Chapter 10.
Promotion Analytics
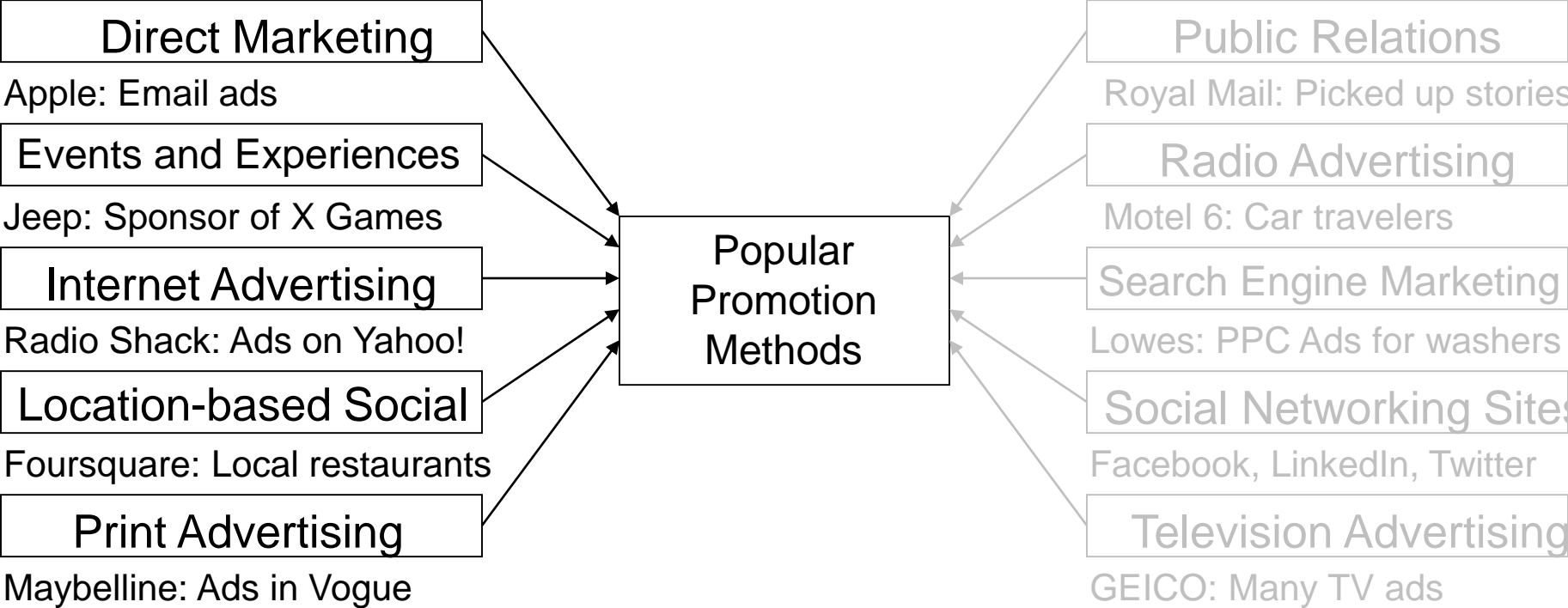## (Estimation and Allocation)

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• Some material adapted from: Sorger, Stephan. "Marketing Analytics: Strategic Models and Metrics. Admiral Press. 2013.
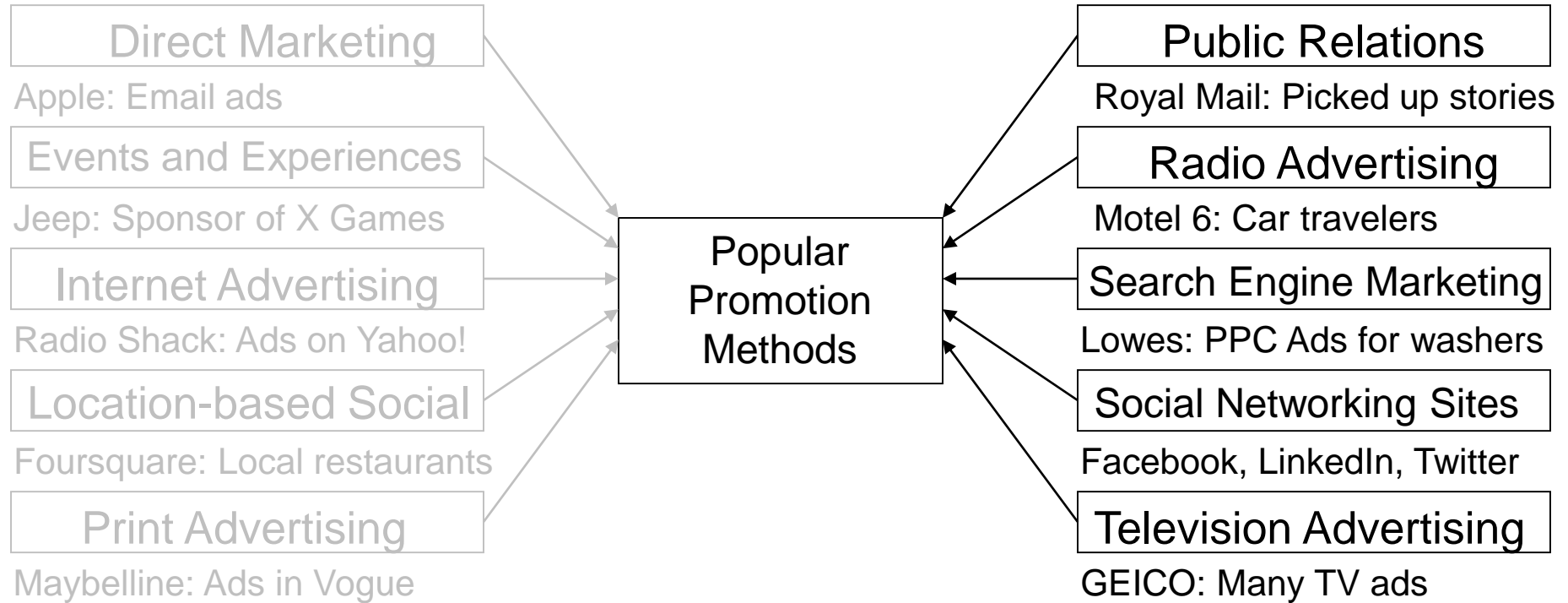
Outline/ Learning Objectives

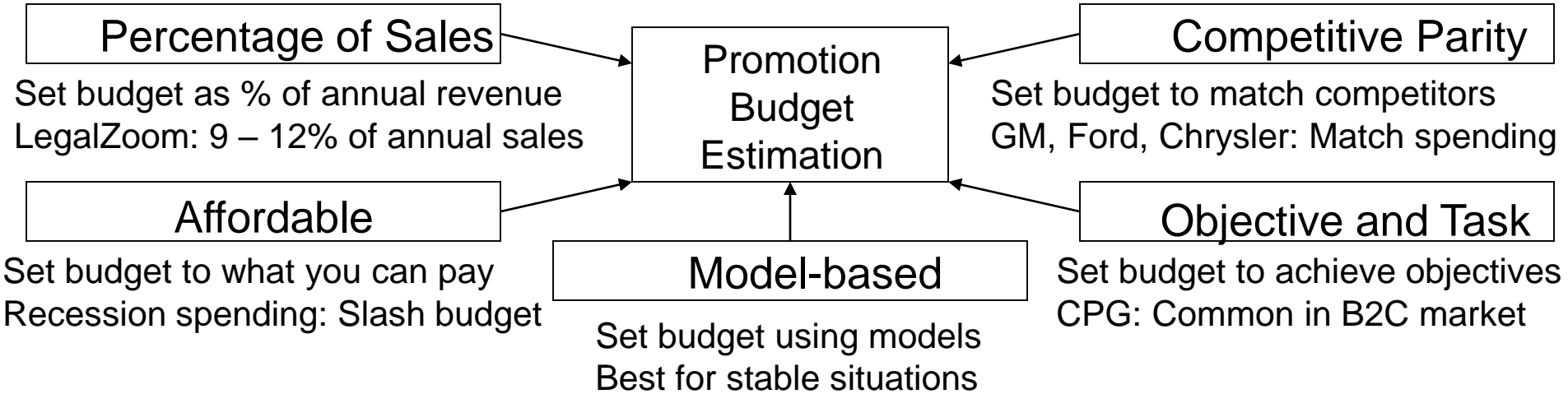| Topic	Description
Estimation	Explain how to estimate the total promotion budget
Allocation	Describe how to allocate promotion budget across vehicles

Promotion

Direct Marketing		Popular Promotion Methods		Public Relations

Direct Marketing
Apple: Email ads

Events and Experiences
Jeep: Sponsor of X Games

Internet Advertising
Radio Shack: Ads on Yahoo!

Location-based Social
Foursquare: Local restaurants

Print Advertising
Maybelline: Ads in Vogue

Popular Promotion Methods

Public Relations
Royal Mail: Picked up stories

Radio Advertising
Motel 6: Car travelers

Search Engine Marketing
Lowes: PPC Ads for washers

Social Networking Sites
Facebook, LinkedIn, Twitter

Television Advertising
GEICO: Many TV ads

Promotion

Direct Marketing

Apple: Email ads

Events and Experiences

Jeep: Sponsor of X Games

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GEICO: Many TV ads

Promotion Analytics: Promotion Budget Estimation

Percentage of Sales

Set budget as % of annual revenue
LegalZoom: 9 – 12% of annual sales

Promotion Budget Estimation

Competitive Parity

Set budget to match competitors
GM, Ford, Chrysler: Match spending

Affordable

Set budget to what you can pay
Recession spending: Slash budget

Model-based

Set budget using models
Best for stable situations

Objective and Task

Set budget to achieve objectives
CPG: Common in B2C market

Promotion Budget: Percentage of Sales

Promotion Budget = % of Revenues

| Annual Revenue | → | **Promotion Budget** |
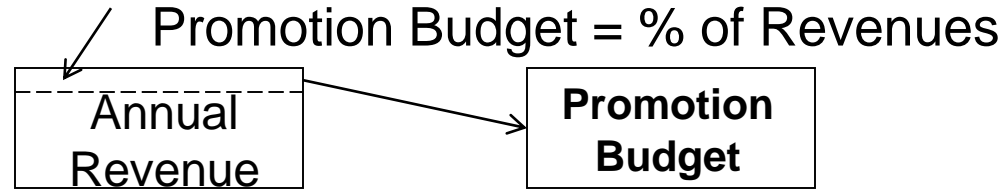
Description: Set budget as a percentage of company annual revenue
Example: LegalZoom estimates that many businesses spend 9-12%

Sample Calculations for Acme Example:
Acme generated $100,000 in revenue in the previous year
If they apply 10% to promotion, promotion budget: 10% * $100,000 = $10,000

Promotion Budget: Affordable Method

Company Funds → Promotion Budget

Leftover funds go to promotion
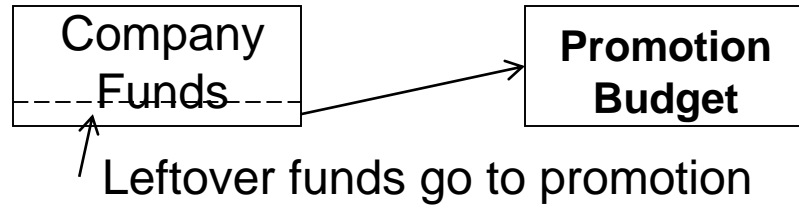
**Description**: Set budget to whatever the organization can afford
Example: During recession, many companies slashed marketing spending

Sample Calculations for Acme Example:
Acme budgets $20,000 for all expenses
After spending $18,000 on rent, etc., $2000 left for promotional expenses

Promotion Budget: Competitive Parity

| Promotion Budget of Competitor | Promotion Budget for Company |
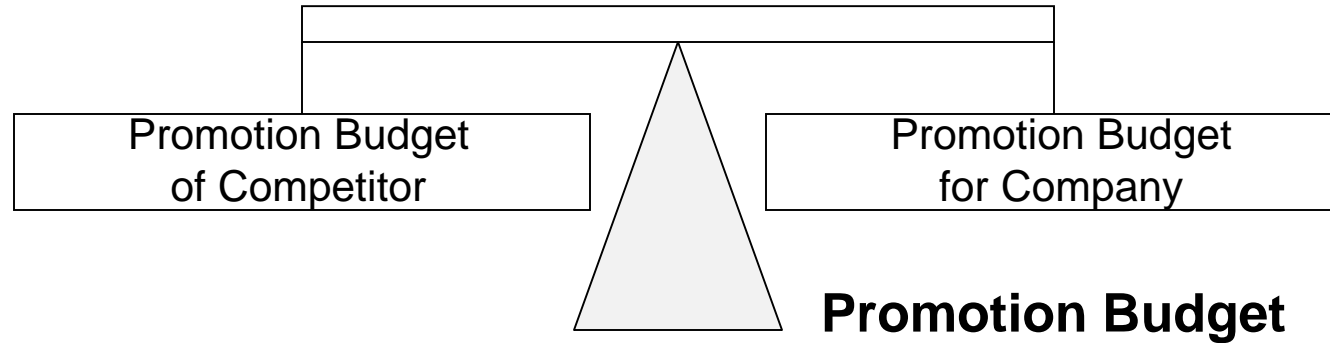
Promotion Budget

Description: Set budget to match what competitors spend
Example: Big 3 auto makers (GM, Ford, Chrysler) match spending levels

Sample Calculations for Acme Example:
See next slide

Promotion Budget: Competitive Parity

Promotion Vehicle	Cost per Ad	Quantity	Subtotal
Print Magazine Ads	$1,000	30	$1,000 * 30 = $30,000
Radio Commercials	$5,000	20	$5,000 * 30 = $100,000
Television Commercials	$10,000	10	$10,000 * 10 = $100,000
Total Spending			*$230,000*

Promotion Budget: Objective and Task

Market Share Goal	→	Advertising Reach	→	Trial Rate	→	Customer Count	→	Advertising Impressions	→	Gross Rating Points	→	Advertising Budget

Common for Consumer Packaged Goods (CPG): Example:

Market Share Objective: Plans to achieve 10% in category of 40 million potential users
10% * 40 million = 4 million users

Advertising Reach: Plans to reach 80% of potential users
80% * 40 million = 32 million people

Trial Rate: Plans to have 25% of informed prospects try the product
25% * 32 million = 8 million people

Customer Count: 50% who those who try it become customers
50% * 8 million = 4 million people

Advertising Impressions: Exposures to advertisements
30 impressions over 4 week campaign for 25% trial rate for each 1% of population

Gross Rating Points: GRP = 1 exposure to 1% of target population
30 impressions * 80% = 2400 GRP

Advertising Budget: Cost of Gross Rating Points (CPP)
CPP in Acme's area = $1800/point; Budget = 24900 * $1800 = $4320,000
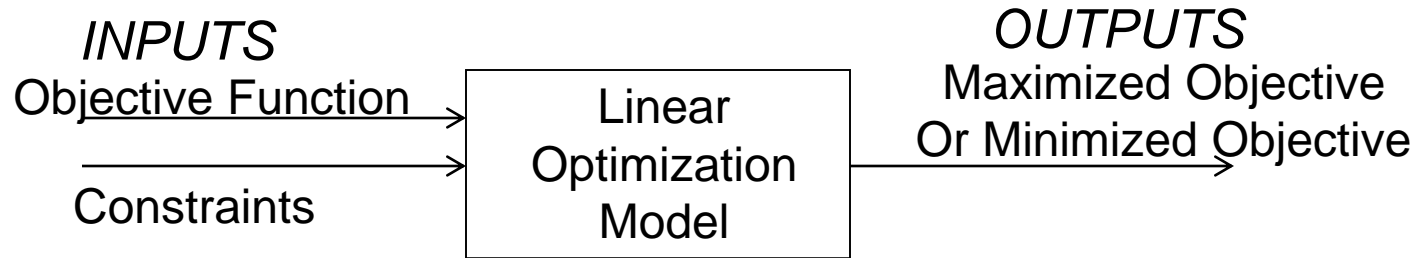
Promotion Budget: Model-Based Method

Description: Set budget according to decision model
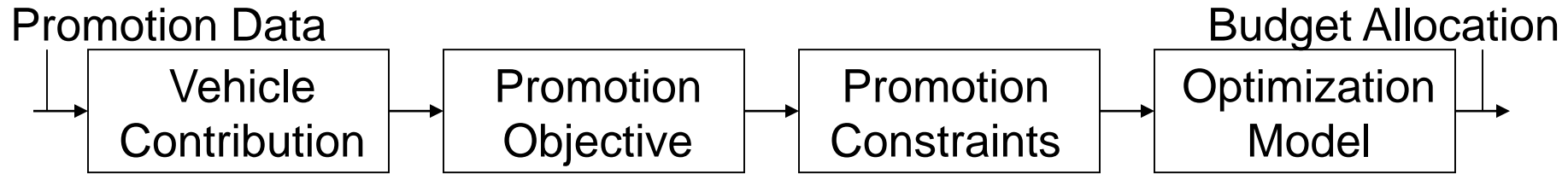**Example**: ADBUDG model used for stable, traditional markets

Sample Calculations for Acme Example:
-Estimate market share for each of four conditions:
　-Zero level advertising
　-Maintenance level advertising
　-50% boost advertising
　-Saturation level advertising
-Build advertising effectiveness curve (model) based on those four points
-Predict market share given a proposed level of spending

Promotion Allocation

INPUTS
Objective Function

Constraints

Linear
Optimization
Model

OUTPUTS
Maximized Objective
Or Minimized Objective

Promotion Allocation: Linear Optimization Process

Promotion Data

Budget Allocation

```
Vehicle          →   Promotion      →   Promotion       →   Optimization
Contribution         Objective          Constraints         Model
```

Vehicle Contribution: Determine effectiveness of campaigns, based on historical data
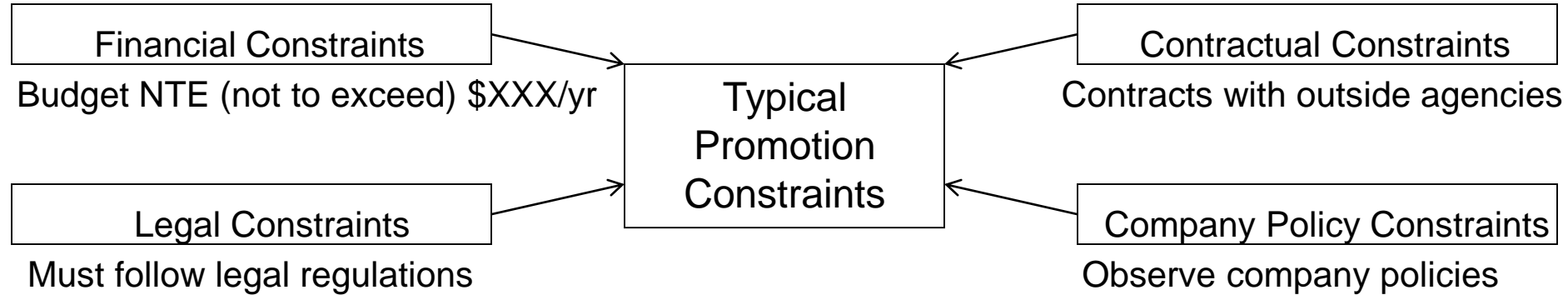**Promotion Objective:**   Declare promotion objective in equation form
Promotion Constraints: Specify promotion constraints in equation form
Optimization Model: Execute model

Promotion Allocation: Constraints

Financial Constraints
Budget NTE (not to exceed) $XXX/yr

Contractual Constraints
Contracts with outside agencies

Typical Promotion Constraints

Legal Constraints
Must follow legal regulations

Company Policy Constraints
Observe company policies

Promotion Allocation: Example

Promotion Vehicle	Audience/Ad	Cost/Ad	Maximum Quantity
D: Direct Marketing	30 Viewers/Ad	$30/Ad	30
P: Pay Per Click	30 Viewers/Ad	$40/Ad	20
S: Social Media	40 Viewers/Ad	$60/Ad	10

Direct Marketing: Emails sent directly to individuals within target market
Pay Per Click: Campaigns displaying ads during relevant Internet searches
Social Media: Paid advertisements on social media platforms

Promotion Allocation: Example

Linear Optimization Element	Equation
Objective Function	Z = 30*D + 30*P + 40*S
Constraint #1: Budget	B = 30*D + 40*P + 60*S <= $2,000
#2: Maximum campaigns/ month: D	D <= 30
#3: Maximum campaigns/ month: P	P <=20
#4: Maximum campaigns/ month: S	S <= 10

Objective Function

Z = 30 * D + 30 * P + 40 * S

The equation applies the following variables:

Z = Our objective, in this case the total number of impressions from all promotion vehicles.

D = Quantity of direct marketing campaigns to run, given that each direct marketing campaign results in 30 viewers per advertisement.

P = Quantity of pay per click campaigns to run, with 30 viewers per campaign.

S = Quantity of social media campaigns to run, with 40 viewers per campaign

Promotion Allocation: Example

Linear Optimization Element	Equation
Objective Function	Z = 30*D + 30*P + 40*S
Constraint #1: Budget	B = 30*D + 40*P + 60*S <= $2,000
#2: Maximum campaigns/ month: D	D <= 30
#3: Maximum campaigns/ month: P	P <=20
#4: Maximum campaigns/ month: S	S <= 10

Promotion Constraints

B = 30 * D + 40 * P + 60 * S ≤ $2,000

The equation applies the following variables:
B = Our monthly budget
D = Quantity of direct marketing campaigns, which cost $30 each to run.
P = Quantity of pay per click campaigns, which cost $40 each to run.
S = Quantity of social media campaigns, which cost $60 each to run.
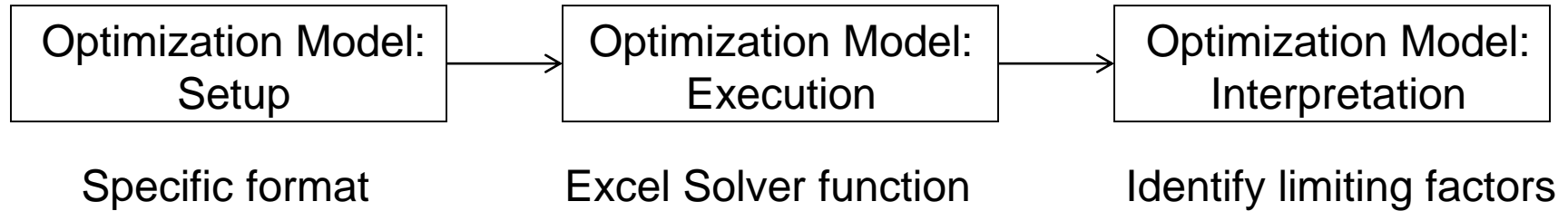≤ = Inequality sign, indicating that we may not exceed our maximum budget.

Promotion Allocation: Example

Linear Optimization Element	Equation
Objective Function	$Z = 30*D + 30*P + 40*S$
Constraint #1: Budget	$B = 30*D + 40*P + 60*S <= \$2,000$
#2: Maximum campaigns/ month: D	$D <= 30$
#3: Maximum campaigns/ month: P	$P <= 20$
#4: Maximum campaigns/ month: S	$S <= 10$

Promotion Constraints

D ≤ 30: Cannot exceed 30 direct marketing campaigns per month
P ≤ 20: Cannot exceed 20 pay per click campaigns per month
S ≤ 10: Cannot exceed 10 social media campaigns per month

Promotion Allocation: Optimization Model

Optimization Model: Setup	→	Optimization Model: Execution	→	Optimization Model: Interpretation
Specific format		Excel Solver function		Identify limiting factors

Promotion Allocation: Setup
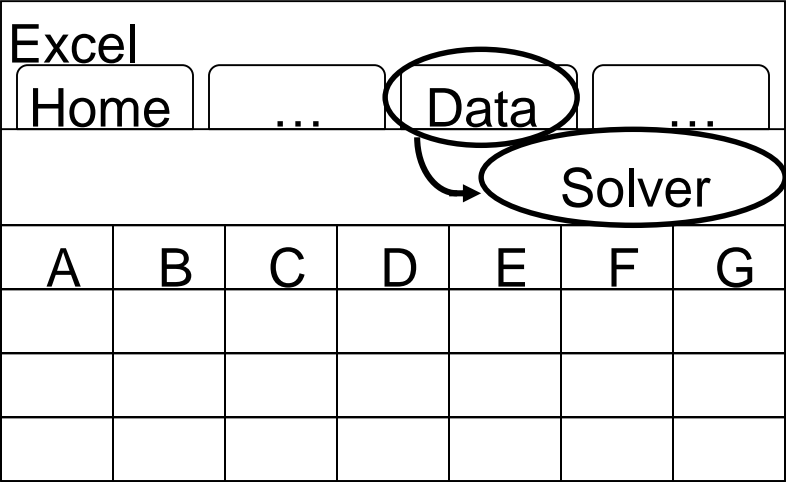
Columns for D, P, and S parameters

Changing cells for D, P, and S

Target Cell
(Contains objective equation)

Constraint, Left Side
(Contains constraint equation)

Constraint, Right Side
(Contains constraint value)

	A	B	C	D	E	F
1		D	P	S		
2	Changing Cells	a	b	c		
3						
4	Target Cell	30	30	40	d	
5						
6	Constraint #1: Budget	30	40	60	e	f
7	Constraint #2: D ≤ 30	1			g	h
8	Constraint #3: P ≤ 20		1		i	j
9	Constraint #4: S ≤ 10			1	k	l

Promotion Allocation: Execution

Excel						
Home	…	Data	…			
		Solver				
A	B	C	D	E	F	G

Promotion Allocation: Execution

Solver Parameters

Set Target Cell: | $E$4 | Solve

Equal To: ● Max. ○ Min.

By Changing Cells:

| $B$2: $D$2 | Options

Subject to the Constraints:

| $E$6 <= $F$6
| $E$7 <= $F$7   Add
| $E$8 <= $F$8
| $E$9 <= $F$9

Add Constraint

Cell Reference: Constraint:

| $E$6 | | <= ▼ | | =$F$6 |

| OK |

Promotion Allocation: Execution

Columns for D, P, and S parameters

Changing cells for D, P, and S

Target Cell
(Contains objective equation)

Constraint, Left Side
(Contains constraint equation)

Constraint, Right Side
(Contains constraint value)

	A	B	C	D	E	F
1		D	P	S		
2	Changing Cells	30	20	5		
3						
4	Target Cell	30	30	40	170	
5					0	
6	Constraint #1: Budget	30	40	60	200	200
7	Constraint #2: D ≤ 30	1			30	30
8	Constraint #3: P ≤ 20		1		20	20
9	Constraint #4: S ≤ 10			1	5	10

Promotion Allocation: Interpretation

Promotion Vehicle	Solver Result	Cost/Ad	Total Cost per Vehicle
D: Direct Marketing	30 (30 max.)	$30/Ad	$900
P: Pay Per Click	20 (20 max.)	$40/Ad	$800
S: Social Media	5 (10 max.)	$60/Ad	$300
Total Spending			*$2,000*

Solver Results: Summary

Promotion Vehicle	Solver Result	Max. Allowable	Status
D: Direct Marketing	30	30	Binding
P: Pay Per Click	20	20	Binding
S: Social Media	5	10	Not Binding
Budget	$2,000	$2,0000	Binding

Solver Results: Constraints

Check for Understanding

Topic	Description
Estimation	Explain how to estimate the total promotion budget
Allocation	Describe how to allocate promotion budget across vehicles