

Probability Management Comes to City Hall

By Shayne Kavanagh



Government Finance Officers Association

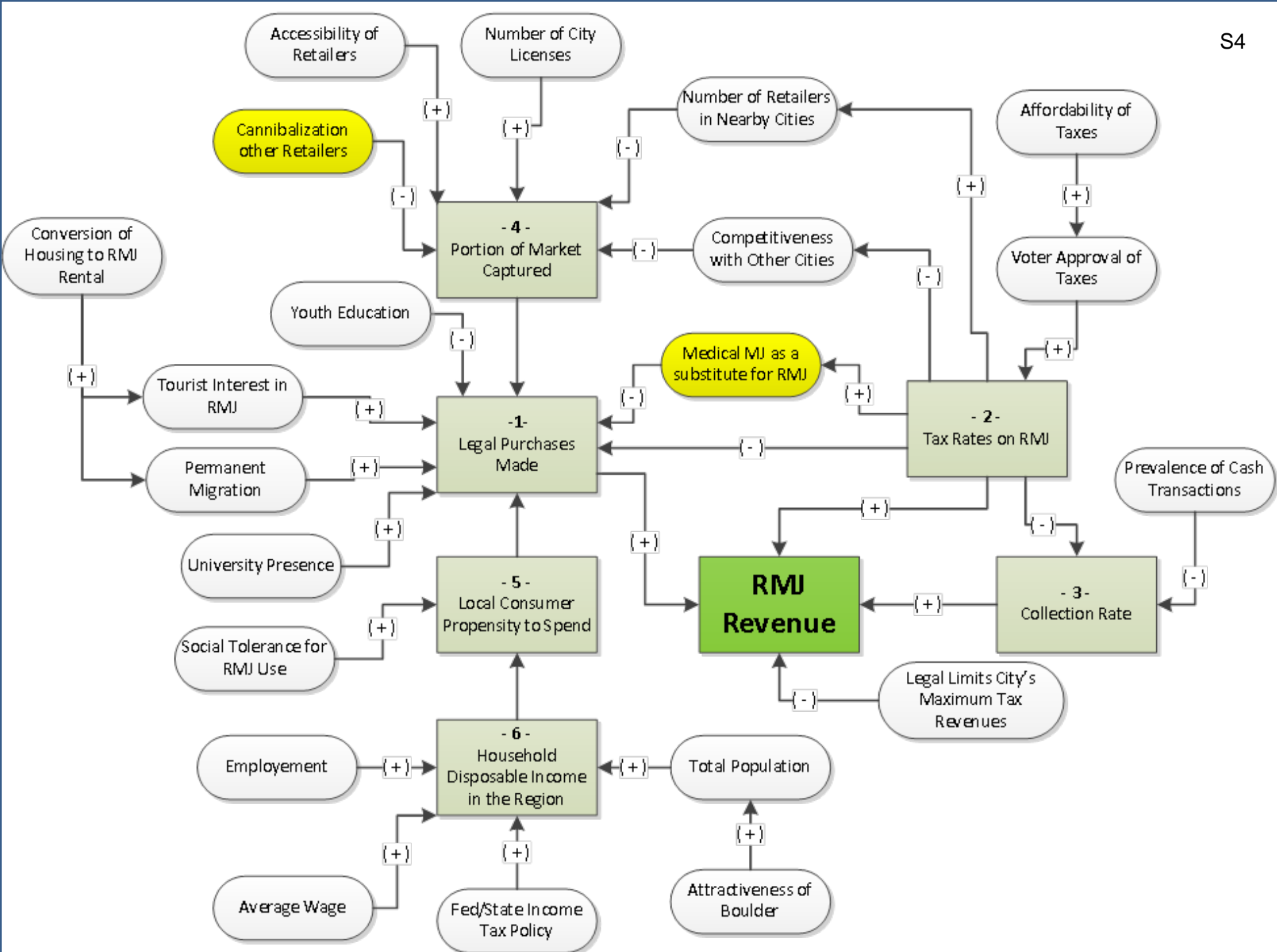
Annual Conference 2015

Colorado's Pioneering Spirit

- Unprecedented approach to RMJ
- A whole host of unknown issues...
 - Public safety
 - Licensing
 - **Tax revenues**

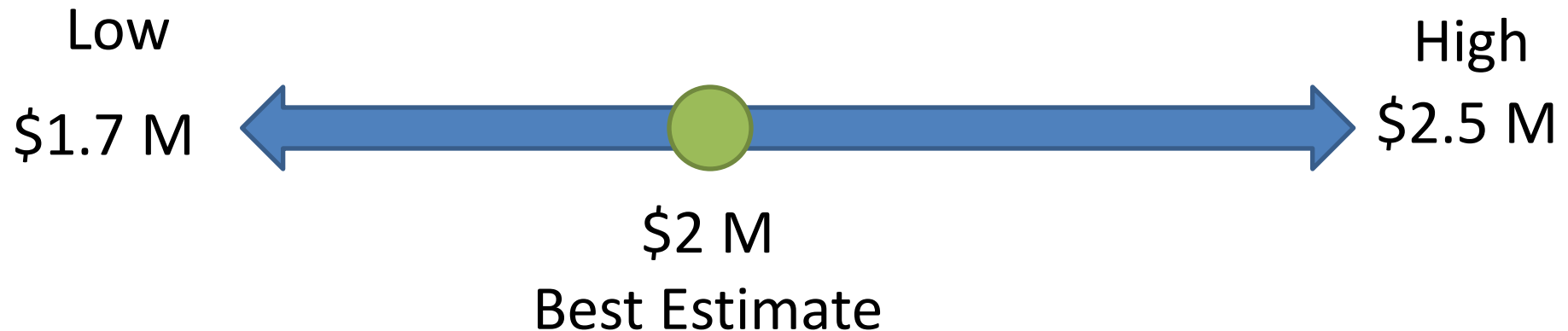
Boulder's Challenges

- No historical data to draw from
- Some highly enthusiastic citizens
- Consistent financial stress since 2001



Making the Forecast

- MMJ was a reference case or analogue
- Modify MMJ experience to account for forces in influence diagram
- Develop a prediction interval



Making Good Decisions

- Introduce optionality
- Break forecasted revenues into tranches
 - First tranches to cover cost of legalization
 - Later tranches for more discretionary spending

Colorado Springs

- Financial reserves are critical to cities to hedge against risk
- Colorado Springs needed to know how much it should keep in reserve and then...
- How to fund it!

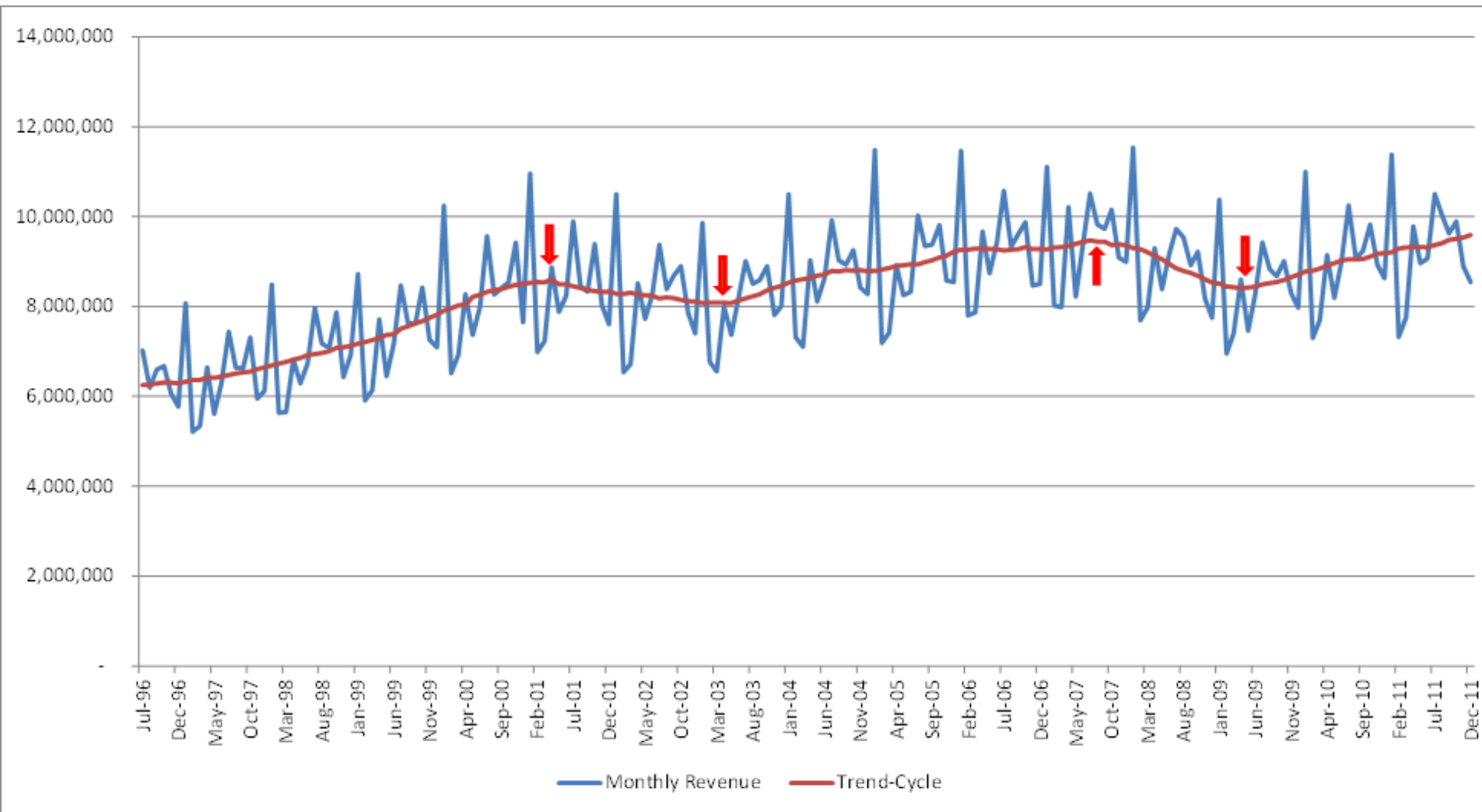




Colorado Springs' Three Primary Risks

- Volatility of sales tax revenue
- Vulnerability to extreme events
- Potential for the storm sewer and bridge infrastructure to fail

Revenue Volatility





Risks are inherently uncertain!

How do you analyze
uncertainties?



Triple-A Approach to Dealing with Uncertainty

- Accept
 - Uncertainty is inevitable
- Assess
 - Find potential impact, using reference cases
- Augment
 - Uncertainty will usually be underestimated!

Triple-A Applied to Sales Tax

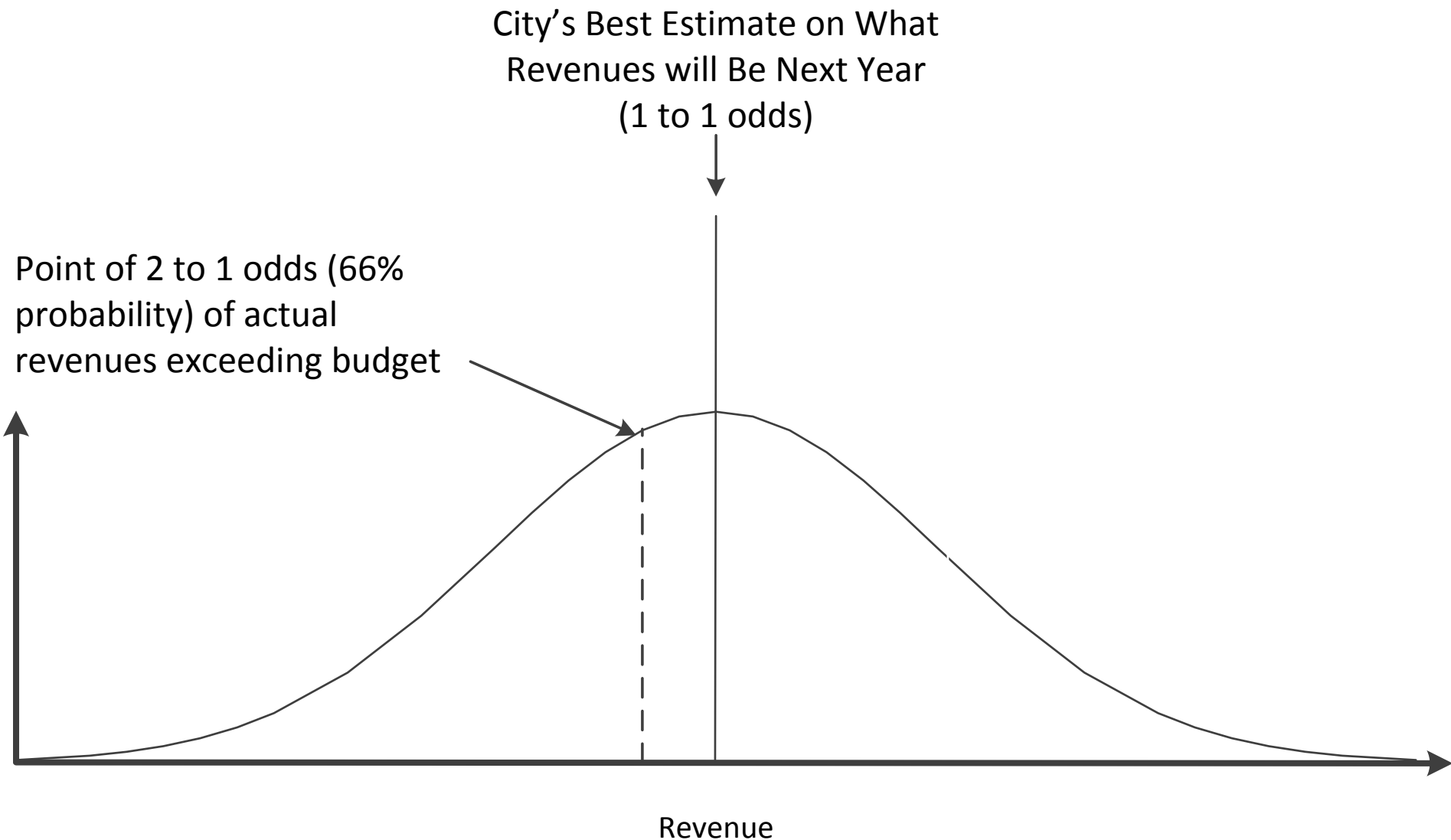
- Accept
 - Little random variation, but recessions are possible
 - Easy to imagine sources of future trouble
- Assess
 - Max length of down turn has been 25 months
 - Max decline during has been 0.53% per month
- Augment
 - Raise expectations for risk (1.5X)
 - Max 0.8% monthly decline
- \$23M loss over 25 months is “worst case”
 - Budget can be reduced in response, though
 - \$13M judged adequate to make a “soft landing”

The Results

- Colorado Springs has since experienced...
 - A transit litigation settlement
 - The largest wildfire in Colorado history
 - Increased flooding risk due to fires
- City has been able to manage these challenges and City Council understands the role of reserves and are working to replenish them.



Making Uncertainty Work in Your Favor



Probability Management...

...The Final Frontier

The Sequest-a-tron

<http://probabilitymanagement.org/library/Shortfall%20Model.xlsx>

The Reserve-o-matic

<http://probabilitymanagement.org/library/Reserves.xlsx>

Where are We Now?

- Group of highly innovative local governments are learning about Probability Management.
- GFOA is working with Rockefeller Foundation on City Resiliency
- First pilot in San Clemente



Questions?

- Shayne Kavanagh,
- Senior Manager of Research
- Government Finance Officers Association
- skavanagh@gfoa.org
- 312-578-2276