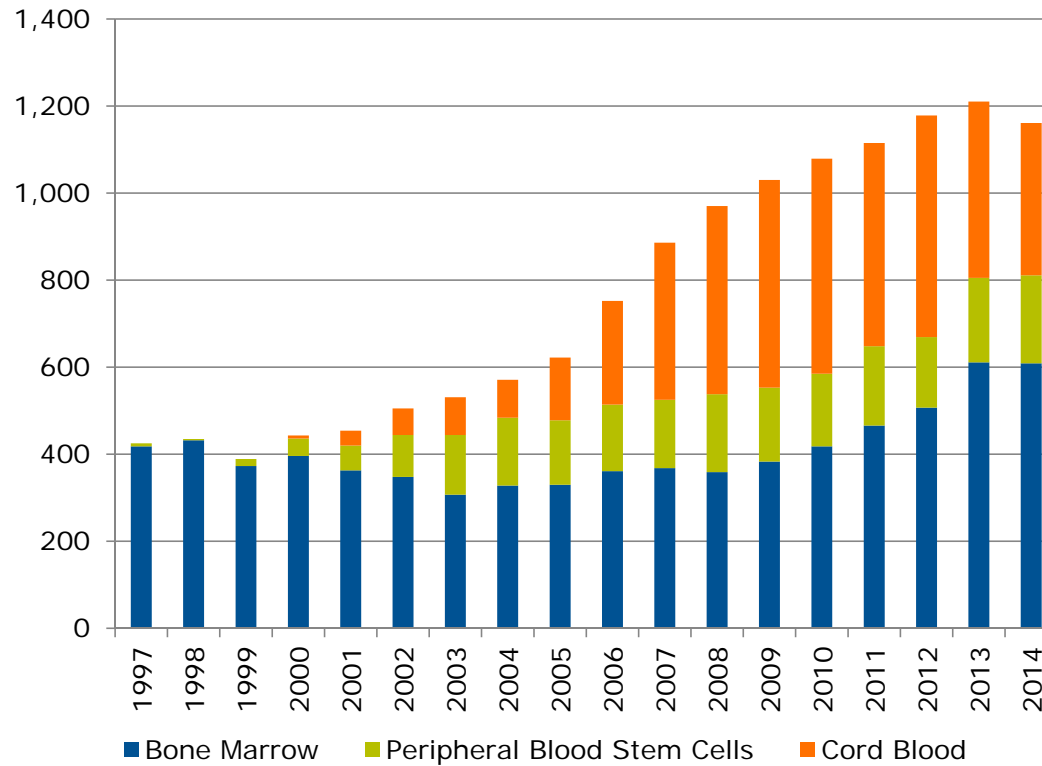
# Historical Use UCB Use Data

# NMDP Historical Transplants by Product

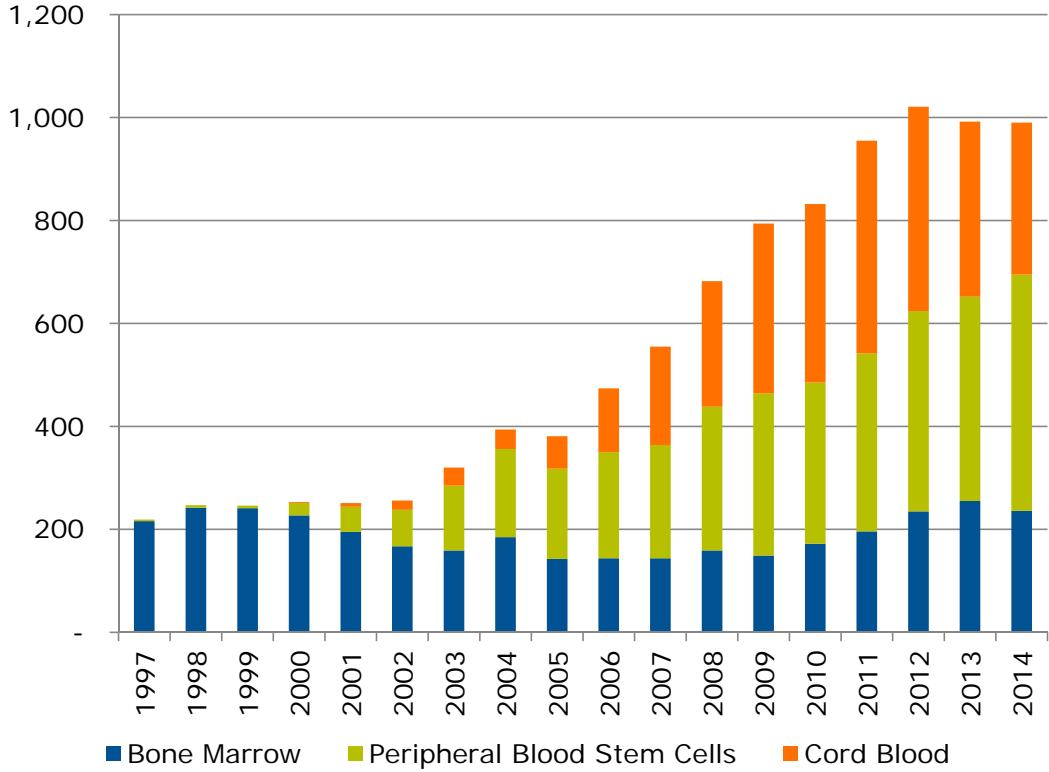


# NMDP Transplants by Cell Source

## Pediatric Recipients (Age Younger than 18 Years)

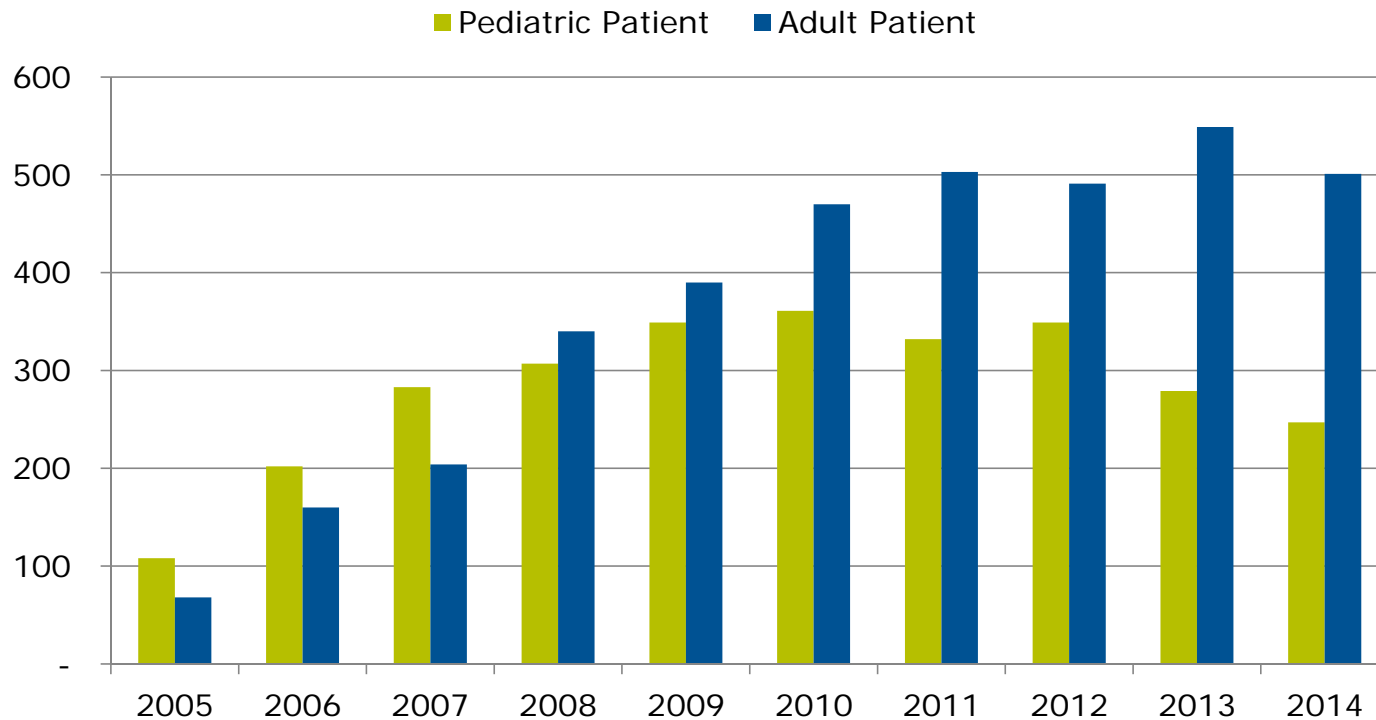


# NMDP Transplants for Minority Patients by Cell Source

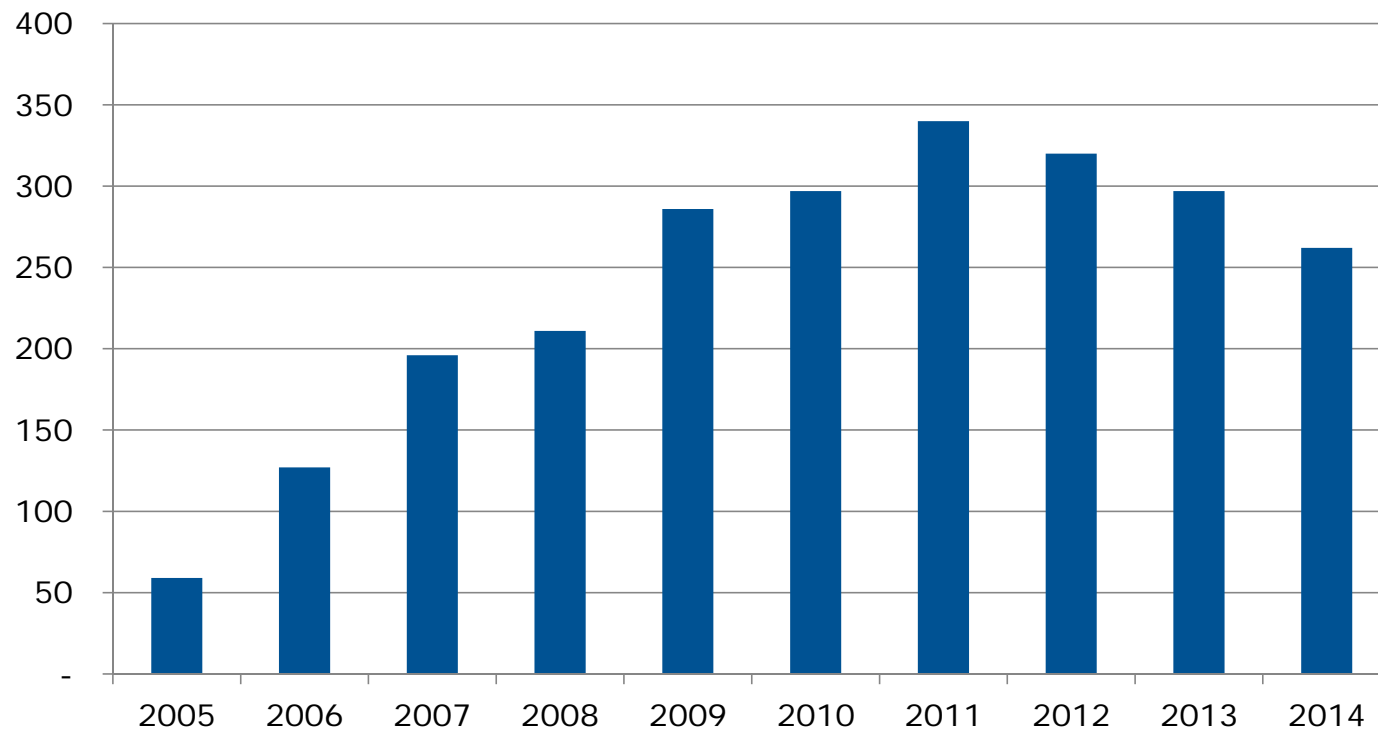


# NMDP Domestic Cord Transplants

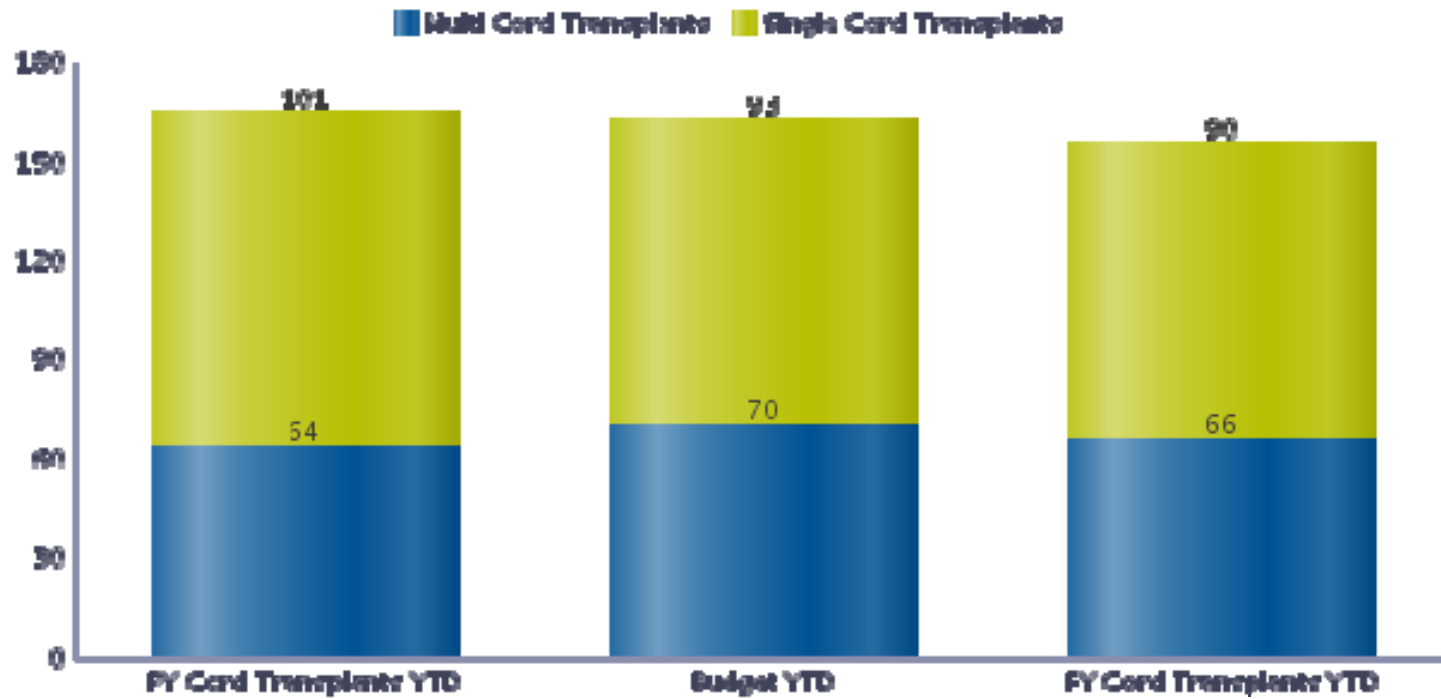
## Pediatric vs. Adult Patient



# NMDP Domestic Cord Transplants – Minority Patients

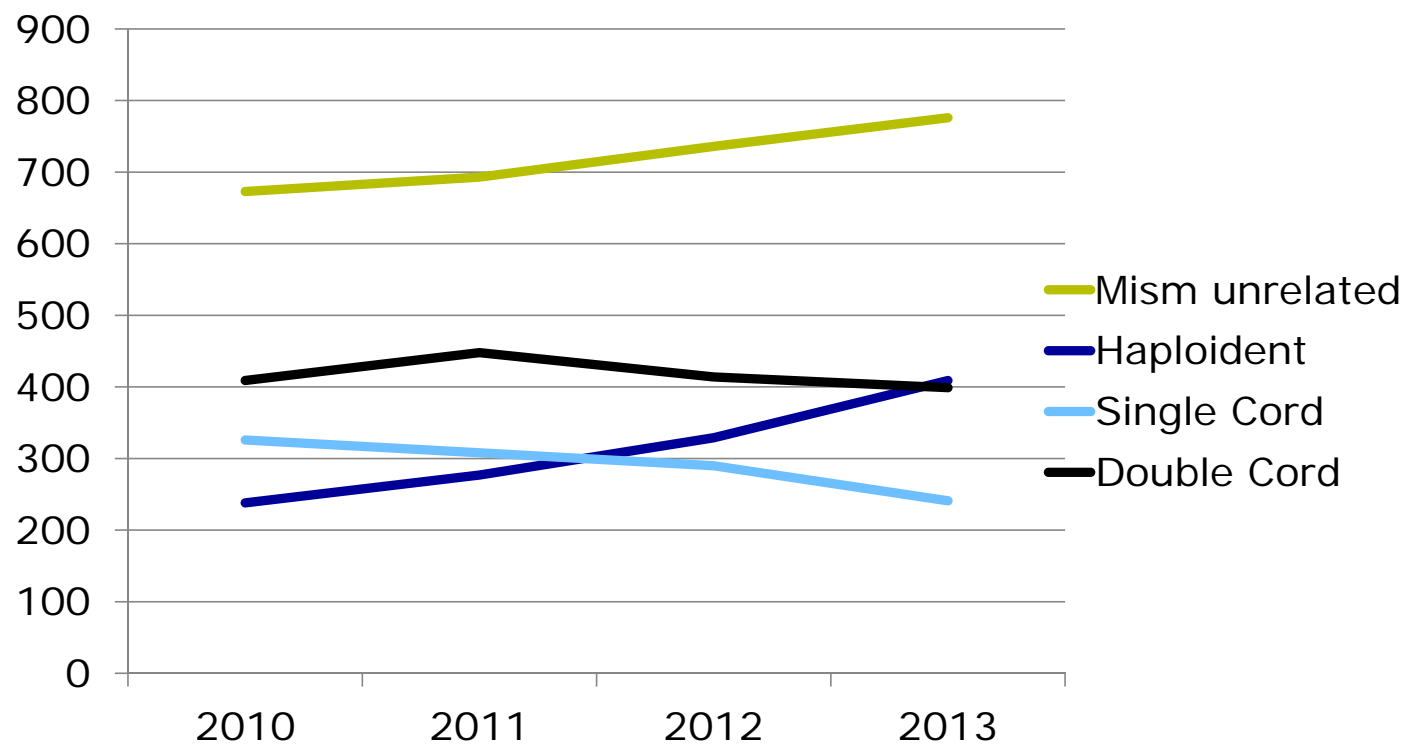


# Multi and Single Cord Transplants





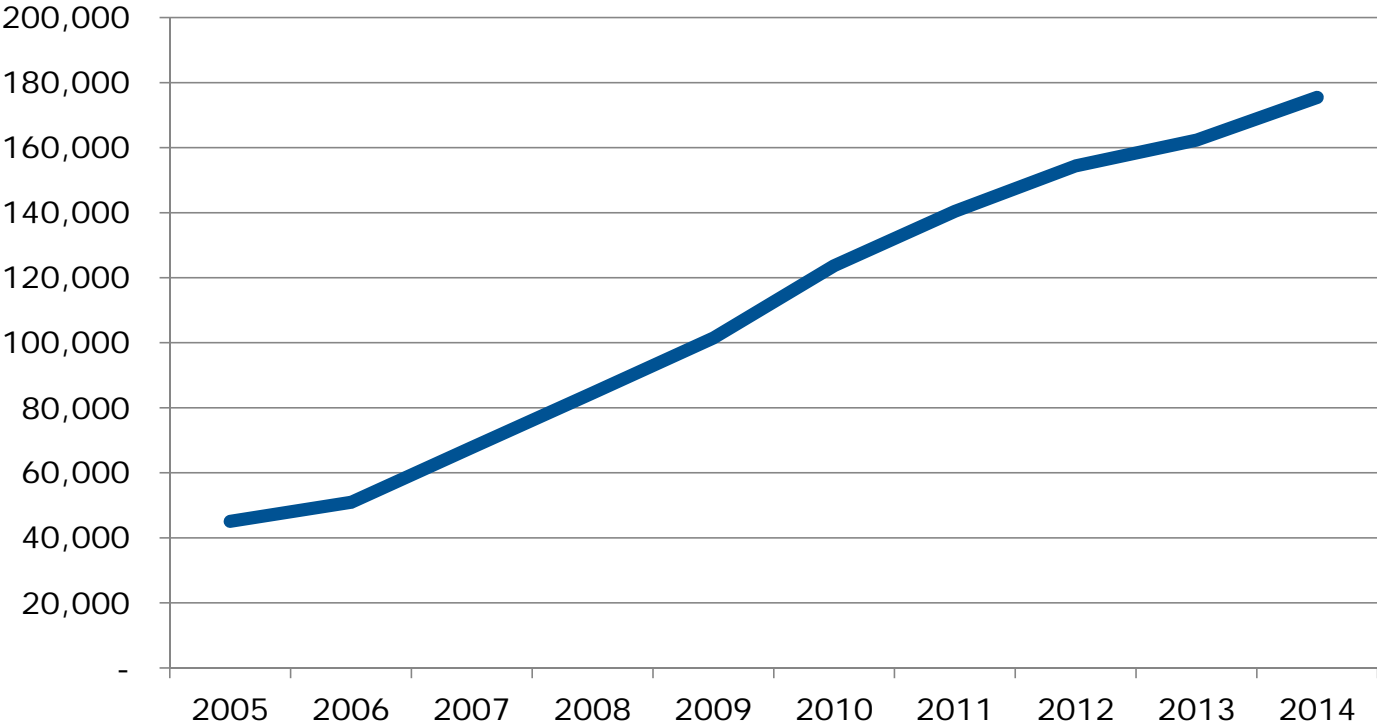
## “Alternative Donor” Transplants in the US by Year and Graft Type



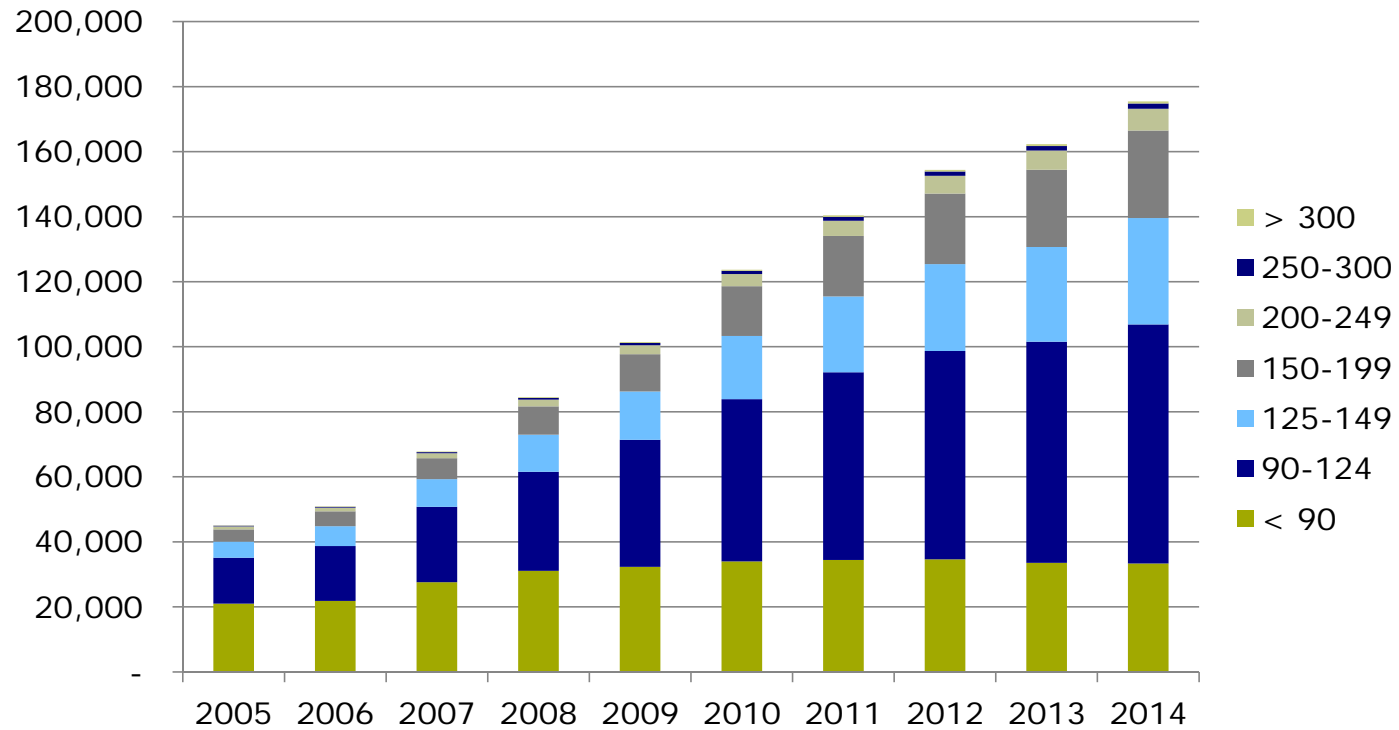
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# Inventory Analysis

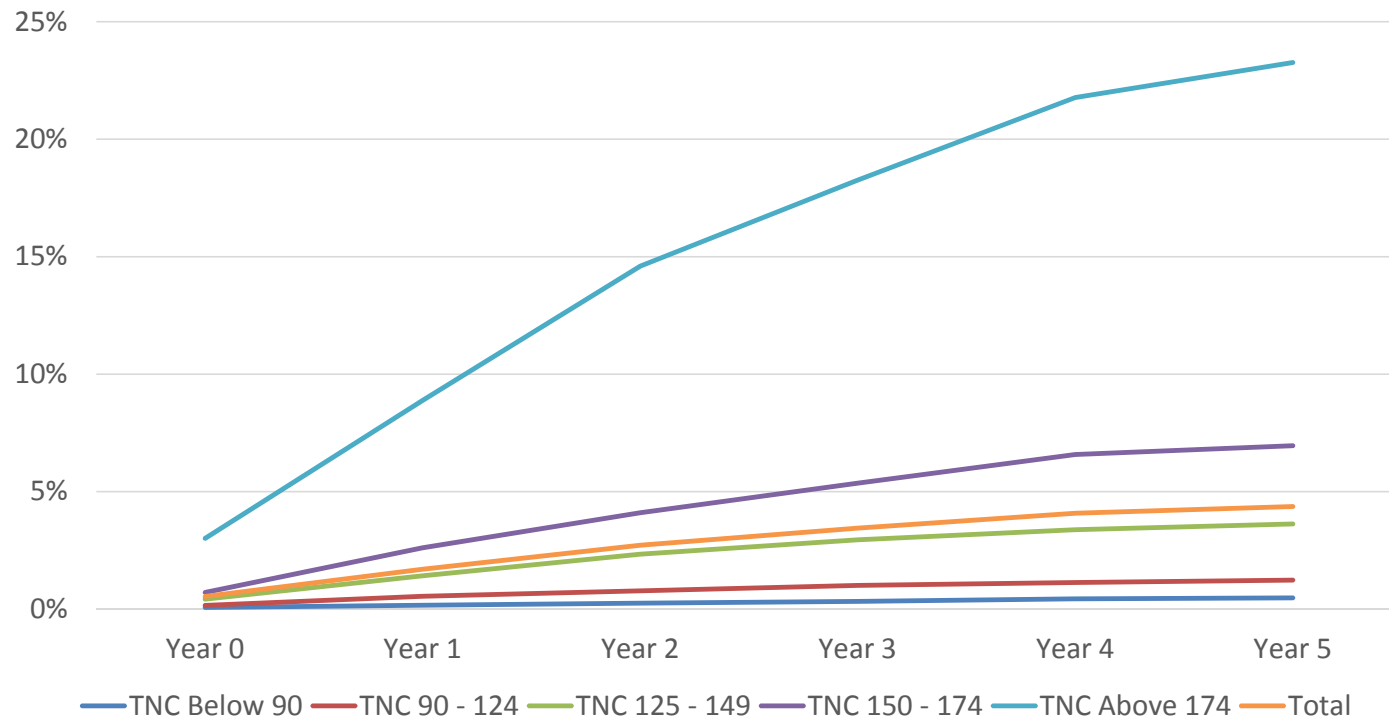
# NMDP Domestic Cord Inventory Growth



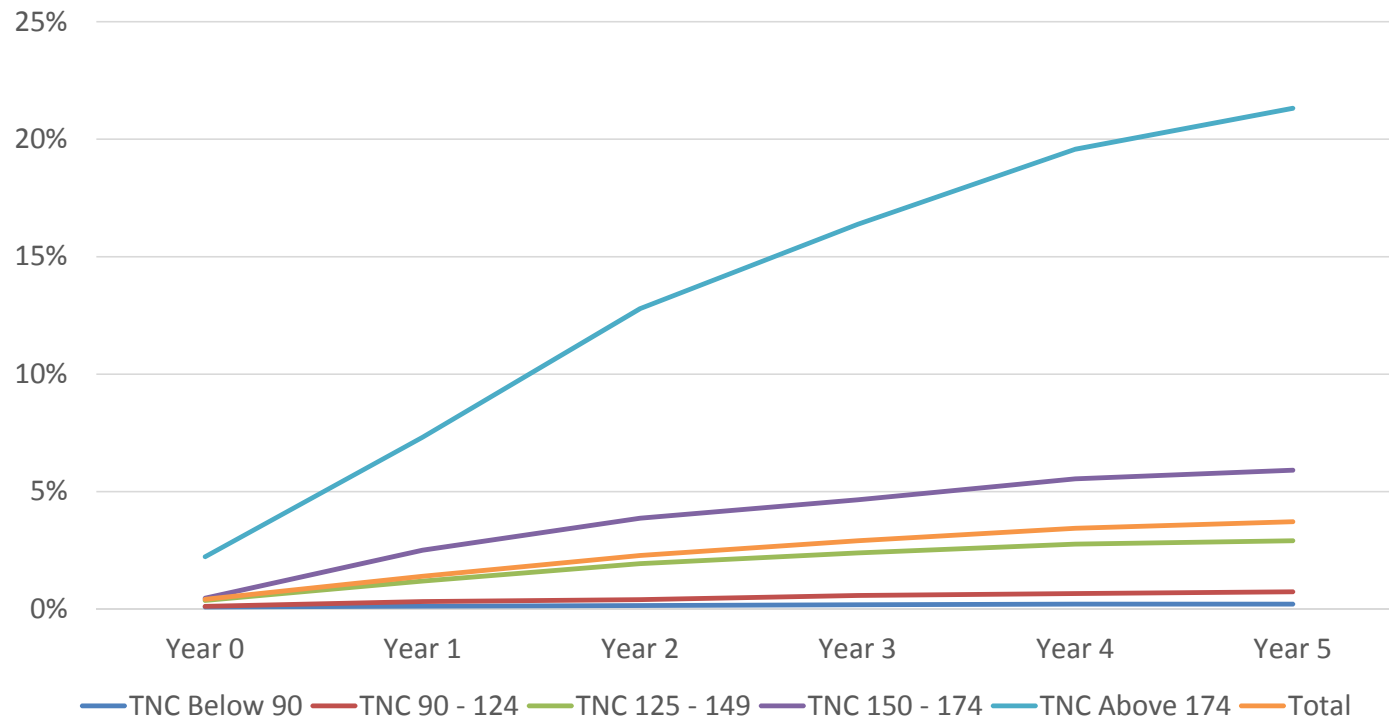
# NMDP Domestic Cord Inventory by TNC



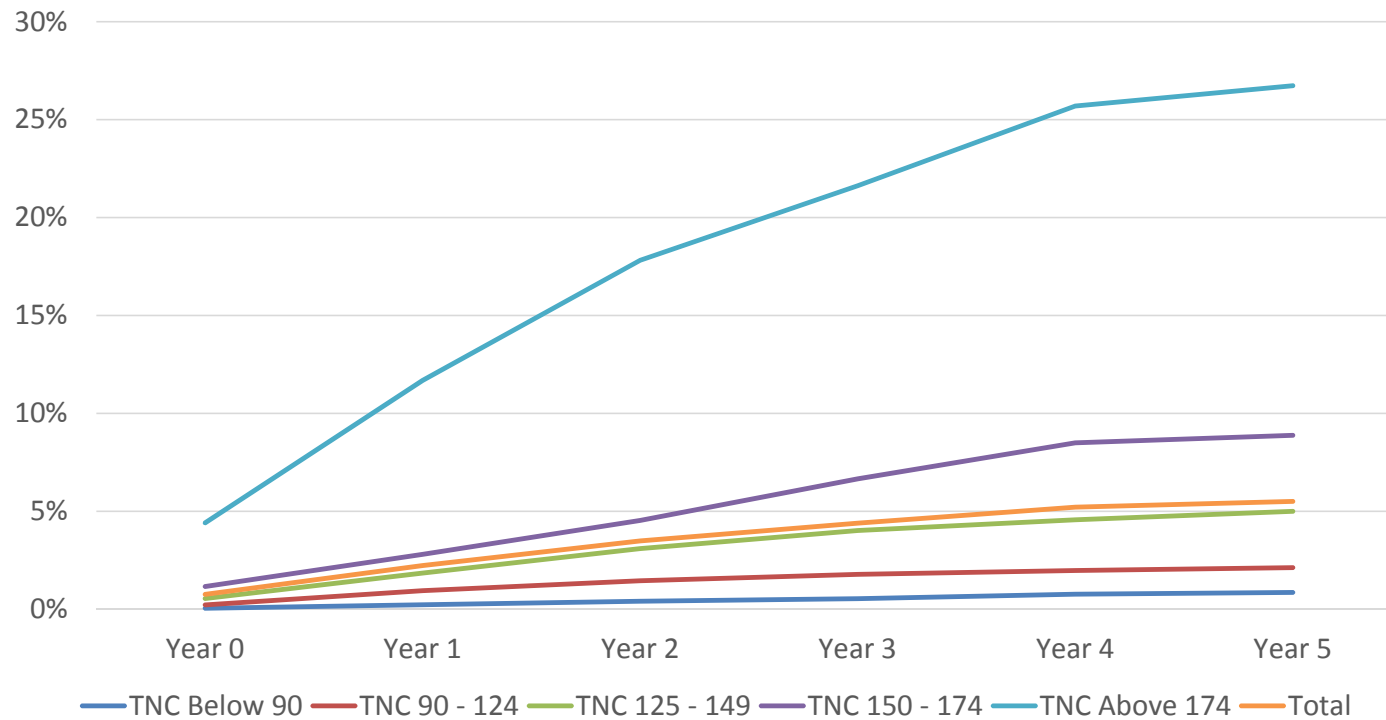
## 2009 Recruitment – Cumulative % Shipped



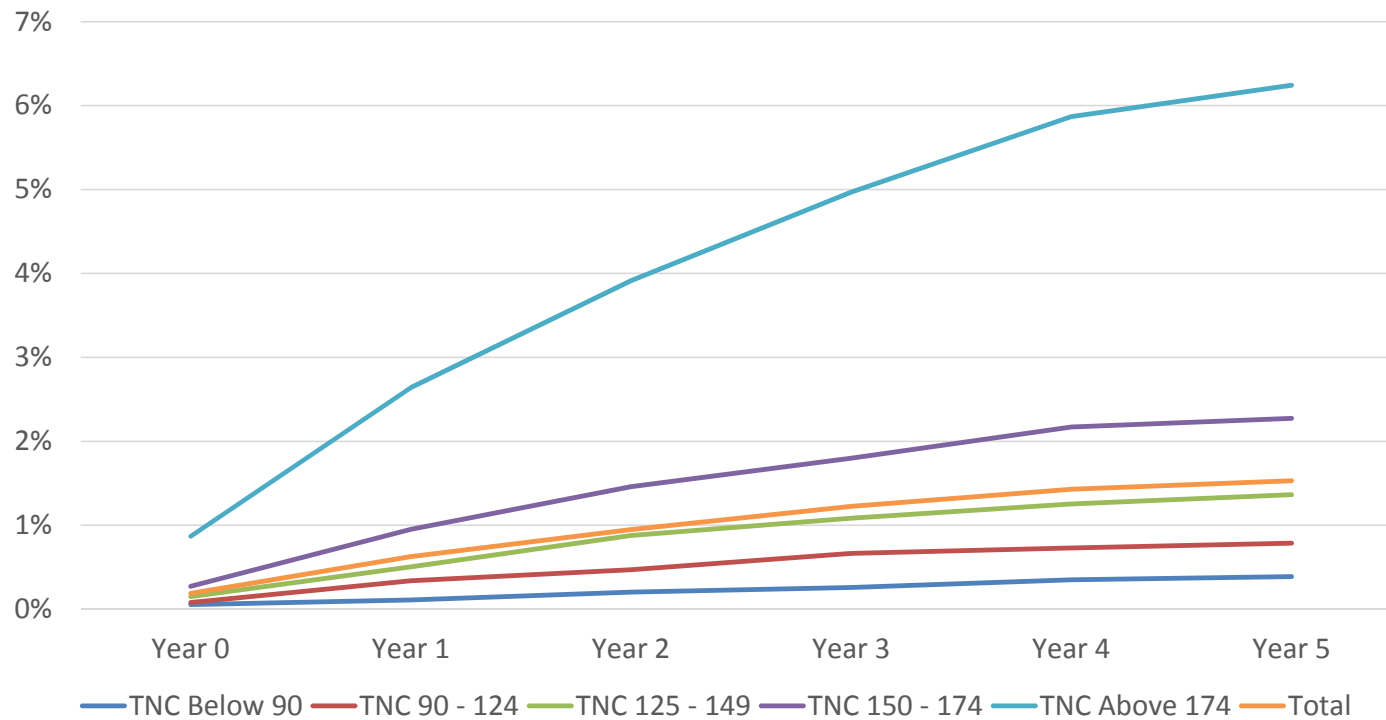
## 2009 Recruitment – Cumulative % Shipped Caucasian CBU's



## 2009 Recruitment – Cumulative % Shipped Minority CBU's

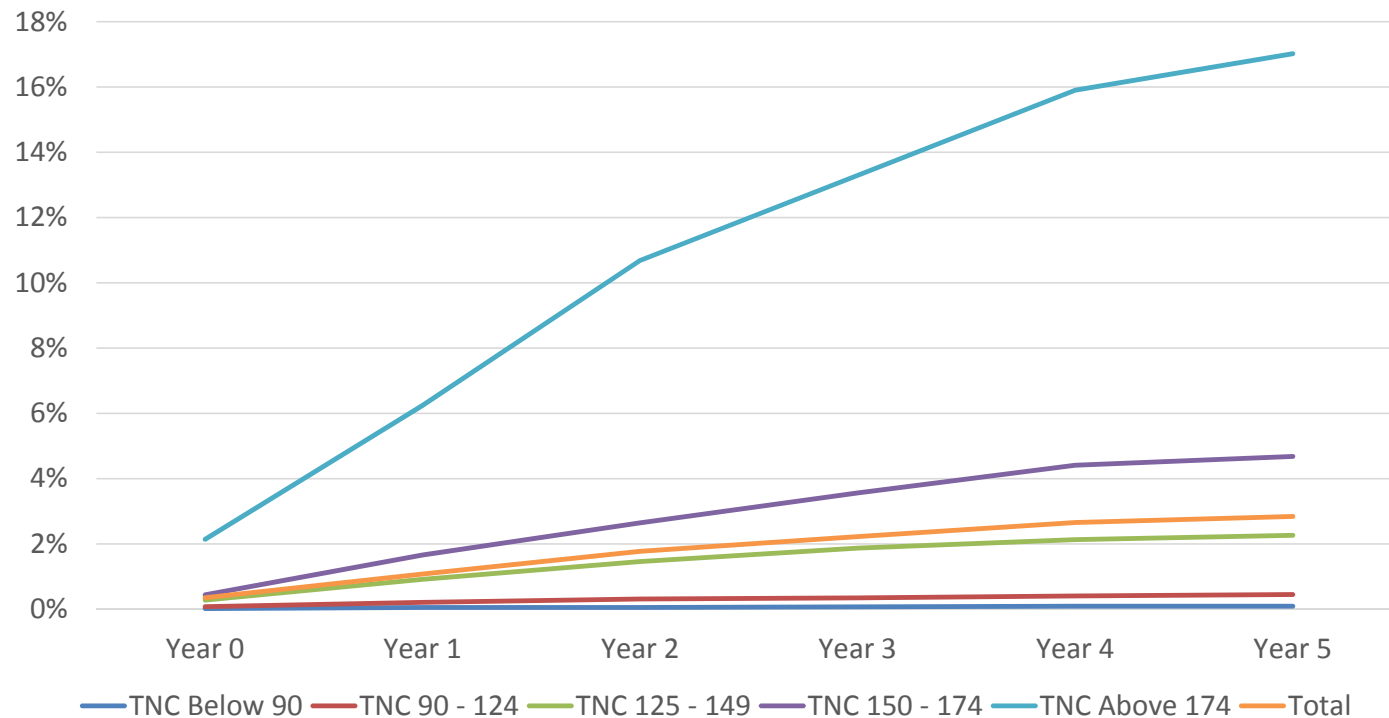


## 2009 Recruitment – Cumulative % Shipped To Pediatric Patients





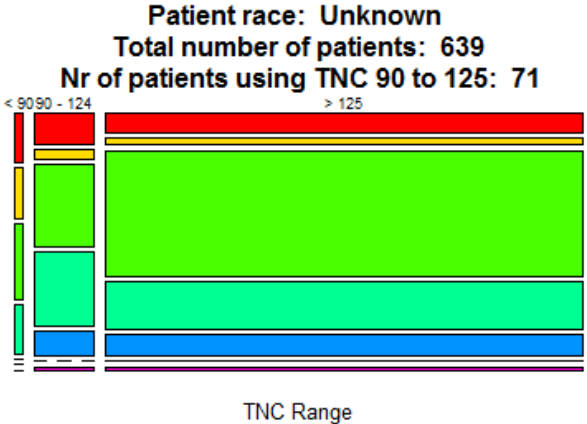
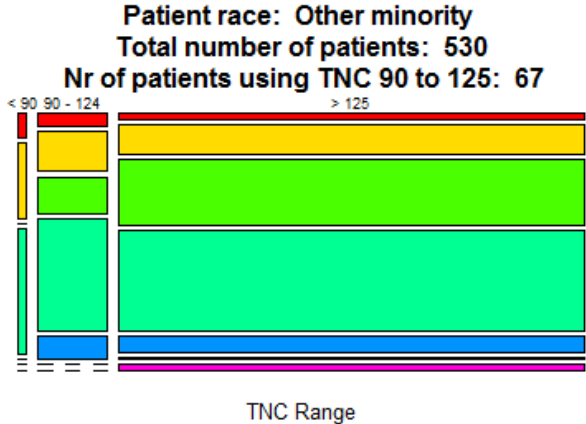
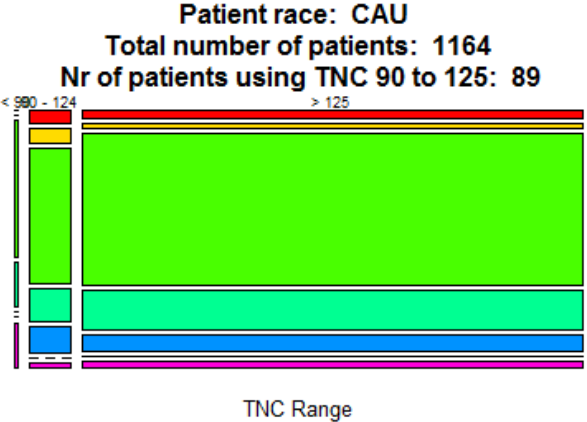
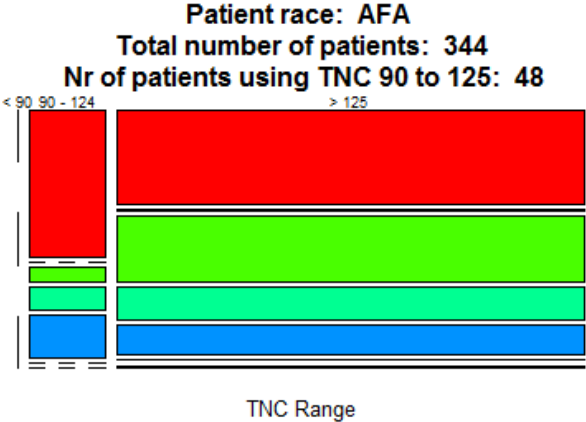
## 2009 Recruitment – Cumulative % Shipped To Adult Patients



# Usage from 2013 to 2015

Donor Race

- AFA
- API
- CAU
- HIS
- MULTI
- NAM
- Unknown



## Single versus multi cord

	% used for single cord transplants	% used for multi cord transplants	# of units
Only units TNC 90 – 124	64%	34%	1644
Units with TNC 125-149	52%	46%	1855
Units with TNC 150+	44%	54%	9008
All units recruited by NMDP	49%	49%	12507

- The percentage of small units that were used in a multi cord transplants is smaller than for all units combined.

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# Cord Blood Banking Financial Modeling – NMDP Analysis



# CBB Industry Financial Analysis Process

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- Selected four banks that represent the industry
  - One licensed utilizing OBGYNs for collection
  - One licensed utilizing collection specialists for collection
  - One not licensed utilizing OBGYNs for collection
  - One not licensed utilizing collection specialists for collection
- Updated the financial model including pre- and post- licensure expenses
- Reconciled the model to one bank's budget to ensure material accuracy of the financial model
- The average data from the four banks was used to represent the industry

# Industry's Current Run Rate Is Unsustainable

(In 000's)

	2015	2016	2017	2018	2019	2020
Total Revenue	\$ 44,656	\$ 44,656	\$ 44,656	\$ 44,656	\$ 44,656	\$ 44,656
Total Costs	<u>\$ 62,192</u>	<u>\$ 64,245</u>	<u>\$ 66,365</u>	<u>\$ 68,555</u>	<u>\$ 70,816</u>	<u>\$ 73,151</u>
<b>Net Loss- Excluding Subsidies</b>	<b>\$ (17,536)</b>	<b>\$ (19,589)</b>	<b>\$ (21,709)</b>	<b>\$ (23,898)</b>	<b>\$ (26,159)</b>	<b>\$ (28,495)</b>
Net Loss % of Revenue	-39%	-44%	-49%	-54%	-59%	-64%
Government Subsidies	<u>\$ 9,937</u>	<u>\$ 9,937</u>	<u>\$ 9,937</u>	<u>\$ 9,937</u>	<u>\$ 9,937</u>	<u>\$ 9,937</u>
<b>Net Loss - Including Subsidies</b>	<b>\$ (7,599)</b>	<b>\$ (9,652)</b>	<b>\$ (11,772)</b>	<b>\$ (13,962)</b>	<b>\$ (16,223)</b>	<b>\$ (18,558)</b>
Net Loss % of Revenue	-17%	-22%	-26%	-31%	-36%	-42%

## Potential further degradation with 3% decline in usage of CBUs

(In 000's)

	2015	2016	2017	2018	2019	2020
Total Revenue	\$ 44,656	\$ 43,317	\$ 42,017	\$ 40,757	\$ 39,534	\$ 38,348
Total Costs	\$ 62,192	\$ 64,210	\$ 66,295	\$ 68,448	\$ 70,671	\$ 72,967
<b>Net Loss- Excluding Subsidies</b>	<b>\$ (17,536)</b>	<b>\$ (20,894)</b>	<b>\$ (24,278)</b>	<b>\$ (27,691)</b>	<b>\$ (31,137)</b>	<b>\$ (34,619)</b>
Net Loss % of Revenue	-39%	-48%	-58%	-68%	-79%	-90%
Government Subsidies	\$ 9,937	\$ 9,937	\$ 9,937	\$ 9,937	\$ 9,937	\$ 9,937
<b>Net Loss - Including Subsidies</b>	<b>\$ (7,599)</b>	<b>\$ (10,957)</b>	<b>\$ (14,341)</b>	<b>\$ (17,754)</b>	<b>\$ (21,200)</b>	<b>\$ (24,683)</b>
Net Loss % of Revenue	-17%	-25%	-34%	-44%	-54%	-64%
Additional Loss	\$ -	\$ (1,305)	\$ (2,569)	\$ (3,793)	\$ (4,978)	\$ (6,125)

## Combination of Changes – Breakeven Decline in CBU Use by 3%

(In 000's)

	2015	2016	2017	2018	2019	2020
Total Revenue	\$ 44,656	\$ 43,317	\$ 42,017	\$ 40,757	\$ 39,534	\$ 38,348
Total Costs	\$ 62,192	\$ 52,612	\$ 51,565	\$ 50,437	\$ 49,183	\$ 48,088
<b>Net Loss- Excluding Subsidies</b>	<b>\$ (17,536)</b>	<b>\$ (9,296)</b>	<b>\$ (9,547)</b>	<b>\$ (9,680)</b>	<b>\$ (9,649)</b>	<b>\$ (9,740)</b>
Net Loss % of Revenue	-39%	-21%	-23%	-24%	-24%	-25%
Government Subsidies	\$ 9,937	\$ 9,937	\$ 9,937	\$ 9,937	\$ 9,937	\$ 9,937
<b>Net Loss - Including Subsidies</b>	<b>\$ (7,599)</b>	<b>\$ 641</b>	<b>\$ 389</b>	<b>\$ 257</b>	<b>\$ 288</b>	<b>\$ 196</b>
Net Loss % of Revenue	-17%	1%	1%	1%	1%	1%
Declines in Recruitment	0%	-6%	-12%	-14%	-17%	-19%

### Assumptions:

- TNC cutoff 150
- Recruitment declines by an increasing percentage each year
- Sales declines by 3% each year
- Cost to recruit and process drop 2% each year
- Inflation remains at 3% each year



# Combination of Changes to Breakeven Increase in CBU Use by 2%

(In 000's)

	2015	2016	2017	2018	2019	2020
Total Revenue	\$ 44,656	\$ 45,549	\$ 46,460	\$ 47,390	\$ 48,337	\$ 49,304
Total Costs	\$ 62,192	\$ 54,069	\$ 55,583	\$ 56,720	\$ 57,894	\$ 59,106
<b>Net Loss- Excluding Subsidies</b>	<b>\$ (17,536)</b>	<b>\$ (8,520)</b>	<b>\$ (9,122)</b>	<b>\$ (9,331)</b>	<b>\$ (9,557)</b>	<b>\$ (9,801)</b>
Net Loss % of Revenue	-39%	-19%	-20%	-20%	-20%	-20%
Government Subsidies	\$ 9,937	\$ 9,937	\$ 9,937	\$ 9,937	\$ 9,937	\$ 9,937
<b>Net Loss - Including Subsidies</b>	<b>\$ (7,599)</b>	<b>\$ 1,417</b>	<b>\$ 814</b>	<b>\$ 606</b>	<b>\$ 380</b>	<b>\$ 135</b>
Net Loss % of Revenue	-17%	3%	2%	1%	1%	0%

## Assumptions:

- TNC cutoff 150
- Recruitment declines by 2% each year in 2018-2020
- Sales increase 2% each year
- Cost to recruit and process drop 1% each year
- Inflation remains at 3% each year

## US Banking Analysis

Allocates cost per unit banked evenly across all sized units and divides cost by number of units sold in each cohort

	CBUs Recruited 2013	Cost to Bank	CBUs Shipped 2014	Cost per Shipped Unit without Subsidies	Revenue from CBUs Shipped	Net Revenue without Subsidies	Net Revenue with Subsidies
CBUs TNC Less Than 90	507	\$ 2,284,605	22	\$ 103,846	\$ 720,264	\$ (1,564,341)	\$ (1,564,341)
CBUs TNC 90 - 124	5,122	\$ 23,080,366	132	\$ 174,851	\$ 4,321,584	\$ (18,758,782)	\$ (15,070,942)
CBUs TNC 125 - 149	3,393	\$ 15,289,278	151	\$ 101,253	\$ 4,943,630	\$ (10,345,648)	\$ (7,902,688)
CBUs TNC 150 - 174	2,203	\$ 9,926,991	157	\$ 63,229	\$ 5,140,065	\$ (4,786,926)	\$ (3,200,766)
CBUs above 174	2,577	\$ 11,612,281	661	\$ 17,568	\$ 21,640,657	\$ 10,028,376	\$ 11,883,816
<b>Total</b>	13,802	\$ 62,193,519	1,123	\$ 55,382	\$ 36,766,200	\$ (25,427,319)	\$ (15,854,919)

## Analysis of Higher TNC Cutoff – All Costs as Variable

Assumes only large units are banked and summarizes different TNC cutoffs of 125 or 150, using volumes and dollars from above table (does not assume overhead is fixed)

	CBU Recruited 2013	Cost to Bank	CBUs Shipped 2014	Cost per Shipped Unit without Subsidies	Revenue from CBUs Shipped	Net Revenue without Subsidies	Net Revenue with Subsidies
If CBUs TNC 125 or higher are kept	8,173	\$ 36,828,549	1,123	\$ 32,795	\$ 36,766,200	\$ (62,349)	\$ 5,822,211
In CBUs TNC 150 or higher are kept	4,780	\$ 21,539,271	1,123	\$ 19,180	\$ 36,766,200	\$ 15,226,929	\$ 18,668,529

## Analysis of Higher TNC Cutoff – Overhead Costs Fully Allocated

Summarizes different TNC cutoffs of 125 or 150, however this assumes that overhead cost will remain the same as it currently is for entire industry

	CBUs Recruited 2013	Cost to Bank	CBUs Shipped 2014	Cost per Shipped Unit without Subsidies	Revenue from CBUs Shipped	Net Revenue without Subsidies	Net Revenue with Subsidies
If CBUs TNC 125 or higher are kept	8,173	\$ 48,829,264	1,123	\$ 43,481	\$ 36,766,200	\$ (12,063,064)	\$ (6,178,504)
In CBUs TNC 150 or higher are kept	4,780	\$ 40,777,675	1,123	\$ 36,311	\$ 36,766,200	\$ (4,011,475)	\$ (569,875)

## Analysis of Higher TNC Cutoff – Overhead Allocated at Lower Cost

Summarizes different TNC cutoffs of 125 or 150, however this assumes that overhead cost savings of one third

	CBU Recruited 2013	Cost to Bank	CBU Shipped 2014	Cost per Shipped Unit without Subsidies	Revenue from CBUs Shipped	Net Revenue without Subsidies	Net Revenue with Subsidies
If CBUs TNC 125 or higher are kept	8,173	\$ 38,821,454	1,123	\$ 34,569	\$ 36,766,200	\$ (2,055,254)	\$ 3,829,306
In CBUs TNC 150 or higher are kept	4,780	\$ 30,769,865	1,123	\$ 27,400	\$ 36,766,200	\$ 5,996,335	\$ 9,437,935

## Reinvestment Opportunity at 150 TNC Cutoff

TNC cutoff of 150, subsidy increased to \$3,000 per NCBI CBU, assume that overhead cost will remain the same as it currently is for entire industry

	CBUs Recruited 2013	Cost to Bank	CBUs Shipped 2014	Cost per Shipped Unit without Subsidies	Revenue from CBU's Shipped	Net Revenue without Subsidies	Net Revenue with Subsidies
If CBU's TNC 150 or higher are kept	4,780	\$ 40,777,675	1,123	\$ 36,311	\$ 36,766,200	\$ (4,011,475)	\$ 4,592,525
Reinvestment on recruitment	1,935						

*\*assumes no additional overhead needed in reinvestment, only use variable cost*

Summarizes cutoff of 150, however this assumes that overhead cost will be 2/3 for entire industry

	CBUs Recruited 2013	Cost to Bank without Subsidies	CBUs Shipped 2014	Cost per Shipped Unit without Subsidies	Revenue from CBU's Shipped	Net Revenue without Subsidies	Net Revenue with Subsidies
If CBU's TNC 150 or higher are kept	4,780	\$ 30,769,865	1,123	\$ 27,400	\$ 36,766,200	\$ 5,996,335	\$ 14,600,335
Reinvestment on recruitment	6,153						

*\*assumes no additional overhead needed in reinvestment, only use variable cost*

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# Questions?