

Parametric Construction: Estimating Consistency through Turbulence

Presented To

ICEAA International
Cost Estimating
& Analysis Association

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The Cost of Living

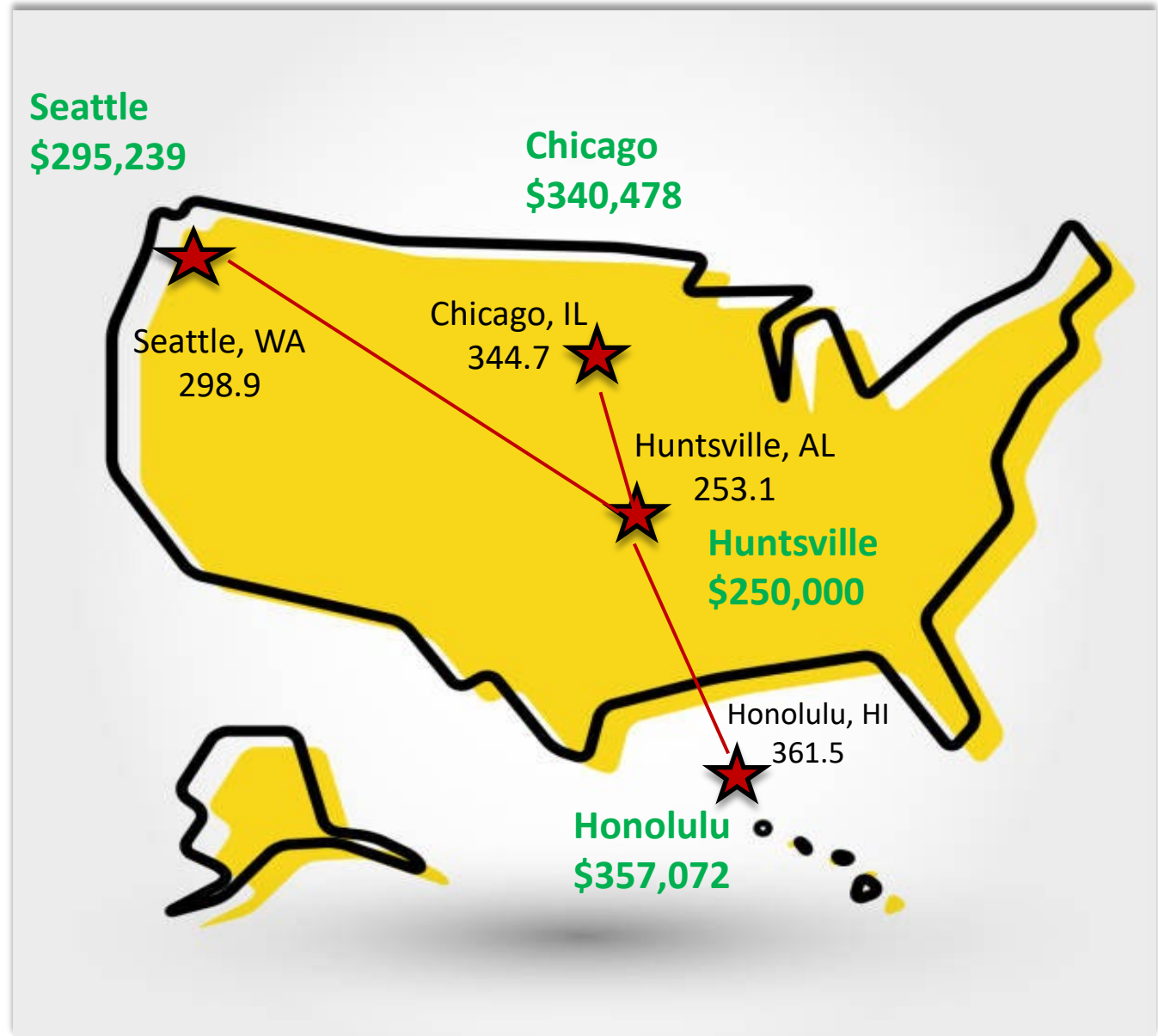


The Cost of Living

Huntsville, AL



The Cost of Living



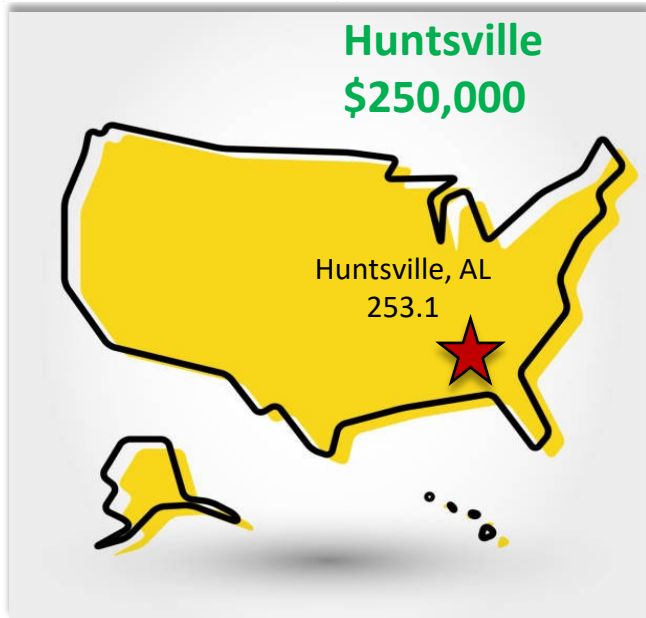
*RSMMeans Historical Cost Indices, FY2024



City Indices

$$\frac{\text{(Un)} \quad 344.7}{\text{Known Index} \quad 253.1} * \$250,000 = \$340,478$$

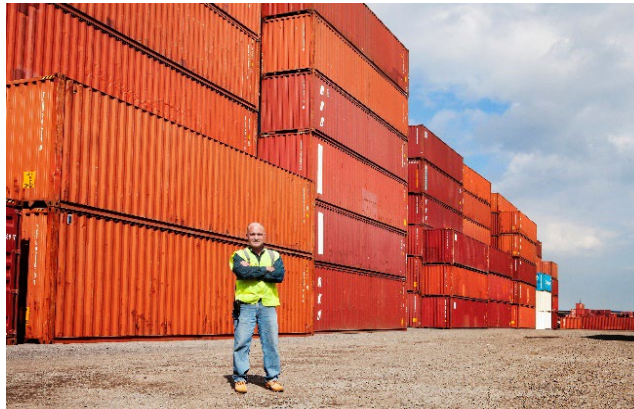
KNOWLEDGE - ADJUSTED PRICE



Labor and Materials



Wood



Bulk

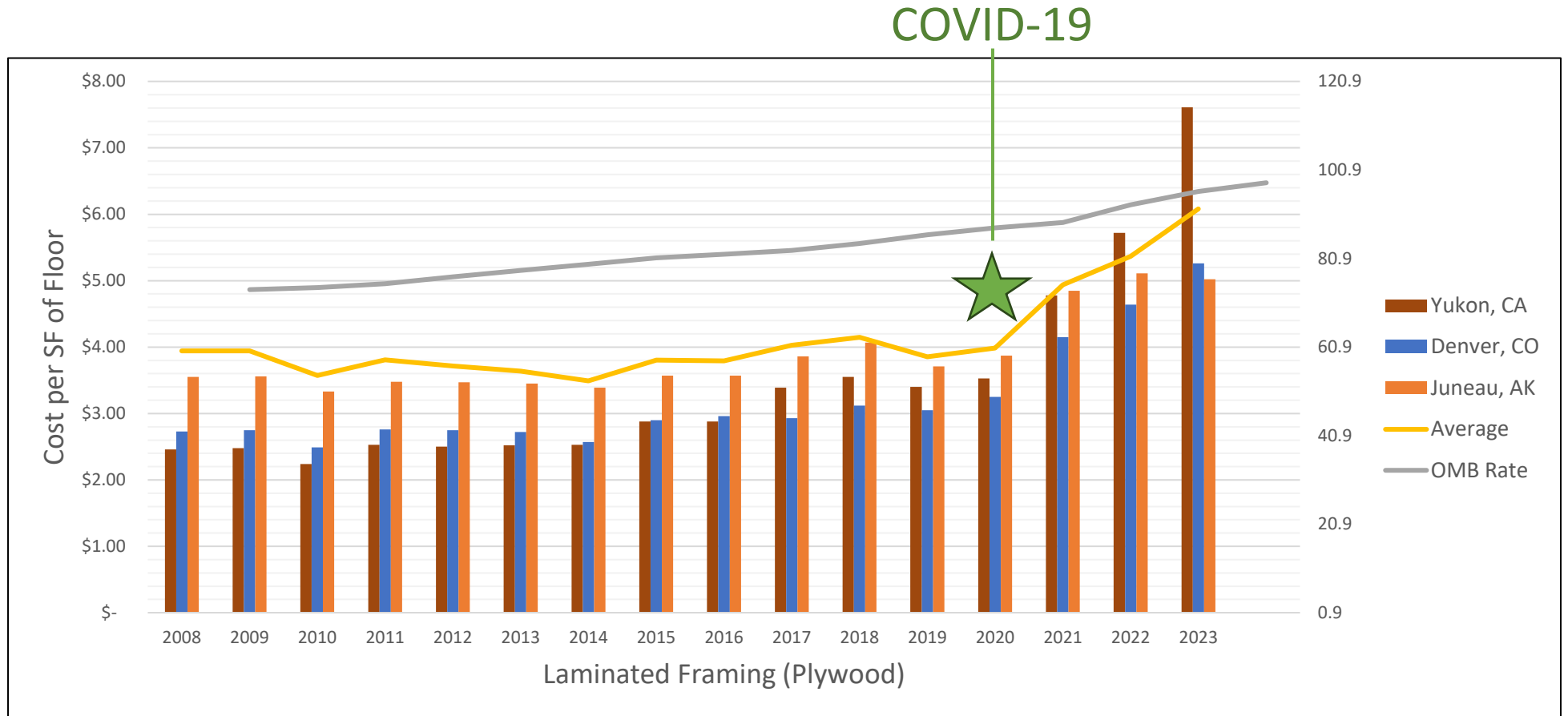


Steel

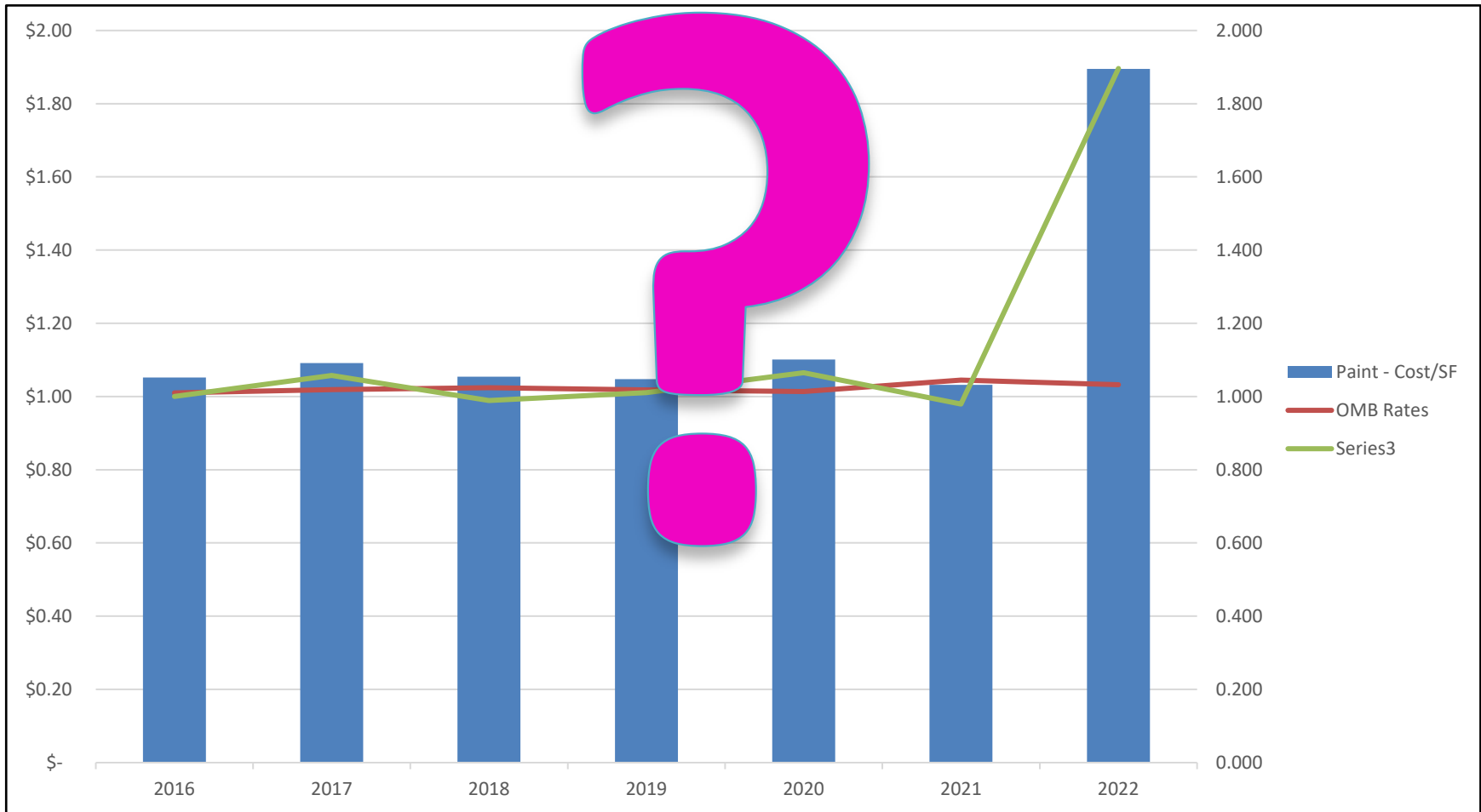
Commodities



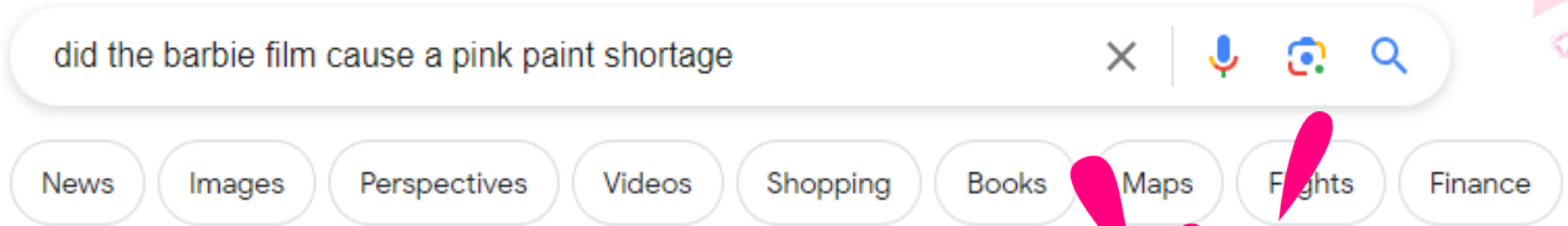
Plywood



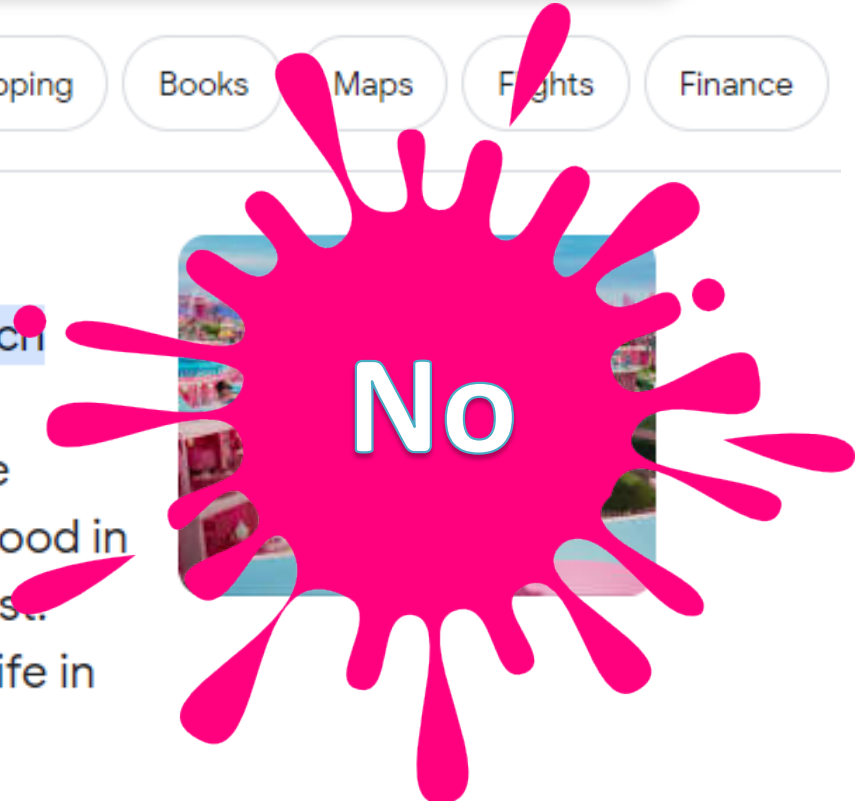
Commercial Paint



Commercial Paint



Creating the perfect backdrop for the upcoming “Barbie” movie required so much pink paint that it led to a global shortage, according to its production designer. “The world ran out of pink,” said Sarah Greenwood in a recent interview with Architectural Digest. Margot Robbie brings the famous doll to life in the movie. Jun 5, 2023



 CNN
<https://www.cnn.com > style > article > barbie-pink-paint...>

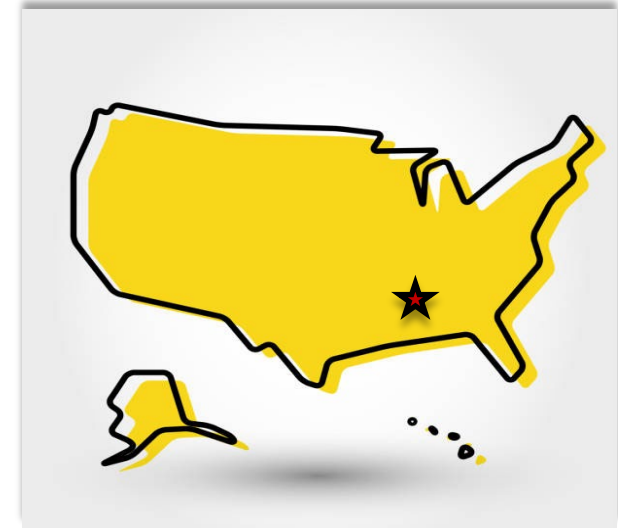
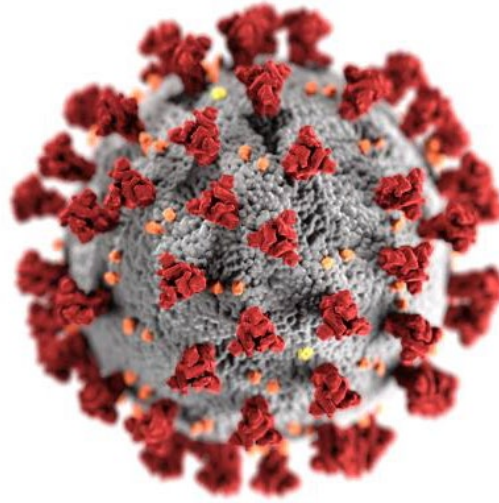
'Barbie' movie's pink paint splurge led to global shortage | CNN

Commercial Paint

Entire State of Texas in a Winter Storm Warning on Sunday, February 14th 2021



What if...



Leveraging Cost Data

Utilize a national database of average construction costs as basis of estimate

Data compiled by

- Work Breakdown Structure (WBS)
- Construction Specifications Institute (CSI) MasterFormat
- Project Scope and Construction Type

Adjustment of national average for project specific location including:

- Labor rates
- Material costs
- Equipment and Assemblies

Parametric Resources

- Use national average parameters, converted to quantity/sf



Construction Data

RSMeans data
from **GARDIAN**®

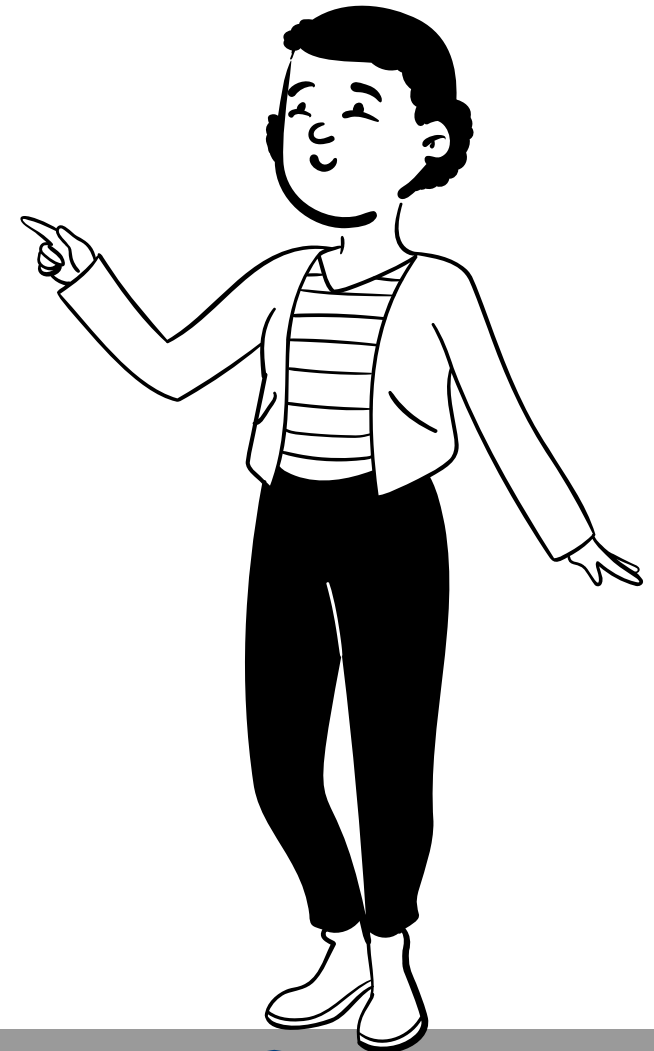


FEMA



Construction Estimating

1. Consistency
2. Clarity
3. Ease of Reference
4. Industry Standard
5. Future Planning



Construction Estimating

MasterFormat 2018

- ▶ 1 General Requirements
- ▶ 2 Existing Conditions
- ▶ 3 Concrete
- ▶ 4 Masonry
- ▶ 5 Metals
- ▶ 6 Wood, Plastics and Composites
- ▶ 7 Thermal and Moisture Protection
- ▶ **8 Openings**
- ▶ 801 Operation And Maintenance Of Openings
- ▶ 805 Common Work Results For Openings
- ▶ 811 Metal Doors And Frames
- ▶ 812 Metal Frames
- ▶ 813 Metal Doors
- ▼ 814 Wood Doors
 - ▶ 81413 Carved Wood Doors
 - ▼ 81416 Flush Wood Doors
 - 81416.09 Smooth Wood Doors**
 - 81416.10 Wood Doors Decorator

SMOOTH WOOD DOORS

Flush, interior, hollow core

- Lauan face, 1-3/8", 3'-0" x 6'-8"
- 4'-0" x 6'-8"
- 1-3/4", 2'-0" x 6'-8"
- 3'-0" x 6'-8"
- 3'-0" x 7'-0"
- Pair of 3'-0" x 7'-0"
- Birch face, 1-3/8", 2'-6" x 6'-8"
- 3'-0" x 6'-8"
- 4'-0" x 6'-8"
- 1-3/4", 2'-0" x 6'-8"
- 2'-4" x 7'-0"
- 2'-6" x 7'-0"
- 3'-0" x 7'-0"
- Pair of 3'-0" x 7'-0"

Year 2023 Quarter 4

Current Quarter +

Historical Quarters

Year 2023 Quarter 4

Year 2023 Quarter 3

Year 2023 Quarter 2

Year 2023 Quarter 1

Equip	Material	Bare Labor	Bare Equ
	115.00	55.00	
	194.00	58.50	
5.00	92.00	55.00	
	115.00	29.50	
194.00	294.00	58.50	
	400.00	104.00	
2 Carp	17.00	0.941	128.00
2 Carp	17.00	0.941	144.00
2 Carp	16.00	1.000	247.00
2 Carp	17.00	0.941	113.00

Risk Mitigation



Monte Carlo Simulations:
Data actuals for risk ranges



Forward-thinking:
Time between a ROM and IGCE



Local Knowledge:
Cost effective and efficient



Accuracy:
Predicting our needs based on history





Estimating Example 1

Requirements

- Demolition and Installation of a door
- Remove old/Install new hardware
- Patch and Paint walls, new carpet
- New thermostat, wiring for entry door card reader
- 791 SF

Construction Estimate

- IGC was \$22,232
- Vendor Proposal was \$23,218
- IGC was within 5% of Vendor Proposal

Reference Code	Reference Description	Qty.	Units	Mat
080505101520	Door demolition, interior door, Solid, 1-3/8" thick, remove and reset, minimum	1	Ea.	\$
080505101525	Door demolition, door hardware, remove	1	Ea.	\$
081416200790	Doors, wood, fire, particle core, 7 face plies, "B" label, 90 minutes, birch face, 1-3/4" x 3'-0" x 7'-0"	1	Ea.	
087120410011	Door hardware, deadlocks, mortise, heavy duty	1	Ea.	
090170100500	Gypsum wallboard, repair in coat surface with joint compound	2,250		
090170100500	Gypsum wallboard, repair in coat surface with joint compound			

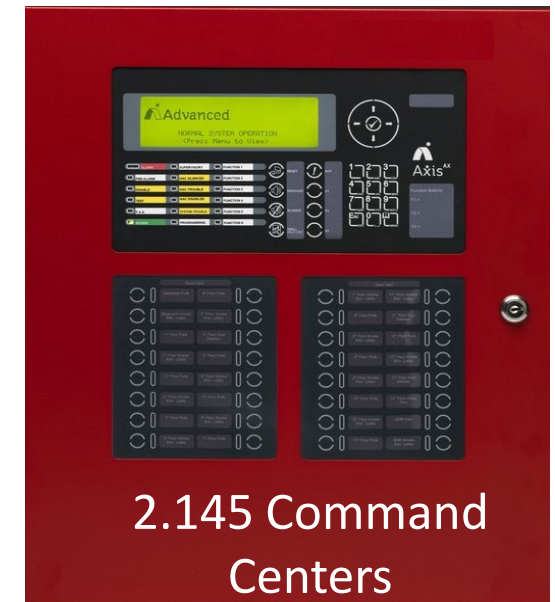
Estimating Example 2



Estimating Example 2

National Average

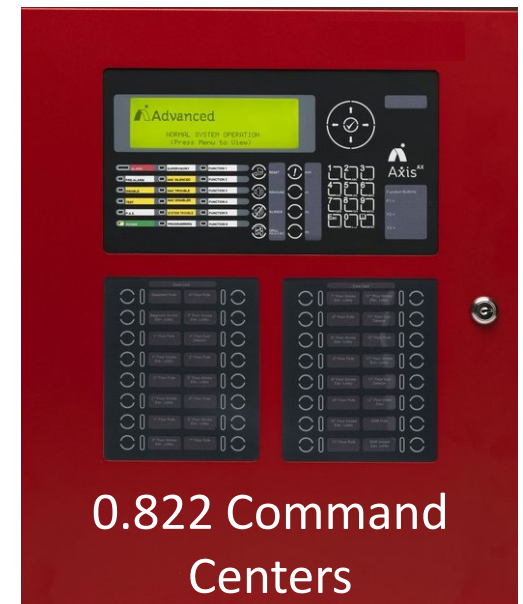
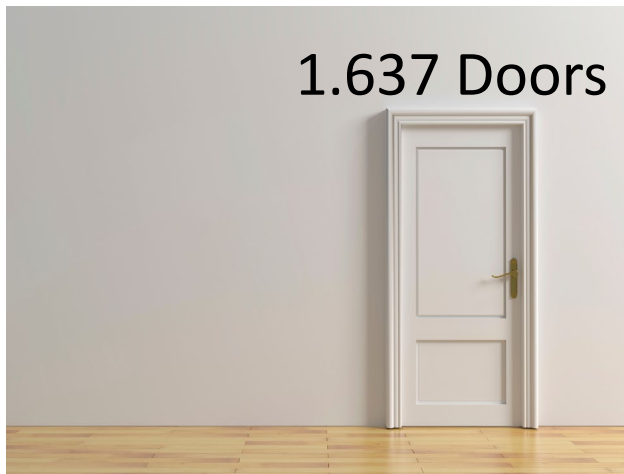
- 1 Story Commercial Building
- Assumes 15,000 USF
- Green Space Initiative



Estimating Example 2

Our Requirements

- Design, renovate, procure/install furniture in Executive Suite
- Construction buildout, with Construction Documents
- Raised Flooring
- 5,745 USF



Estimating Example 2

Requirements

- Design, renovate, procure/install furniture in Executive Suite
- Construction buildout, with 35% drawings
- Raised Flooring
- 5,745 USF

- Construction IGCE - \$2.06M
- Vendor Proposal - \$1.93M
- Variance of 6.4%



Bringing It All Together

Not all estimates are created equal
(but they can be accurate!)



- 1. Consistency**
- 2. Clarity**
- 3. Ease of Reference**
- 4. Industry Standard**
- 5. Future Planning**

