

Prison and Sentencing Impact Model



2010 NASC Conference

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Purposes of the Model

Isolate and measure the impact of amendments on:
Offender Sentences
Prison Resources

Audience:

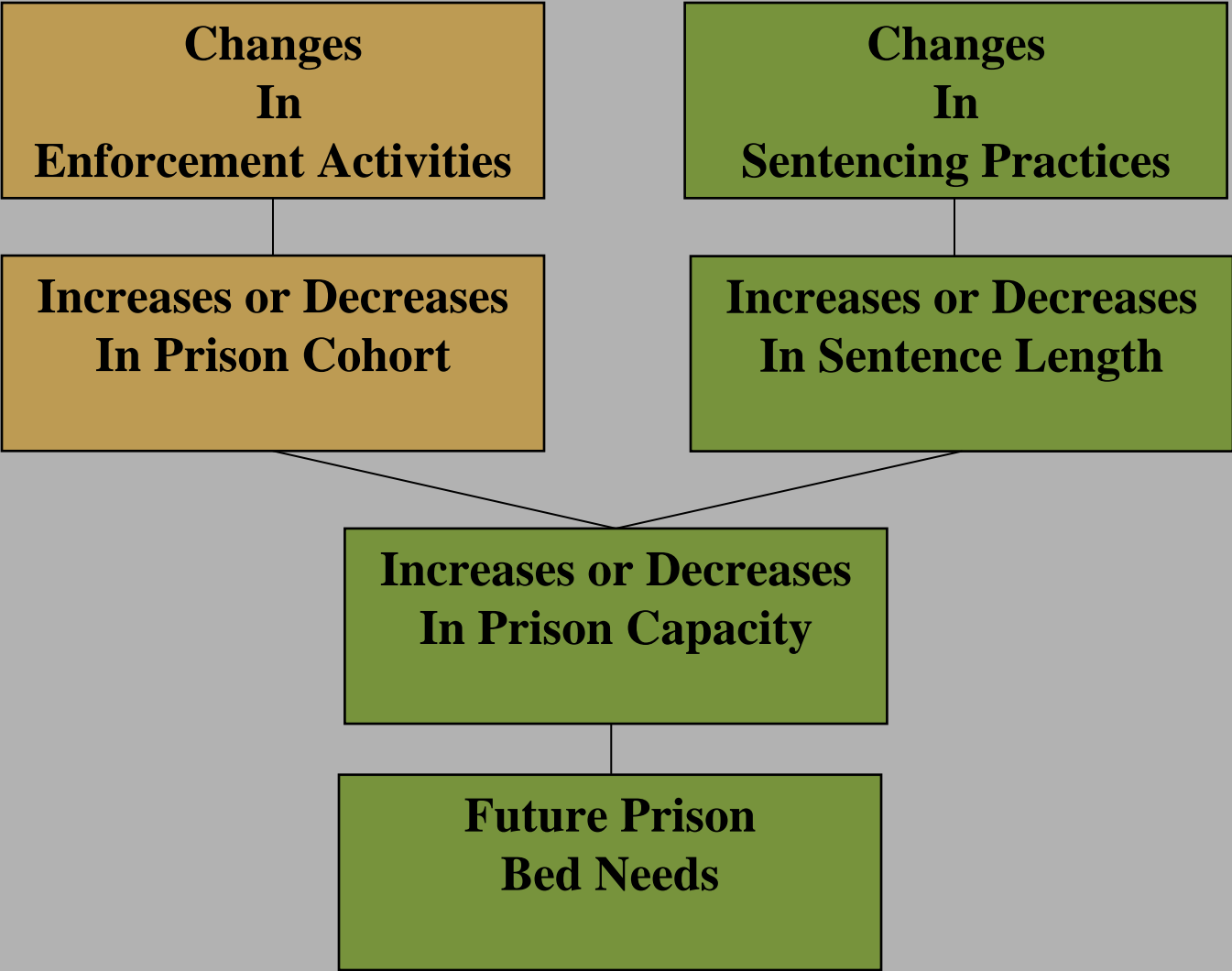
Commissioners

Congress

Congressional Budget Office

Bureau of Prisons

Factors Affecting Federal Prison Beds



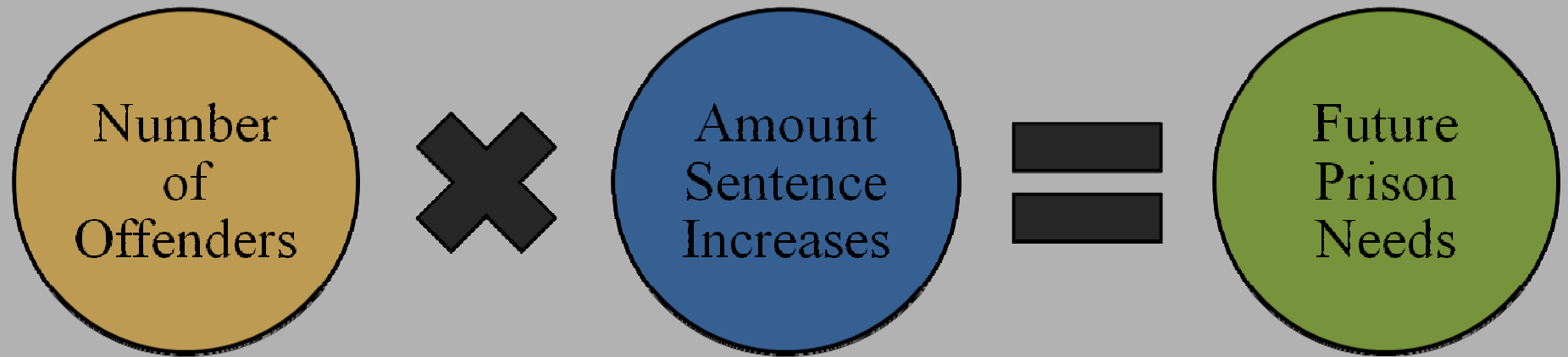
SOURCE: U.S. Sentencing Commission

Model Assumptions

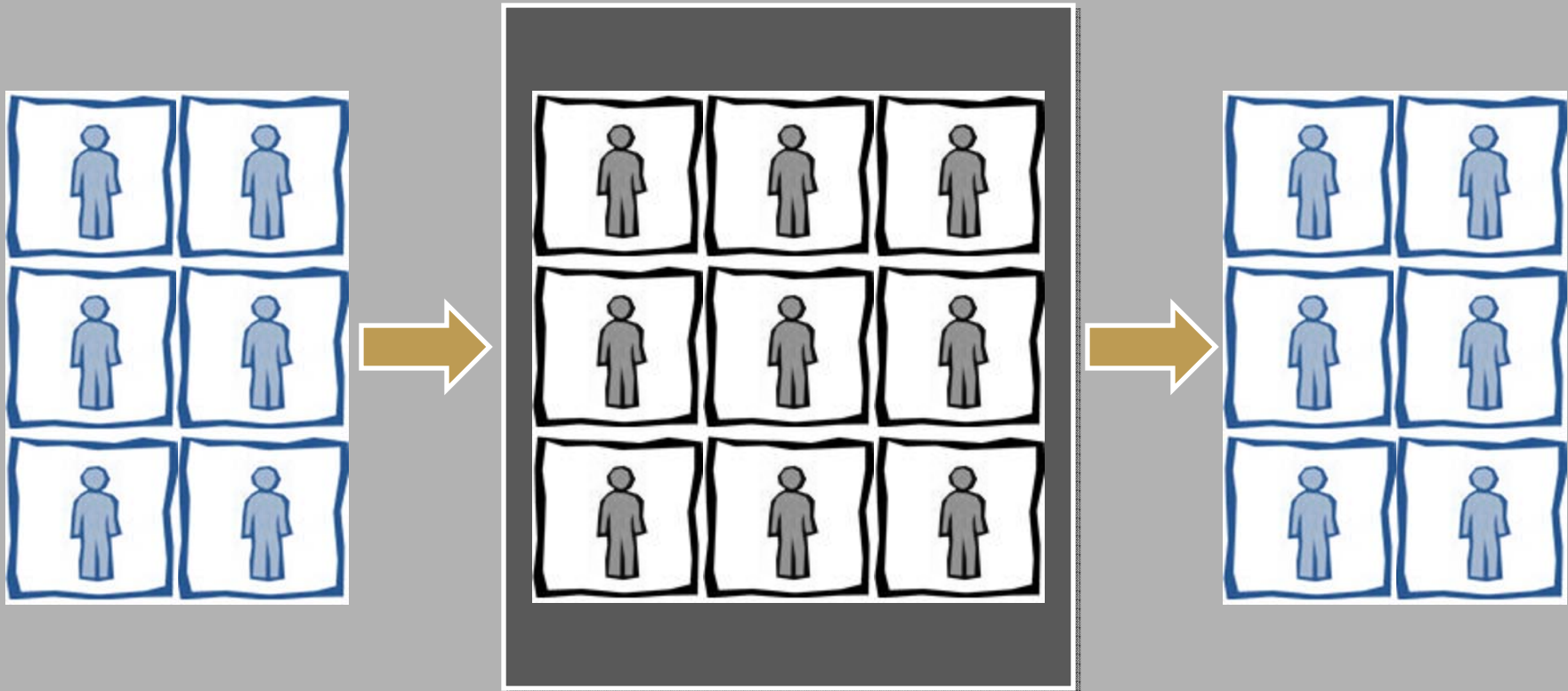
The prison and sentencing impact model assumes:

- Proportional Re-Sentencing of Cases
- Application of Statutory Minimum and Maximum Constraints
- Good Conduct Time Accrual
- Offender Life Expectancy
- Random Application of Characteristic
- Hypothetical Steady State Prison System

Prison Beds

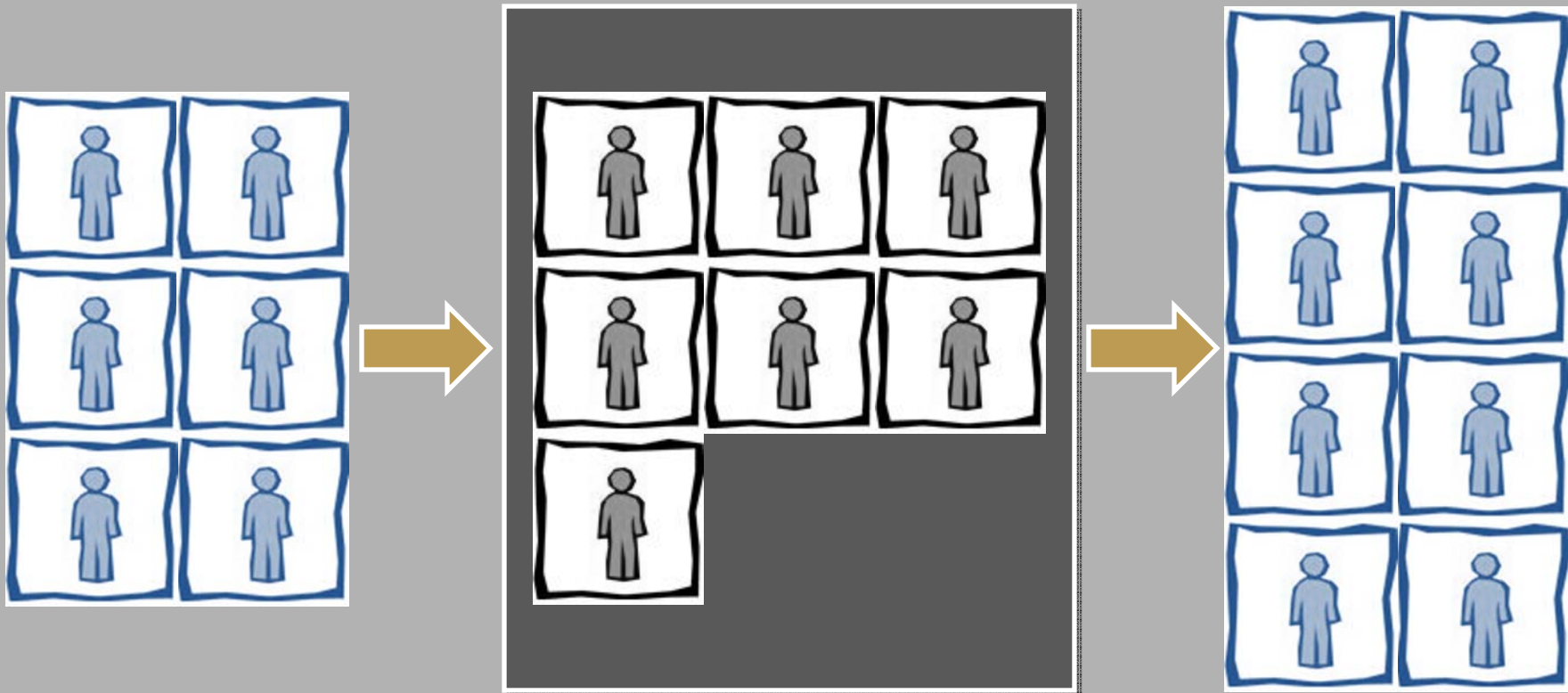


Model Assumes Homeostasis



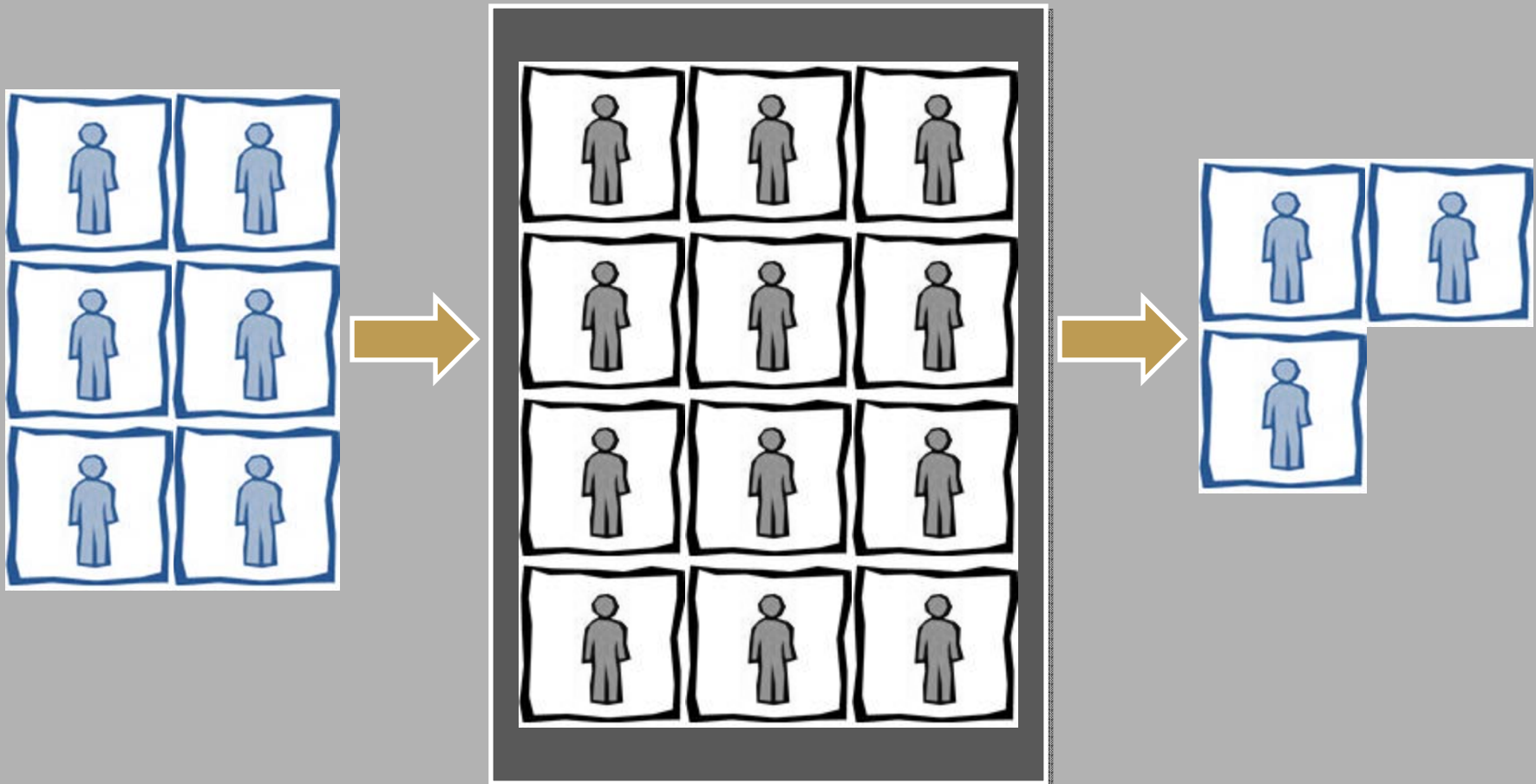
“Steady State” Prison Population NOT in Homeostasis

Effect of Decreasing Sentences



“Steady State” Prison Population NOT in Homeostasis

Effect of Increasing Sentences



Spot and Re-Spot

- **Prison/Sentencing Impact Model is based on proportional resentencing of cases.**
 - The position of the sentence relative to the guideline range (location and extent), will be maintained in the resentencing.
 - An offender originally sentenced within the guideline range will be resentedenced within the new guideline range.
 - An offender originally sentenced below the guideline range will be resentedenced below the new guideline range.
 - An offender originally sentenced above the guideline range will be resentedenced above the new guideline range.
 - Every single case (with the specified criteria) has a new, proportional sentence calculated by the model.

Spot and Re-Spot

- In essence, the Prison/Sentencing Impact Model identifies cases with given criteria, replaces that criteria with the new specification(s), and calculates a new sentence for each offender that is proportional to the old sentence's position relative to the guideline range.
 - This is known as 'Spot' and 'Re-Spot'.
 - **Spot**
 - The current sentence's position relative to the guideline range.
 - **Re-Spot**
 - The proportional resentencing relative to the new guideline range.

Spot and Re-Spot

SPOT

Actual Offense Level

19

Criminal History Category

I

30

37



32

RE-SPOT

New Offense Level

22

Criminal History Category

I

41

51



44

Spot and Re-Spot Formulas

Current Position Formula (Spot):

$$P = \frac{\text{Sentence} - \text{Guideline Minimum}}{\text{Guideline Maximum} - \text{Guideline Minimum}}$$

New Position Formula (Re-Spot):

$$\text{New Sentence} = \text{New Guideline Minimum} + ((\text{New Guideline Maximum} - \text{New Guideline Minimum}) * P)$$

Re-Spotting a Within Range Case

Current Position Formula (Spot):

$$P = \frac{S - GL\ Min}{GL\ Max - GL\ Min}$$

Example: Sentence = 37 months

GL Min = 37 months

GL Max = 46 months

$$P = \frac{37 - 37}{46 - 37} = \frac{0}{9} \quad \underline{\underline{P = 0}}$$



Re-Spotting a Within Range Case

New Position Formula (Re-Spot):

$$S' = GL'_{\text{Min}} + ((GL'_{\text{Max}} - GL'_{\text{Min}}) * P)$$

Example: GL' Min = 51 months

GL' Max = 63 months

$$P = 0$$

$$S' = 51 + ((63-51)*0) = 51 + (12*0) = 51 + 0$$

New Sentence = 51 months

Re-Spotting a Below Range Case

Current Position Formula (Spot):

$$P = \frac{S - GL\ Min}{GL\ Max - GL\ Min}$$

Example: Sentence = 24 months

GL Min = 37 months

GL Max = 46 months

$$P = \frac{24 - 37}{46 - 37} = \frac{-13}{9}$$
$$P = \frac{-13}{9} \rightarrow$$

Re-Spotting a Below Range Case

New Position Formula (Re-Spot):

$$S' = GL'_{\text{Min}} + ((GL'_{\text{Max}} - GL'_{\text{Min}}) * P)$$

Example: GL' Min = 51 months

GL' Max = 63 months

P = -1.44

$$\begin{aligned} S' &= 51 + ((63-51)*-1.44) = 51 + (12*-1.44) \\ &= 51 + (-17.28) \end{aligned}$$

New Sentence = 34 months

Re-Spotting an Above Range Case

Current Position Formula (Spot):

$$P = \frac{S - GL \text{ Min}}{GL \text{ Max} - GL \text{ Min}}$$

Example: Sentence = 52 months

GL Min = 37 months

GL Max = 46 months

$$P = \frac{52 - 37}{46 - 37} = \frac{15}{9} \quad \underline{\underline{P = 1.67}}$$



Re-Spotting an Above Range Case

New Position Formula (Re-Spot):

$$S' = GL'_{\text{Min}} + ((GL'_{\text{Max}} - GL'_{\text{Min}}) * P)$$

Example: GL' Min = 51 months

GL' Max = 63 months

P = 1.67

$$S' = 51 + ((63-51)*1.67) = 51 + (12*1.67) = 51 + 20.04$$

New Sentence = 71 months

Checking Validity Within the Model

■ Programming Validity

- Is the SAS Code doing what we want it to do?
 - Look for errors in log
 - Multiple people check all new code

■ Face Validity

- Are the results about what you would expect?
 - Are sentencing “going in the right direction”?
 - Is the magnitude of the change reasonable?
 - Is the number of cases changing reasonable?

■ Predictive Validity

- Are past predictions accurate?
 - Have past results “come true”?
 - Using a past datafile, can you predict current results?

Model Weaknesses

- **Data Intense**
 - Requires large number of person-specific variables
- **Model Complexity**
 - Unintended consequences of changes in the SAS code
- **Assumptions**
 - Judicial decision making; Good conduct time accrual; Life expectancy; Data availability of currently irrelevant information
- **Isolation from Real World**
 - Cohort dependent; Changes/trends in enforcement; Changes/trends in offense prevalence

Model Strengths

- **Re-Sentences Person**
 - Permits comparison of subtle changes (limited only by the data)
 - Can evaluate impact on subsets of offenders (demographic, specific offense characteristics, criminal history, *etc.*)

- **Steady State isolates impact to guideline change only**

- **Determines the year in which the guideline change will be experienced on a case-by-case basis**
 - Evaluates impact on a year-by-year basis

Crack Reduction

Historical Background

- Drug Quantity Table at §2D1.1 establishes a Base Offense Level based on drug type and drug weight.
 - BOL corresponded to a guideline range **above** the statutory mandatory minimum.
 - Example: 5 grams of crack cocaine
 - Statutory Mandatory Minimum: **60 months**
 - Base Offense Level: 26
 - Guideline Range (CHC I): **63 – 78**
- May 1, 2007 – Amendment 706 submitted to Congress
 - Proposed modifications to the drug quantity thresholds so base offense levels for crack cocaine offenses would correspond to guideline ranges that **included** statutory mandatory minimum penalties.

Crack Reduction

Historical Background

- November 1, 2007 – Guidelines Manual
 - Amendment 706 effective for cases sentenced under the 2007 manual.
 - Example: 5 grams of crack cocaine
 - Statutory Mandatory Minimum: **60 months**
 - Base Offense Level: 24
 - Guideline Range (CHC I): **51 – 63**
 - The Base Offense Level for crack cocaine offenses is two levels lower than in previous manuals.

Drug Quantity Table (USSG §2D1.1(c))¹

CRACK COCAINE		
Drug Amount	Original BOL	New BOL
500mg – 1g	16	14
1g – 2g	18	16
2g – 3g	20	18
3g – 4g	22	20
4g – 5g	24	22
5g – 20g	26	24
20g – 35g	28	26
35g – 50g	30	28

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¹ Selected portions of the Drug Quantity Table for crack cocaine offenses only. Original BOL refers to the Base Offense Level application for Guidelines Manuals in effect prior to November 1, 2007. New BOL refers to the Base Offense Level application for Guidelines Manuals in effect November 1, 2007 and later.

Crack Reduction

Prison & Sentencing Impact

- Prison and Sentencing Impact Model was used to recalculate the relevant guideline range based on the amendment to the Drug Quantity Table and compares the recalculated offense levels to the existing offense level.
- The model then reassigns any Chapter Three adjustments and outside the range sentences that currently exist in each case.
- The model re-spots the new sentence in the new guideline range to a location equivalent to the location in the guideline range of the current sentence.

Example #1 – Crack Reduction

- *An offender sells a total of 4.2 grams of crack cocaine. During the course of the offense, he is armed with a gun. The offender pleads guilty to the offense.*

Original §2D1.1 Application:

Base Offense Level (BOL)	§2D1.1(c)(8)	24
Specific Offense Characteristic (SOC)	§2D1.1(b)(1)	2
Acceptance of Responsibility	§3E1.1(a)/(b)	-3

Final Offense Level (FOL)	23
Criminal History Category (CHC)	I
Guideline Range (GL Min/GL Max)	46 - 57

Example #1 – Crack Reduction

- *An offender sells a total of 4.2 grams of crack cocaine. During the course of the offense, he is armed with a gun. The offender pleads guilty to the offense.*

New §2D1.1 Application:

<u>Base Offense Level (BOL)</u>	§2D1.1(c)(9)	22
Specific Offense Characteristic (SOC)	§2D1.1(b)(1)	2
Acceptance of Responsibility	§3E1.1(a)/(b)	-3
Final Offense Level (FOL)		21
Criminal History Category (CHC)		I
<u>Guideline Range (GL Min/GL Max)</u>		37 - 46

Skip to Spot

Sentencing Table¹

SENTENCING TABLE (in months of imprisonment)

Offense Level	Criminal History Category (Criminal History Points)					
	I (0 or 1)	II (2 or 3)	III (4 - 6)	IV (7 - 9)	V (10 - 12)	VI (13+)
20	33 – 41	37 – 46	41 – 51	51 – 63	63 – 78	70 - 87
21	37 – 46	41 – 51	46 – 57	57 – 71	70 – 87	77 - 96
22	41 – 51	46 – 57	51 – 63	63 – 78	77 – 96	84 - 105
23	46 – 57	51 – 63	57 – 71	70 – 87	84 - 105	92 - 115
24	51 – 63	57 – 71	63 – 78	77 – 96	92 - 115	100 - 125
25	57 – 71	63 – 78	70 – 87	84 - 105	100 - 125	110 - 137
26	63 – 78	70 – 87	78 – 97	92 - 115	110 - 137	120 - 150

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¹ Selected portions of the Sentencing Table. See Chapter 5, Part A of the 2009 *Guidelines Manual* for the complete Sentencing Table.

Example #1 – Crack Reduction Re-Spotting a Within Range Case

Current Position Formula (Spot):

$$P = \frac{S - GL \text{ Min}}{GL \text{ Max} - GL \text{ Min}}$$

Example: Sentence = 50 months

GL Min = 46 months

GL Max = 57 months

$$P = \frac{50 - 46}{57 - 46} = \frac{4}{11} \quad \Rightarrow \quad \underline{P = .36}$$

Example #1 – Crack Reduction Re-Spotting a Within Range Case

New Position Formula (Re-Spot):

$$S' = GL' \text{Min} + ((GL' \text{Max} - GL' \text{Min}) * P)$$

Example: GL' Min = 37 months

GL' Max = 46 months

P = .36

$$S' = 37 + ((46-37)*.36) = 37 + (9*.36) = 37 + 3.24$$

New Sentence = 40 months

Example #1 – Crack Reduction Re-Spotting a Below Range Case

Current Position Formula (Spot):

$$P = \frac{S - GL \text{ Min}}{GL \text{ Max} - GL \text{ Min}}$$

Example: Sentence = 43 months

GL Min = 46 months

GL Max = 57 months

$$P = \frac{43 - 46}{57 - 46} = \frac{-3}{11} \quad \Rightarrow \quad \underline{P = -.27}$$

Example #1 – Crack Reduction Re-Spotting a Below Range Case

New Position Formula (Re-Spot):

$$S' = GL' \text{Min} + ((GL' \text{Max} - GL' \text{Min}) * P)$$

Example: GL' Min = 37 months

GL' Max = 46 months

$$P = -.27$$

$$S' = 37 + ((46-37)*-.27) = 37 + (9*-.27) = 37 + (-2.43)$$

New Sentence = 35 months

Example #1 – Crack Reduction Re-Spotting an Above Range Case

Current Position Formula (Spot):

$$P = \frac{S - GL\ Min}{GL\ Max - GL\ Min}$$

Example: Sentence = 60 months

GL Min = 46 months

GL Max = 57 months

$$P = \frac{60 - 46}{57 - 46} = \frac{14}{11} \quad \Rightarrow \quad \underline{P = 1.27}$$

Example #1 – Crack Reduction Re-Spotting an Above Range Case

New Position Formula (Re-Spot):

$$S' = GL'_{\text{Min}} + ((GL'_{\text{Max}} - GL'_{\text{Min}}) * P)$$

Example: GL' Min = 37 months

GL' Max = 46 months

P = 1.27

$$S' = 37 + ((46-37)*1.27) = 37 + (9*1.27) = 37 + 11.43$$

New Sentence = 48 months

MODEL OF APRIL 27, 2007 CRACK COCAINE AMENDMENT¹

(Amends the Drug Quantity Table and Drug Equivalency Table in USSG §2D1.1)

Estimated Sentence Change

CRACK COCAINE AMENDMENT	Percent of Cases Affected	All Cases: Current Avg. Sentence (in months)	All Cases: Estimated New Avg. Sentence (in months)	Percent Change
	69.7%	121	106	12.4%

Estimated Reduction in Prison Beds

CRACK COCAINE AMENDMENT	1 Year	2 Years	3 Years	4 Years	5 Years	10 Years	15 Years
	-20	-101	-307	-542	-894	-2,623	-3,808

¹ This model assumes no change to the current statutory mandatory minimum sentencing thresholds for crack cocaine offenses.

Example #2 – Small N, Big Impact

- When only a small number of cases meet the criteria for a guideline change, it's tempting to think the impact will be small as well.
- The Prison and Sentencing Impact Model shows, however, that the assumption of Small N, Small Impact is not always true.
- For example, increasing penalties for a very small number of cases resulted in the following impact analysis.

SENTENCING IMPACT AND PRISON IMPACT MODEL

SMALL N, BIG IMPACT

<u>Estimated Sentence Change</u>				
HYPOTHETICAL AMENDMENT	Estimated Proportion of Cases Affected	Current Sentence (in months)	Estimated New Sentence (in months)	Percent Increase to Sentence
	1.5%	74	166	124.3%

<u>Estimated Increase in Prison Beds¹</u>								
HYPOTHETICAL AMENDMENT	1 Year	2 Years	3 Years	4 Years	5 Years	10 Years	15 Years	20 Years
	65	175	366	738	1,172	3,814	5,298	5,378

¹ Cumulative number addition to prison beds.

Example #3 – Random Sample Impact

- **Question:** A 2-level enhancement is given if prior convictions involved a knife. What is the impact if this enhancement was amended to add a 4-level enhancement if prior convictions involved a gun?
- **Problem:** Specific information about weapon involvement in prior convictions is not available in the standard dataset.
- **However,** a random sample of cases from a special coding project includes information on the weapon involvement in prior convictions.
- **Solution:** Random Sample Impact

Example #3 – Random Sample Impact

- **Random Sample Impact**
- Sample data indicates that 40% of cases currently receiving the 2-level enhancement for possession of a knife in a prior conviction also have a gun in a prior conviction.
- Therefore, 40% of cases with the existing 2-level enhancement would change to a 4-level enhancement.
- In the full dataset, the model randomly identifies 40% of all cases receiving the 2-level enhancement, eliminates it, and applies a 4-level enhancement in its place.

Example #3 – Random Sample Impact

Case Number	Current SOC	New SOC	Current Sentence	New Sentence
1	+2	+2	100	100
2	+2	+2	65	65
3	+2	+4	100	124
4	+2	+2	87	87
5	+2	+4	70	87
6	+2	+2	92	92
7	+2	+2	70	70
8	+2	+4	87	108
9	+2	+4	92	114
10	+2	+2	84	84
Average Sentence			85	93

Prison/Sentencing Impact & Retroactivity

- The Commission is statutorily authorized to determine whether a guideline amendment that reduces the sentencing range may be retroactively applied.
- One of the tools used to help the Commission make decisions about retroactivity is the Prison and Sentencing Impact model.
 - Allows the Commissioners to estimate the impact of an amendment should the Commission vote to make that amendment retroactive.
 - Allows a year-by-year analysis of the impact of retroactivity.
 - Allows the Commissioners to see what affected cases look like before a change is made to inform decisions.

Prison/Sentencing Impact & Retroactivity

- The 2007 Crack Amendment reduced sentencing ranges and therefore was eligible to be considered for retroactivity.
- The Prison/Sentencing Impact Model was run for offenders who appeared to be eligible to seek a reduced sentence.
 - The offenders were hypothetically resentenced as if the amended guideline had been in effect in the year in which they were sentenced.
 - A new release date for each offender was calculated using the new sentences to determine when each offender would be eligible for release.
- The model allowed the Commissioners to estimate the impact of retroactivity prior to its implementation.

Prison/Sentencing Impact & Retroactivity

DEMOGRAPHICS	Predicted	As of May 2010
Race/Ethnicity		
White	5.8%	5.9%
Black	85.9%	86.0%
Hispanic	7.6%	7.2%
Other	0.8%	0.9%
TOTAL	100%	100%
Citizenship		
U.S. Citizen	94.5%	94.8%
Non-Citizen	5.5%	5.2%
TOTAL	100%	100%
Gender		
Male	94.2%	94.0%
Female	5.8%	6.0%
TOTAL	100%	100%
Average Age (at sentencing)		
	30	30

Prison/Sentencing Impact & Retroactivity

CHARACTERISTICS	Predicted	As of May 2010
<u>Adjustments</u>		
Weapon SOC	24.3%	23.8%
Safety Valve §5C1.2	9.0%	9.7%
Firearms Man. Min. Applied	11.3%	9.9%
Aggravating Role §3B1.1	11.7%	9.2%
Mitigating Role §3B1.2	3.2%	2.7%
Obstruction Adjustment §3C1.1	6.6%	6.0%
<u>Criminal History Category</u>		
I	21.9%	22.8%
II	12.8%	12.9%
III	22.7%	23.1%
IV	16.6%	17.2%
V	10.2%	10.2%
VI	15.7%	13.7%
<u>Sentence Relative to GL Range</u>		
Within Range	69.4%	70.9%
Above Range	0.5%	0.3%
Below Range	30.1%	28.8%

Crack Reduction Retroactivity & Prison Impact

Projected Year of Release for Retroactive Eligible Crack Cocaine Offenders		
	If Amendment Retroactive	If Amendment Not Retroactive
<u>Release Date</u>	<u>N</u>	<u>N</u>
within 1 yr	3,804	1,284
within 2 yr	2,118	1,995
within 3 yr	1,967	1,894
within 4 yr	1,773	1,833
within 5 yr	1,353	1,577
within 6 yr +	5,661	8,093

SOURCE: U.S. Sentencing Commission

Crack Reduction

Retroactivity & Prison Impact

- The model predicted the average sentence reduction for eligible offenders would be 27 months.
 - See http://www.ussc.gov/general/Impact_Analysis_20071003_3b.pdf for more information on the Commission's Analysis of the Impact of the Crack Cocaine Amendment If Made Retroactive.
- For crack retroactivity motions decided through May 19, 2010, the average sentence reduction for offenders whose motions were granted was 26 months.
 - See http://www.ussc.gov/USSC_Crack_Retroactivity_Report_2010_May.pdf for more information on Preliminary Crack Cocaine Retroactivity Data.

