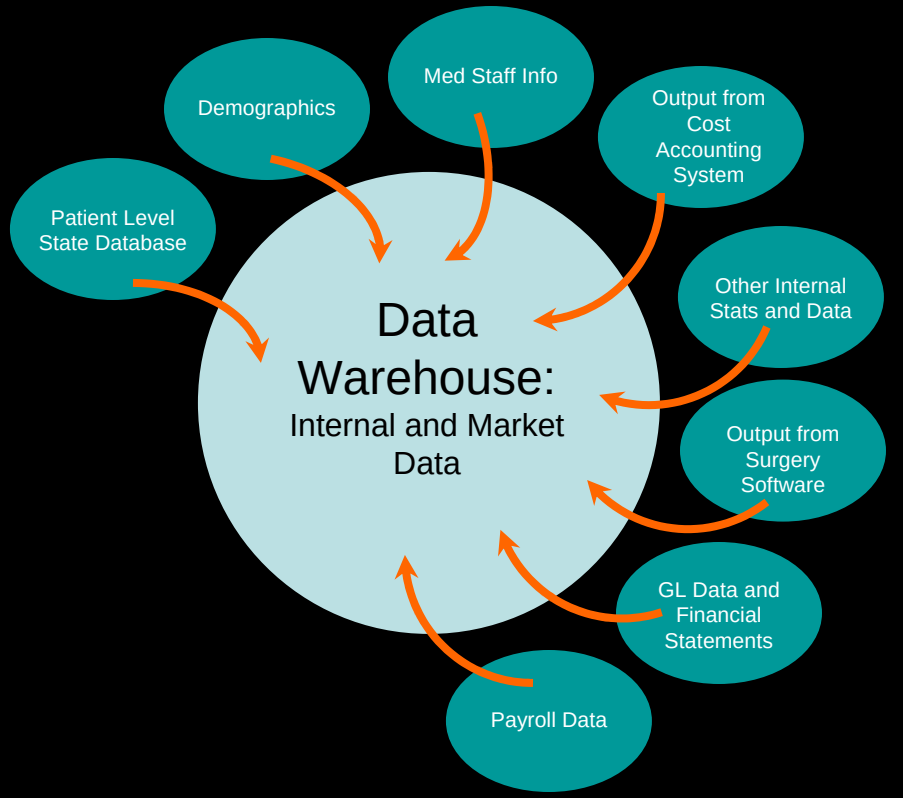
Turning Point
Direction in Healthcare

The Power of an Integrated Approach to Planning

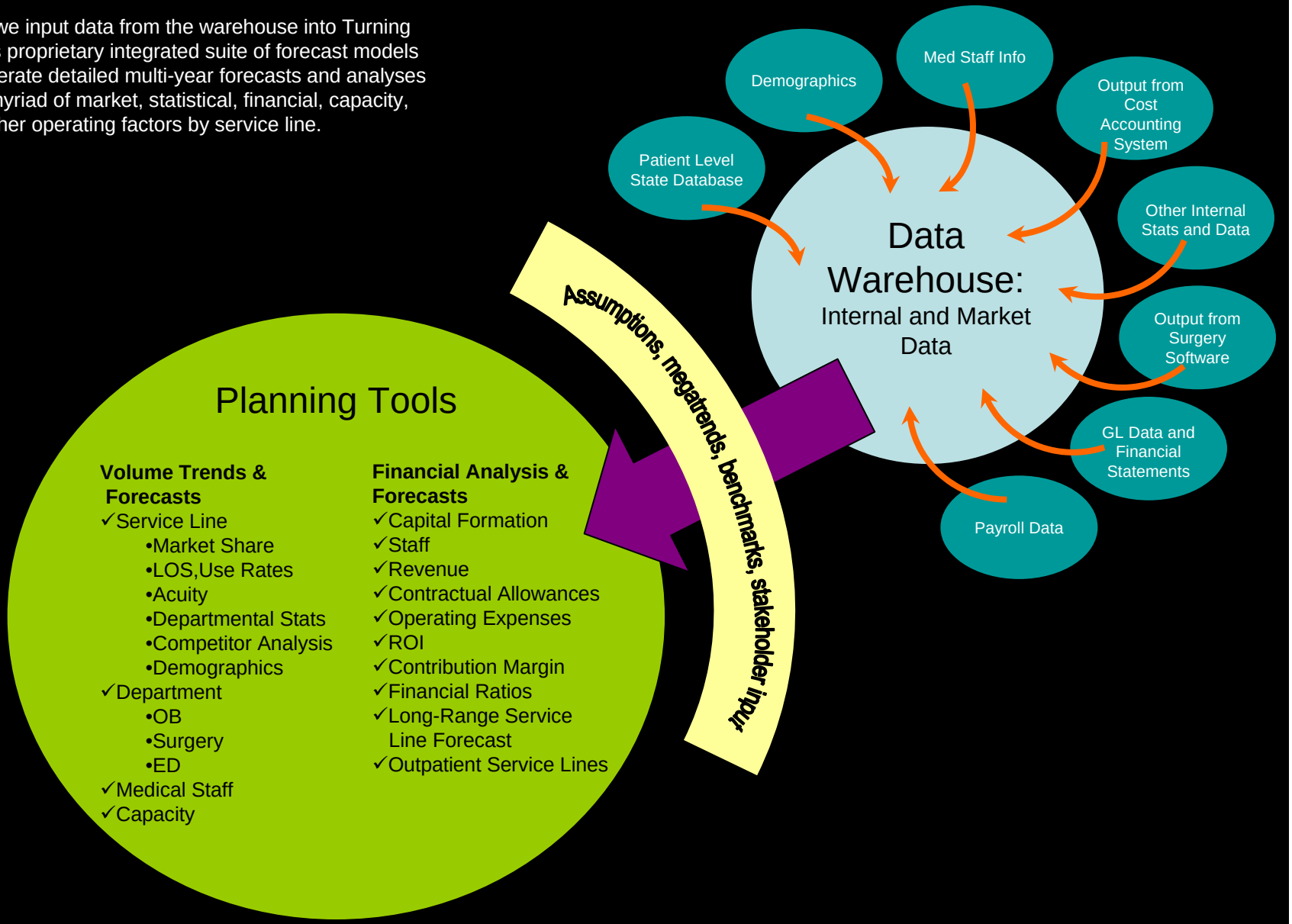
1

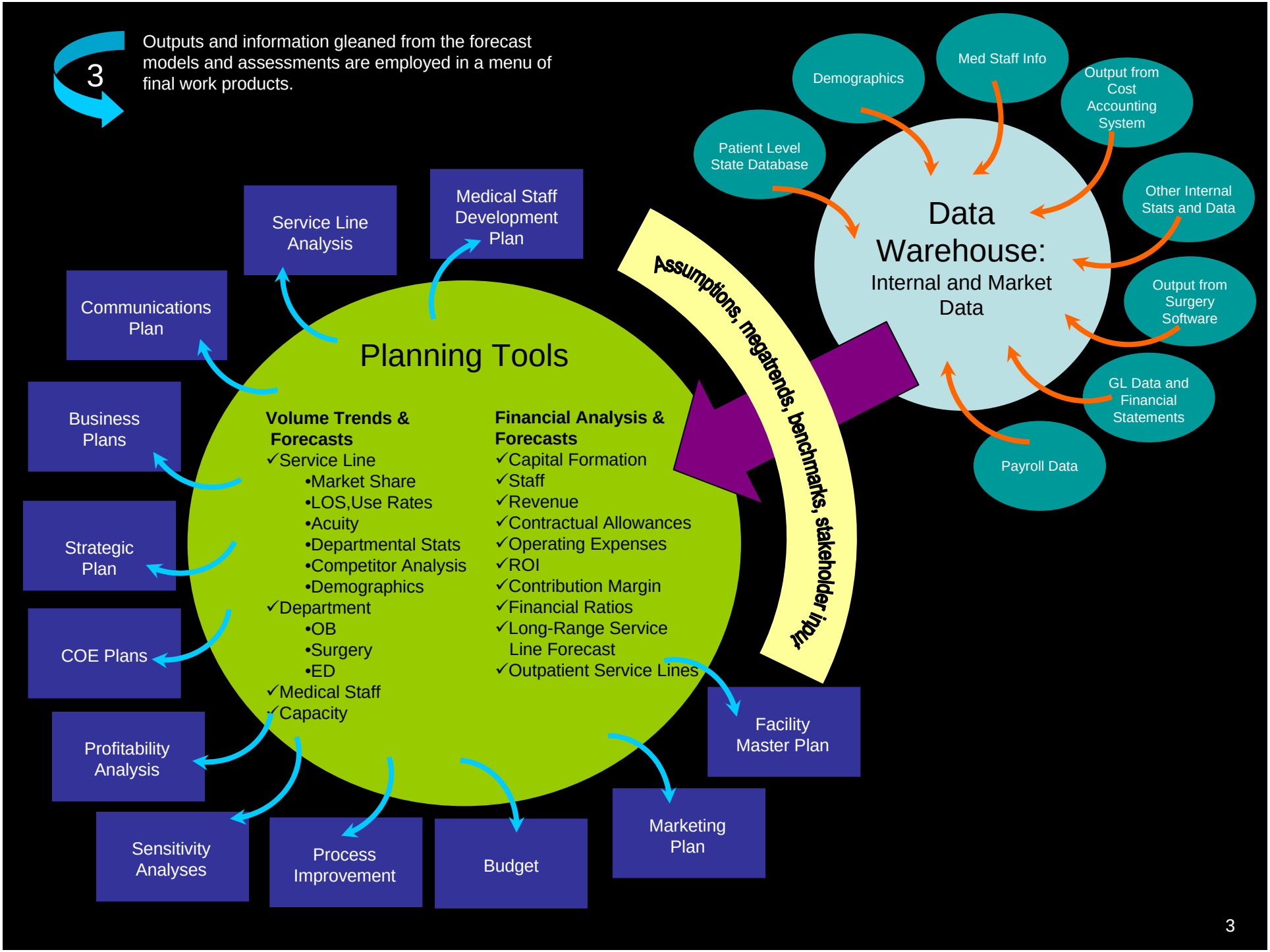
We collect source data from the hospital and from external sources in your market in a consistent, organized, and “user friendly” way. This information is input to and stored in the Data Warehouse.



2

Next, we input data from the warehouse into Turning Point's proprietary integrated suite of forecast models to generate detailed multi-year forecasts and analyses for a myriad of market, statistical, financial, capacity, and other operating factors by service line.




3
Outputs and information gleaned from the forecast models and assessments are employed in a menu of final work products.
Demographics
Med Staff Info
Output from Cost Accounting System
Patient Level State Database
Other Internal Stats and Data
Data Warehouse:
Internal and Market Data
Output from Surgery Software
GL Data and Financial Statements
Payroll Data
Assumptions, megatrends, benchmarks, stakeholder input
Service Line Analysis
Medical Staff Development Plan
Communications Plan
Business Plans
Strategic Plan
COE Plans
Profitability Analysis
Sensitivity Analyses
Process Improvement
Budget
Marketing Plan
Facility Master Plan
Planning Tools
Volume Trends & Forecasts
✓Service Line
•Market Share
•LOS,Use Rates
•Acuity
•Departmental Stats
•Competitor Analysis
•Demographics
✓Department
•OB
•Surgery
•ED
✓Medical Staff
✓Capacity
Financial Analysis & Forecasts
✓Capital Formation
✓Staff
✓Revenue
✓Contractual Allowances
✓Operating Expenses
✓ROI
✓Contribution Margin
✓Financial Ratios
✓Long-Range Service Line Forecast
✓Outpatient Service Lines

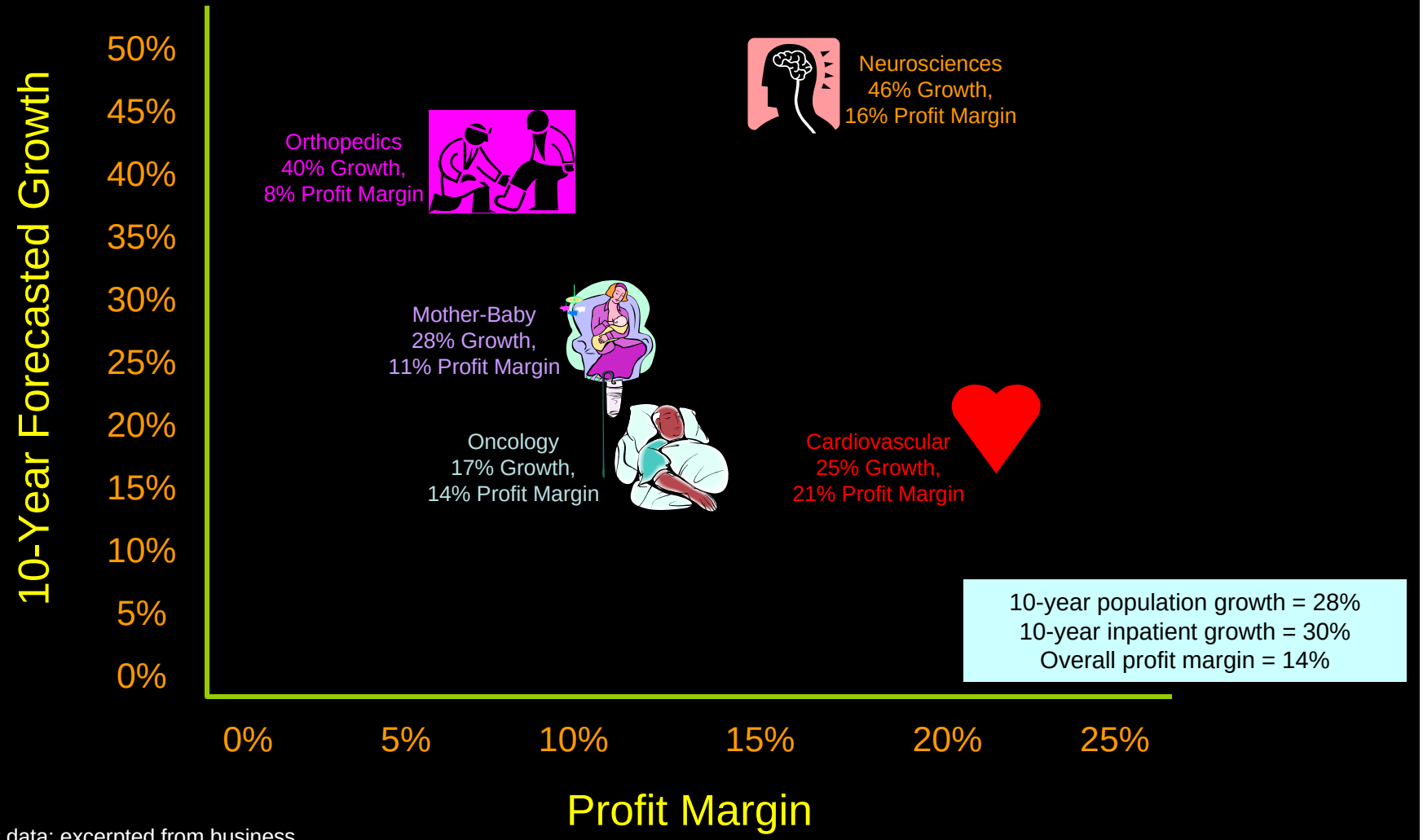
4

To complete a work product, various components in addition to output from the Planning Tools are required.

5

Many of the products that are created based on outputs from the integrated Planning Tools are interrelated and depend on one another. And some of these relationships are iterative and circular. The possibilities are virtually endless. The power and integrity of the integrated Planning Tools make it possible to create many end products without re-inventing the wheel every time.

Service-Line Analysis: 10-Year Forecasted Inpatient Growth and Current Profit Margin



Actual client data; excerpted from business plan supporting a $281m building project.

4

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6

Oftentimes, results of a process and work product like Facility Master Planning will generate new assumptions which must be fed back into the integrated forecast models, creating an iterative loop that flows back into related work products.

Data…and More Data

- Hospitals generate data that is used for many different purposes
  - Strategic and business plans
  - Facility master plans
  - Capital and operating budgets
  - Benchmark comparisons
  - Operations improvement
  - Quality enhancement
  - Reports to interested constituents, internal and external
- Hospitals deserve and need meaningful, quality data
- Hospitals want good, useful data but are challenged by and frustrated with the process of getting and integrating it

Appendix

Description of Planning Models

Market Analysis

The market analysis sets the stage for the volume forecasts. It includes:

- An assessment of area competitors
  - Services offered (e.g., radiation oncology, cardiac catheterization, endoscopy, dialysis, MRI)
  - Number of beds by type (med/surg, telemetry, critical care, obstetric, pediatric, rehabilitation, psychiatric, observation, transitional care, etc.)
  - Level and availability of emergency care
  - Historical volume trends (admissions, patient days, outpatient visits, births, etc.)
- An assessment of patient out-migration. Through state databases, we determine how many area residents are traveling to other locations for inpatient services. That source also allows us to determine the type of service (e.g., cardiac surgery, neurosurgery) they received and where they received it. It also allows us to capture the acuity of out-migrating patients so we can compare it to the acuity of those who remained in the service area for care. All of this information is used to forecast future volumes as assumptions can be made about the potential "recapture" rate for some or all of these services.
- Current and forecasted demographic characteristics, detailed by sub-areas within the service area
  - Current and forecasted population counts by cohort (e.g., 0-14, 15-44, 45-64, 65-74, 75+, females 15-44)
  - Average household income
  - Ethnic composition

Market Analysis

- Relevant economic considerations
- Geographic dynamics
- Ambulance (ground and air)
- Available services
  - Health promotion
  - Medical care
  - Complementary or alternative medicine
- Provider supply and demand (physicians, registered nurses, others)
- Capacity threshold guidelines or program priorities promulgated by regulatory bodies (if any)

A few examples of other types of information that might be included:

A comparison of the current number of acute care beds per 1,000 population to current planning standards

- Comparison of an area's *resident* population to its *de facto* population if the area is one where the population varies significantly during the year (e.g., ski resorts, beach cities)
- Issues related to areas designated as Primary Care Health Professional Shortage Areas

Service-Line Forecasts

This model uses client-defined service lines, although we recommend separating the medical from the surgical components (e.g., medical cardiology and cardiac surgery) so the data can be used for other purposes.

Working with the client, we assign a relevant age cohort to each product line (e.g., women, 15-44; Adults, 45+). We then analyze four years of historical service area data, including patient days, discharges, length of stay, and market share. We use this data to determine use rates based on the relevant age cohort. The use rate will tell us, for each service line, how many cases per 1,000 population that service area residents generated in each of the four years. The source for this information is typically a state database; we obtain the data at the patient level. We then make assumptions about the future, looking at each service line individually and then confirm our assumptions with the client. The variables that our model accommodates include use rates, length of stay, non-service area residents, and market share.

Generally, we use population change as the baseline forecast. This allows us to see the “stand-alone” impact of change in each age cohort that is likely if market share and length of stay remain constant. For alternative forecasts, we work with the client to develop assumptions about likely changes, by variable and by service area. Among the elements we consider are technology changes (e.g., the impact of drug-eluting stents), physician recruitment goals, new services or capabilities, expected competitor strategies, and new audiences (e.g., patients from outside of the service area). We frequently use data and information from Sg2 and the Health Care Advisory Board when we’re developing assumptions.

Service-Line Forecasts

Once the patient day forecast is complete, we calculate the average daily census and translate that information into bed need by type (e.g., medical/surgical, intensive care, labor and delivery, and so forth). We use several different parameters to translate forecasted average daily census into the actual number of beds needed. For example, in medical-surgical units, we often use 72% to 80% occupancy as the “translator.” In critical care and in OB, we often use 99% availability to account for the fact that when one of those types of beds is needed, it’s not desirable (or sometimes not possible) to substitute another type of bed. The 99% availability factor may result in a seemingly low occupancy rate, so we test the client’s tolerance for lower rates before making a final recommendation.

We also look at actual current vs. ideal location of patients on nursing units. For example, financial data by department may show that some OB patients are placed on a medical floor when there is a shortage of OB beds. Ideally, all of them should be on the OB unit. Our bed reallocation matrix tool facilitates discussion with the client about less-than-ideal operational practices, and allows us to make appropriate changes so that current practices are not perpetuated into the future. As a result, our bed forecasts illustrate how the hospital should be configured in the future.

We often conduct special studies during the forecasting process to account for such anomalies as seasonal fluctuations. For example, pediatric average daily census over the course of a year may be less than 5.0. During RSV season, the census may climb to 20. Because it isn’t cost-effective to set up a 20-bed pediatric unit simply to assure adequate beds during peak census months, the forecast provides data that can be used to assure those patients can be accommodated elsewhere.

Once the forecasts are complete, we prepare a year-by-year table that shows bed need. This is especially useful to architects during schematic design.

Financial Forecast

We have developed a flexible, sophisticated model that our clients find to be extremely useful for forecasting the financial performance of complex, expensive projects and for preparing annual operating budgets. The model is driven by inpatient and outpatient service-line volume forecasts. From these forecasts, it projects inpatient and outpatient revenue, calculates inpatient and outpatient revenue deductions by payer, and provides detailed department-level operating statements and schedules for depreciation, interest, operating and non-operating revenues, and so forth.

Our model takes into consideration the importance of accurate revenue deductions (contractual allowances). We are able to do this because our financial team has in-depth experience with and understanding of reimbursement methods used by major payers (e.g., Medicare, Medicaid, Blue Cross Blue Shield, managed care payers). We start with the client's payer mix—by aggregating patient-level account information—and then make assumptions about how payer mix might change in the future; the result is a forecast of net revenue by service line.

Our model ties expenses to the service line volume forecasts. And, it can forecast departmental expenses at the detailed G/L code level, including salaries and labor hours by job class. The model also includes a fixed/variable split at the department level for expenses and for salaries and labor hours at the job code level. It also allows inflation assumptions by G/L code, and allocates fringe benefits directly to each department.

Another strength of the financial model is that it accommodates sensitivity analysis to test the effect of key financial assumptions. The following variables are among those that can be tested: volume by service line, inflation (salaries, supplies, third-party rates), interest rate and repayment method, capital costs, contributions, timing issues.

Financial Forecast

We use our model to generate demand for inpatient and outpatient ancillary services separately. On the inpatient side, the forecasts are based on the client's current use by service line (e.g., number of CT scans per neurosurgery patient, number of echocardiograms per medical oncology patient). The model can accommodate expected changes in those use rates. This approach to forecasting inpatient ancillaries assures a direct tie to expected changes in service line volumes.

Outpatient ancillary services are based on the major "drivers" of those services. Generally, those include the emergency department, outpatient surgery, imaging, cardiac catheterization lab, and the therapies. For example, the model calculates the average number of CT scans per emergency department patient and then allows that rate to continue into the future or to be adjusted based on assumptions we generate with the client. The model also accommodates the outpatient who comes in solely for a single test, perhaps an ultrasound, that is not "driven" by another service.

For inpatient service lines and for outpatient drivers, the model generates gross and net revenues, relevant statistics, and revenue deductions. In addition, the model generates consolidated statements of operating changes (i.e., profit and loss), a balance sheet, changes in net assets, and cash flows. At the client's request, it can be configured to generate profitability by center of excellence. The model also computes key ratios that may be required by any capital policies with which our clients must comply.

Our model has been used to generate financial statements required for bond financing, bank letters of credit, bank loans, and other financing methods. We work with appropriate agencies to develop initial estimates relative to the terms and conditions for healthcare revenue bonds. We also work on behalf of our clients with banks and other funding sources to ensure that they evaluate all major potential funding sources. We can forecast payment schedules and incorporate them into the financial model.

Financial Forecast

Our financial model is flexible, allowing us to meet each client's particular needs. Because our model is not a "cookie-cutter" template, we are able to accommodate a wide variety of requests. For example, one or more clients have:

- Asked us to prepare service-line volume and financial forecasts by payer. The assumptions used to forecast each component (patient days, financial performance, ancillary use, etc.) varied among the divergent payers as well, adding to the overall complexity of the engagement.
- Used our model to generate their annual operating budget which included an upload of the G/L code detail into the client's accounting system.
- Asked us to roll-up detailed information from our financial model for input to another financial model (e.g., ENUFF); the CFO gets the detail that s/he desires and the client's parent company gets the high-level summary it needs.
- Requested that we compare the financial feasibility of competing strategies. Often, this involves high-cost facility initiatives that have far-reaching impact.
- Asked us to prepare trend data based on several years of historical G/L data.
- Requested that we run "what-if" scenarios to test the impact of large capital expenditures or the addition of a significant new program or service.
- Used our model to compute service-line and payer profitability.

Other Forecasting Models: Emergency Department

This model forecasts emergency department (ED) visits as well as the number of rooms or bays needed to accommodate them. At the outset, we discuss with the client their preferences for how they want to operate the ED in the future; we then obtain historical data that relates to those preferences. For example, if they want all rooms to accommodate every type of patient, we collect total visits. But, if the ED is large and cares for a diverse population, they may want to designate specific rooms for specific visits (e.g., trauma, obstetric, psychiatric, pediatric), or they may want separate rooms for urgent and emergent visits. The need for special room configurations or specialized equipment often dictates the level of detail we forecast.

The model calculates historical use rates, either in total or by type of visit. We like to look at visits and use rates over three or four years to determine trends. We then make assumptions about how those rates might change in the future and apply the new use rates to the forecasted population. If data are available for competing EDs, we calculate market share and make assumptions about how it might change as well.

During data collection, we also ask for average stays—time spent waiting as well as in an ED bed. Those averages, along with room turnover time, are used to calculate occupancy and to forecast future room need. In addition, we collect data about the distribution of visits throughout the day and about seasonal fluctuations so that we can accommodate the peaks that typically occur in any ED.

Finally, we calculate room need using either an acceptable occupancy rate or an availability rate. The latter uses a Poisson distribution formula that takes the average daily census and applies a factor that (theoretically) produces the number of rooms that will assure the client of availability between 90% and 99.9% of the time. The higher the availability rate, the greater the time the room stands empty.

To test the results of the forecast, we look at average visits per room which generally range from 1,200 to 1,600. In some specialized rooms and for longer-stay patients, the averages will be lower. In EDs that experience more urgent than emergent visits, the average can easily exceed 1,600.

Other Forecasting Models: Obstetrics

This model forecasts births as well as related bed need (either LDRs and postpartum beds, LDRPs, or a combination. It also forecasts the need for antepartum and "outpatient" beds. The model begins with an analysis of historical patient day and discharge data by DRG, separated into the following categories.

- OB – Delivery, Medical — DRGs 372 and 373 – vaginal deliveries
- OB – Delivery, Surgical — DRGs 370, 371, 374, and 375 – C-sections
- Other OB – Medical — DRGs 376, 378, 379, 380, 382, 383, and 384 – medical admissions; no deliveries
- Other OB – Surgical — DRGs 377 and 381 – surgical admissions; no deliveries

Using historical data, the model calculates historical length of stay, the C-section rate, and a hospital-specific use rate for each DRG based on the relevant population cohort (generally, females 15-44 years of age). When DRG-specific data is available for other hospitals in the service area, market share and area use rates can be calculated as well.

We also request data related to the average stay in an LDR and the percent of patients, by DRG, who use an LDR. Generally, it is difficult to obtain average stays for outpatients, so we work with nursing staff to make that assumption (generally, four hours). We also try to estimate, by DRG, which patients use an antepartum room and for how long. The latter is important only when the hospital wants separate beds for ante- and post-partum patients.

Once all of the data is collected and trends are analyzed, we make assumptions about how the variables (use rates, length of stay, C-section rate, market share) might change in the future and calculate discharges and patient days by DRG. Forecasted average daily census is the next calculation, followed by bed need calculations.

Other Forecasting Models: Obstetrics

We calculate bed need as follows.

- Postpartum Beds — Divide the ADC by the desired occupancy rate; typically, we use 70%.
- LDRs — Apply the Poisson distribution formula to the ADC; typically, we use the formula that produces an availability rate of 99.9%.
- Antepartum Beds — Apply the Poisson distribution formula to the ADC; typically, we use the formula that produces an availability rate of 95%.

Using the Poisson distribution formula produces a bed count that (theoretically) assures that a bed is available a certain percent of the time that it is needed. A 95% availability factor suggests that there may be 18 days each year when the "right" bed isn't available. Since antepartum and postpartum beds can be used interchangeably, 95% generally works.

Other Forecasting Models: Surgery

Our surgical services forecasting model begins with an assessment of surgical patient volumes by type of care or specialty (e.g., orthopedic, open heart, urological, etc.) separated into inpatient and outpatient volumes. Service area use rates are calculated, by specialty or type, and assumptions made about how they might change in the future. We recommend basing use rates on the age cohort in the population that accounts for the majority of operations performed in that particular specialty. For example, we would calculate the use rate for joint replacements using the number of service area residents in the 45+ cohort. That use rate would then be applied to the forecasted population in that same cohort. Because each cohort changes at a different rate, we believe that using the most relevant cohort produces a more reliable forecast. Our model allows for changes in use rates to accommodate new procedures.

We also review historical information related to in-room minutes and room turnaround time—again, by specialty or type of case. We then make assumptions about how these might change into the future. And, our forecasting model also takes into consideration the percentage of cases which occur during “prime time” (as defined by the hospital), the number of hours each OR is routinely staffed, and scheduling efficiency (to accommodate the inevitability of cancelled cases). Once the historical data are analyzed and assumptions about the future applied, the number of operating rooms needed, by type, is calculated.

This model also generates the number of pre-op and PACU beds needed to accommodate the surgical volumes. The model takes into consideration the percentage of cases that use these beds, the average stay per patient, the hours of greatest use, and other hospital population that may use these beds.

Space Programming

In facility master planning engagements, we develop a functional space program based on client-approved volume forecasts. We share the forecasts—and any related capacity analyses and programming standards—with the user groups. Occasionally, the forecasts are refined during space programming or the programming standards are altered when the total space allowed by the standard doesn't meet the goals.

Typically, we meet with a Steering Committee to discuss alternative care models, particularly as they relate to space requirements and ultimate design. For example, most clients want to encourage families to support their loved ones throughout their hospitalization. Private rooms with adequate space for family members have requirements that are different from patient rooms in facilities that opt not to provide these amenities. Other elements, such as family kitchens and patient/family libraries, also mandate that adequate space be programmed to accommodate them.

We believe it is imperative to create a detailed space program for several reasons. An accurate capital budget cannot be prepared without sufficient detail. In turn, financial feasibility cannot be assessed without a realistic capital budget. Because our experience has proven repeatedly that paying adequate attention to the space program early on is less costly in the long run, we include architects on our team who have in-depth experience planning, designing, and building facilities that exemplify the client's vision. We also believe that space programming and schematic design must occur relatively simultaneously. When these processes are separate, many things can and do go wrong.

- "Space creep" is inevitable.
- The architects may not be able to design the building to accommodate the program and the desired collocations.
- Initial cost estimates are significantly over or under those developed in later stages of planning.

Space Programming

Working with the client, we form user groups to provide input to various components of the space program. User groups can be department-focused or they may be much broader in scope. Examples of the latter include groups that meet to discuss how the care model will impact facility design. The work from these groups that have a broad focus is then taken to the department-focused groups, as appropriate. Appointing members with clinical expertise as well as operations experience adds value to the process.

When groups are being formed, we encourage our clients to include individuals who are willing to consider doing things differently than they have done or are doing. We highly recommend that representatives from such areas as IT and security participate in most user groups to assure that their particular needs and concerns are not overlooked. Infection control and ergonomic experts may also need to be appointed to multiple user groups. And, to the extent that physicians can participate, we advocate including them as well. Scheduling those groups where physician input is critical must take into consideration when they are most likely to be able to attend.

Our experience has been that most groups can accomplish initial programming work—enough to get reasonably reliable, yet preliminary cost estimates—in three to five meetings, although more complex departments—surgery and obstetrics, for example—may require twice that many. Completing schematic design generally requires an equal number of meetings.

Medical Staff Planning

Our approach to medical staff planning is two-pronged. On the recruitment side, we determine how many physicians are needed in each specialty to serve the hospital's needs and/or the community by comparing demand to supply and then developing strategies to close or narrow the gap. On the retention side, we work with our clients to craft strategies related to retaining those physicians who provide a level of service that the hospital desires.

The process we use to develop a comprehensive plan follows these steps.

- Determine service area(s) which may (or may not) be the same service area the hospital uses for other planning activities.
- Obtain service area demographics for two age cohorts (0-64 and 65+).
- Determine physician supply in the service area. Generally, this involves developing a database of all physicians currently in practice.
  - Name
  - Gender
  - State license number
  - Specialty
  - Date or year of birth
  - Office address(es) and phone number(s)
  - Geographic area (zip code, county, etc.) that fits with the service area(s) definition
  - FTE status, by office location
  - Hospital affiliation(s)

We frequently call every physician office in the service area to obtain the data that isn't available from such sources as state licensing boards, hospital medical staff rosters, American Board of Medical Specialties, and a variety of internet resources. We believe it's important to have accurate supply data, particularly as it relates to age and FTE status.

Medical Staff Planning

- Make assumptions about physician retirement age by specialty; we use this information to age the physician supply into the future. Our model allows us to vary expected retirement age by specialty.
- Prepare demand forecast.
  - Population-based demand, using physician-to-population ratios to determine community need; we use different ratios for those age 65+ to reflect their higher number of physician visits. We also have ratios that reflect the area's level of managed care.
  - Hospital-based demand, using historical physician activity applied to recognized specialty-specific standards, to determine the number of physicians needed to serve forecasted patient volume by service line.

    During the demand forecast, we may also assess other factors that can influence physician demand, including time patients are waiting to get an appointment, practices closed to new patients or to patients with specific insurances, and so forth.
- Calculate variance between supply and demand.
- Obtain input from medical staff and senior leadership; information regarding impending retirements or practice variations is used to modify the demand forecast.
- Develop recruitment strategies and priorities based on identified variances and strategic initiatives. At this point, recruitment-related costs can be identified for inclusion in the hospital's budget.
- Craft retention strategies. These are tailored to each organization's needs, but may include such activities as:

Medical Staff Planning

- Forming a physician relations advisory committee to provide input to and evaluate the effectiveness of physician retention activities
- Meeting with targeted physicians to discuss their issues and to solicit their input
- Appointing a physician liaison who can respond quickly and appropriately to concerns
- Sponsoring programs of interest to physicians or their office staff
- Meeting with physicians' office managers to address their concerns, introduce them to hospital personnel
- Sponsoring special events (Doctor's Day, holiday parties, recognition dinners, thank-you dinners)
- Recognizing physicians' birthdays
- Soliciting physician input to strategic planning, budget preparation, and operations improvement
- Offering a physician referral service in the community

Communications

The importance of communicating with a wide variety of constituents during the facility planning process cannot be underestimated. We work with the Steering Committee to develop a plan to inform and to seek input and support from the residents, business and community leaders, physicians and other healthcare providers, donors, the media, and others. This communication is also key to future fundraising activities. Potential communication tools include a newsletter, web site, resident and physician forums, media kits, press releases, and educational programs. The plan includes specific tasks and schedules and responsibility for each activity. We can also provide design, written materials, or production either directly or through our relationships with experts in these areas.