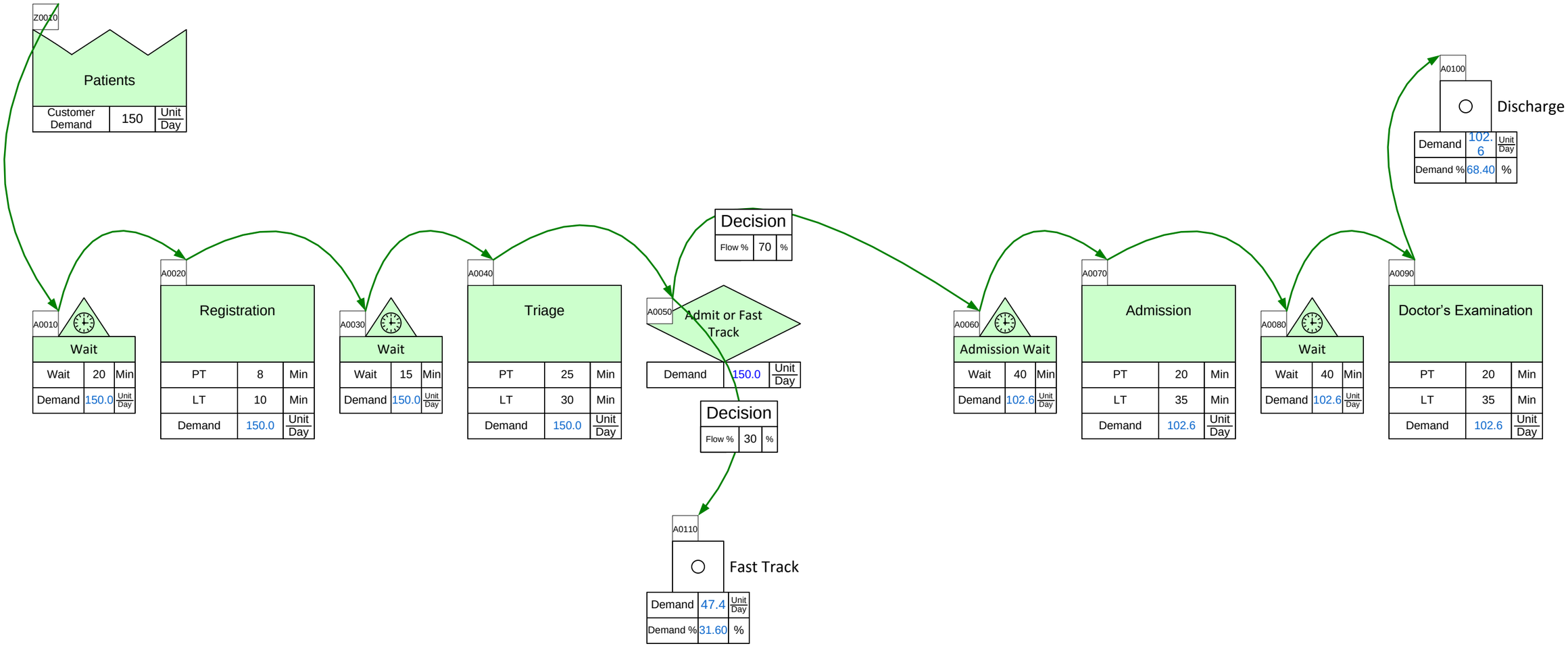
Healthcare Problem: Total Time

Calculate how long it takes from when a patient arrives to discharge.

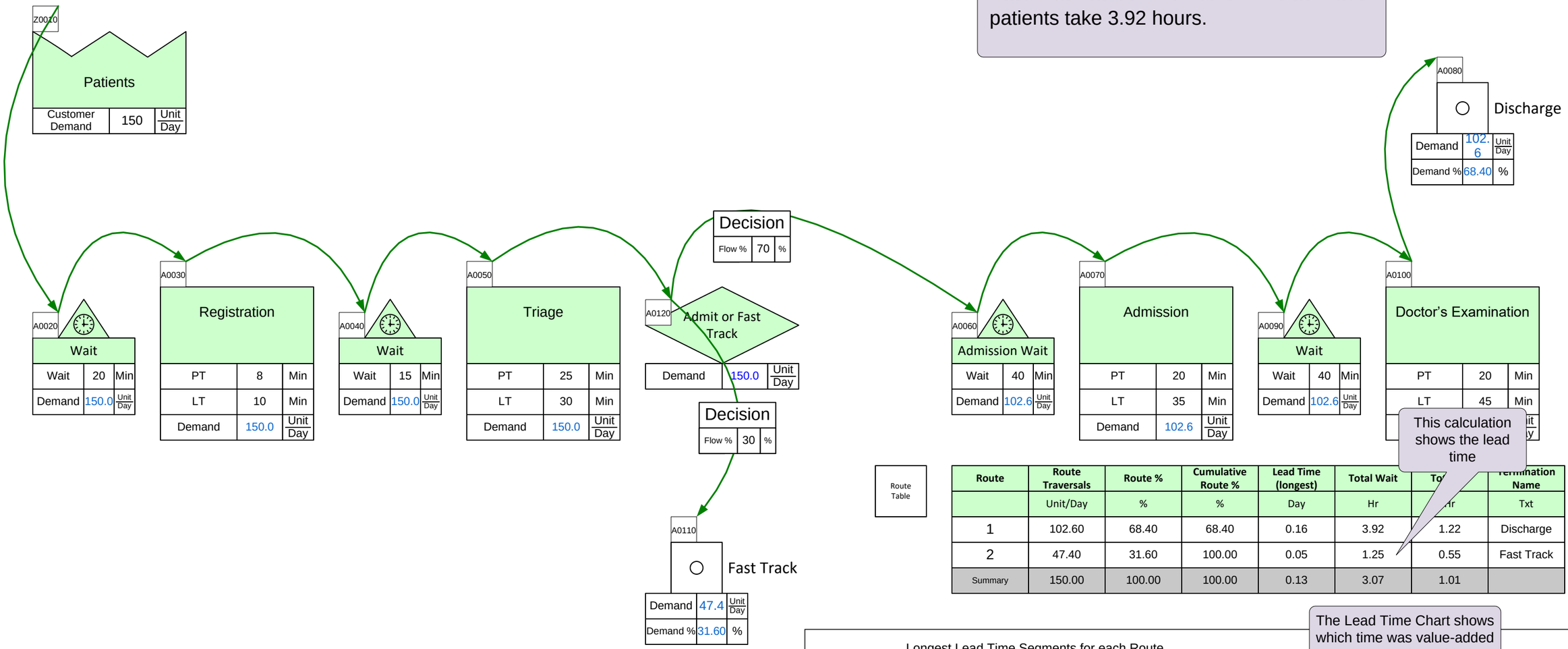


Units	Day	Wk	Year
	24	5	52
	Hr	Day	Wk

Healthcare Solution: Total Time

Calculate how long it takes from when a patient arrives to discharge.

Fast Track takes 1.25 hours while admitted patients take 3.92 hours.

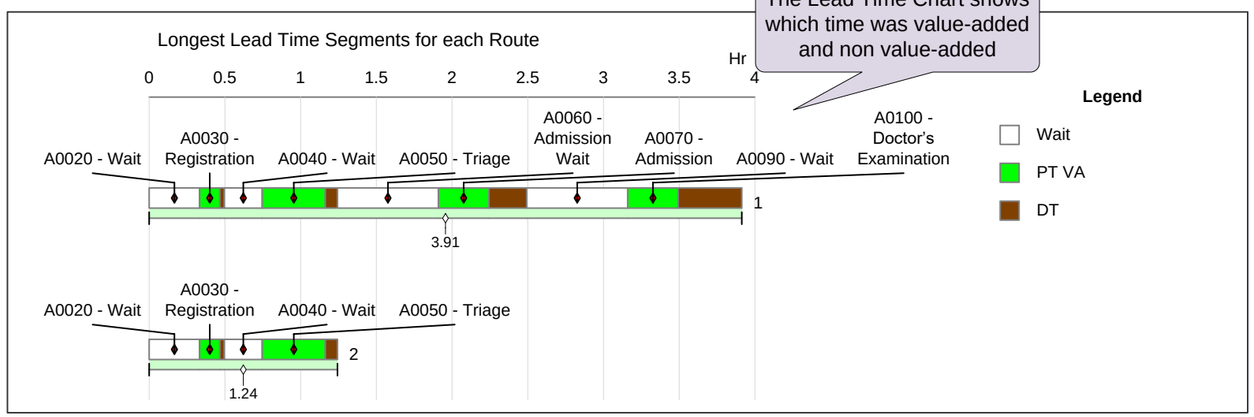


Route Table

Route	Route Traversals	Route %	Cumulative Route %	Lead Time (longest)	Total Wait	To	Termination Name
	Unit/Day	%	%	Day	Hr	Hr	Txt
1	102.60	68.40	68.40	0.16	3.92	1.22	Discharge
2	47.40	31.60	100.00	0.05	1.25	0.55	Fast Track
Summary	150.00	100.00	100.00	0.13	3.07	1.01	

This calculation shows the lead time

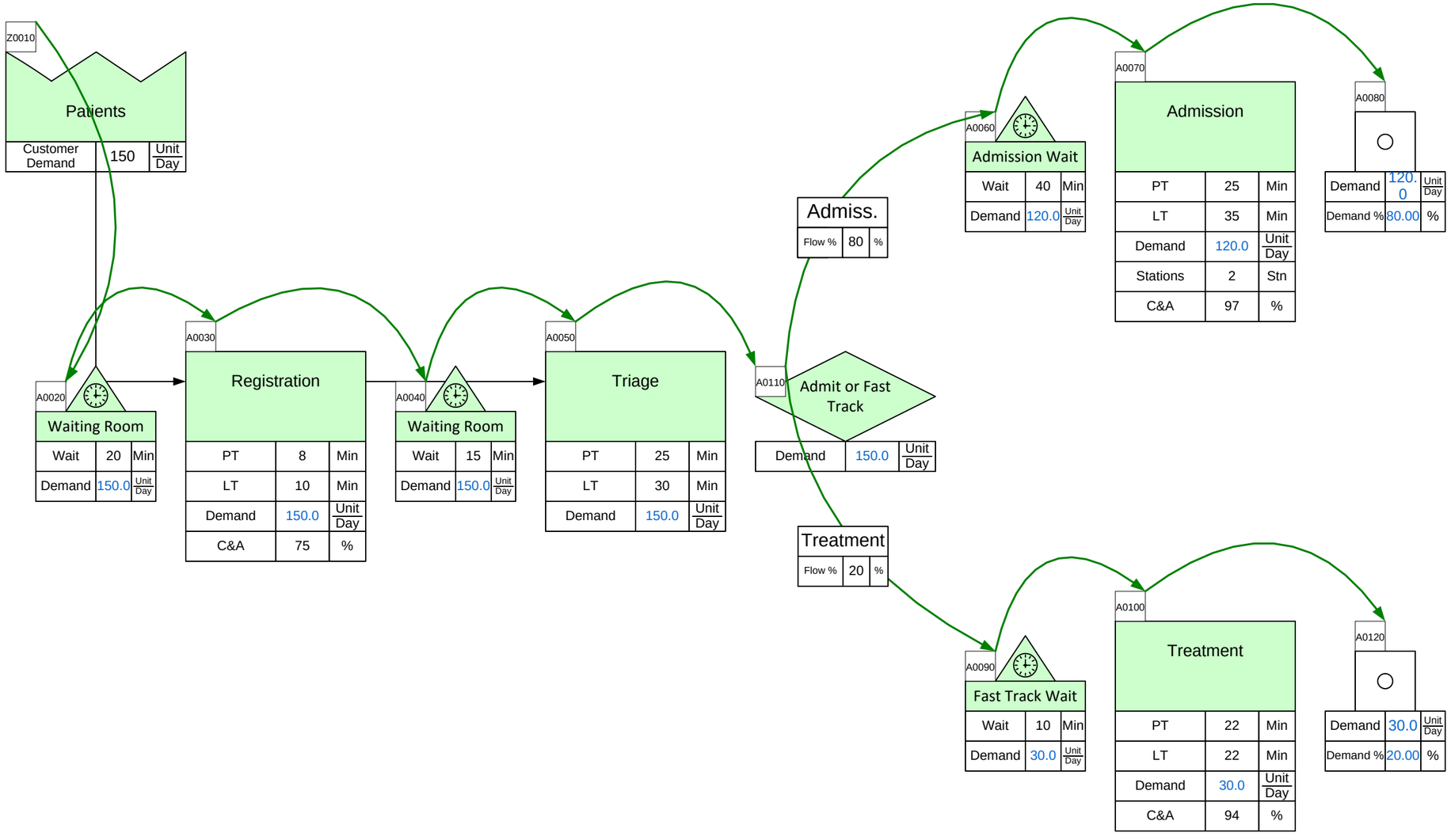
The Lead Time Chart shows which time was value-added and non value-added



Units	Day	Wk	Year
	24	5	52
	Hr	Day	Wk

Healthcare Problem: Complete and Accurate

We have a quality issue with the patient flow. Can we home in on the problem area?

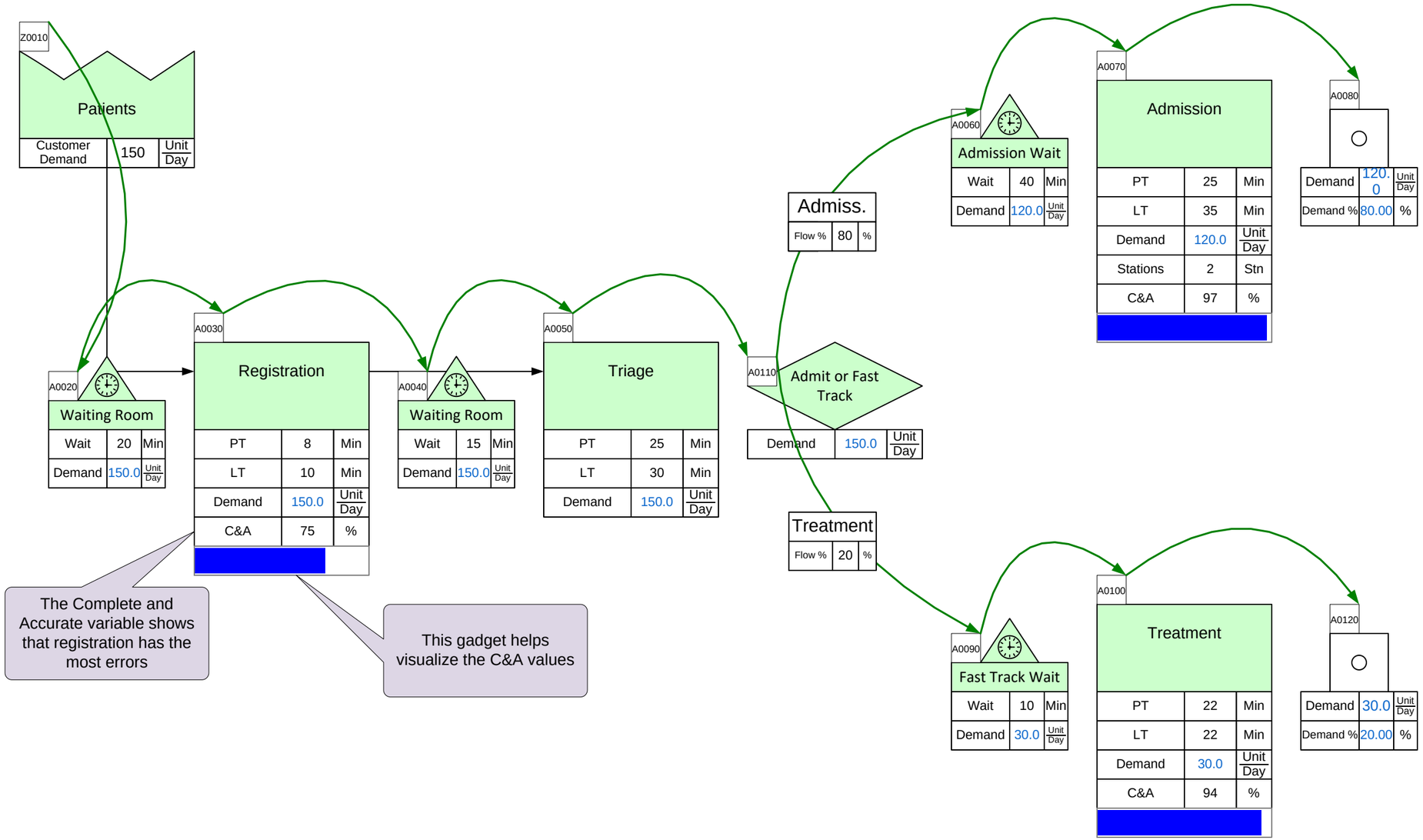


Units	Day	Wk	Year
	24	5	52
	Hr	Day	Wk

Healthcare Solution: Complete and Accurate

We have a quality issue with the patient flow. Can we home in on the problem area?

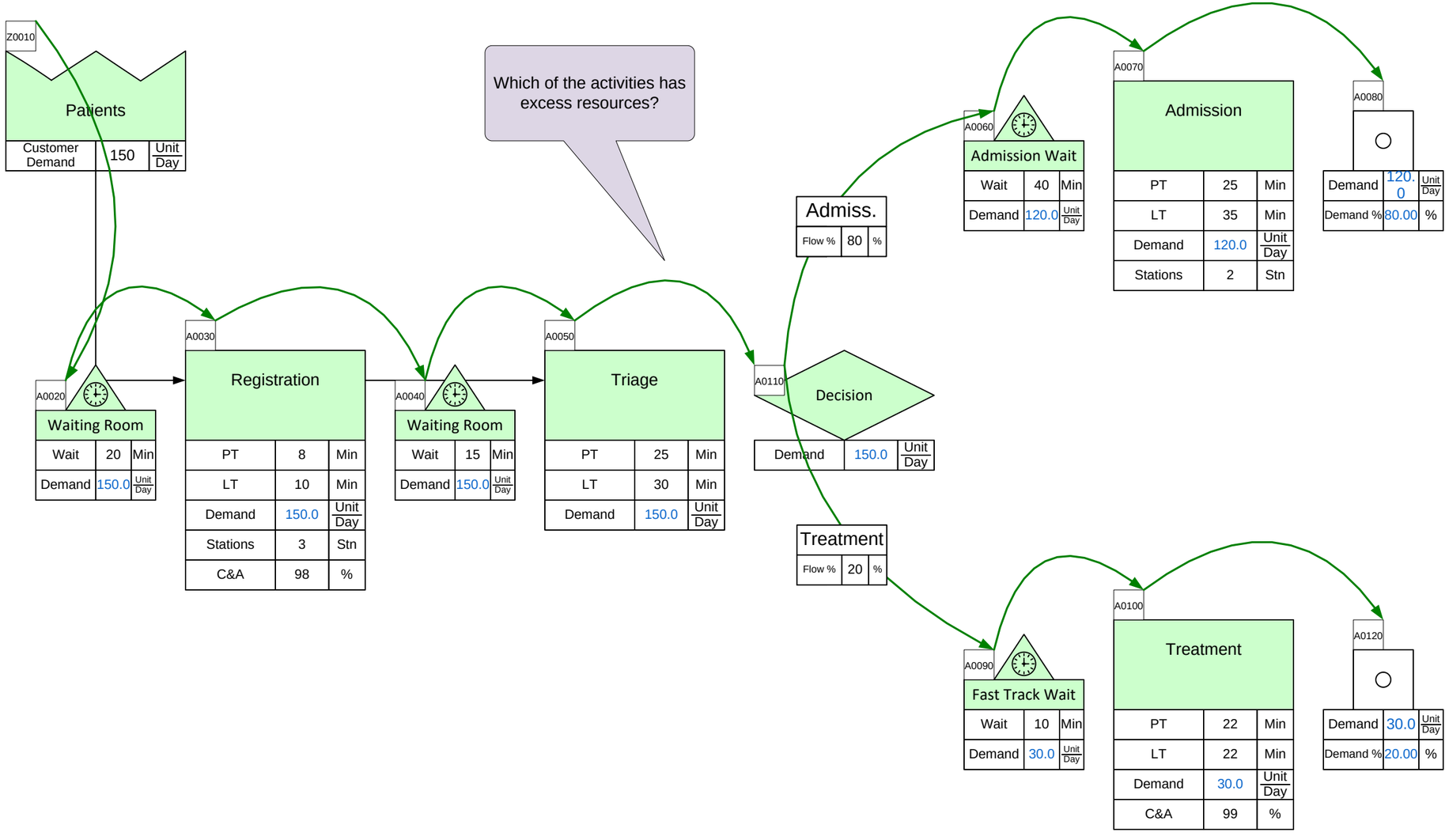
The Complete and Accurate variable shows that quality suffers after registration. If the accuracy is improved there it will help the rest of the patient flow.



Units	Day	Wk	Year
	24	5	52
	Hr	Day	Wk

Healthcare Problem: Excess Capacity

We have hold-ups in several places because we are always short-staffed. Do we have any excess resource we might re-deploy?



Units	Day	Wk	Year
	24	5	52
	Hr	Day	Wk

Healthcare Solution: Excess Capacity

We have hold-ups in several places because we are always short-staffed. Do we have any excess resource we might re-deploy?

Which of the activities has excess resources?

The Capacity Chart shows that the Registration process has excess capacity. If these resources were redeployed it would decrease the likelihood of hold-ups by increasing the capacity at other processes.

Z0010 **Patients**

Customer Demand	150	Unit / Day

A0020 **Waiting Room**

Wait	20	Min
Demand	150.0	Unit / Day

A0030 **Registration**

PT	8	Min
LT	10	Min
Demand	150.0	Unit / Day
Stations	3	Stn
C&A	98	%

A0040 **Waiting Room**

Wait	15	Min
Demand	150.0	Unit / Day

A0050 **Triage**

PT	25	Min
LT	30	Min
Demand	150.0	Unit / Day

A0110 **Decision**

Demand	150.0	Unit / Day

Admiss.

Flow %	80	%

Treatment

Flow %	20	%

A0060 **Admission Wait**

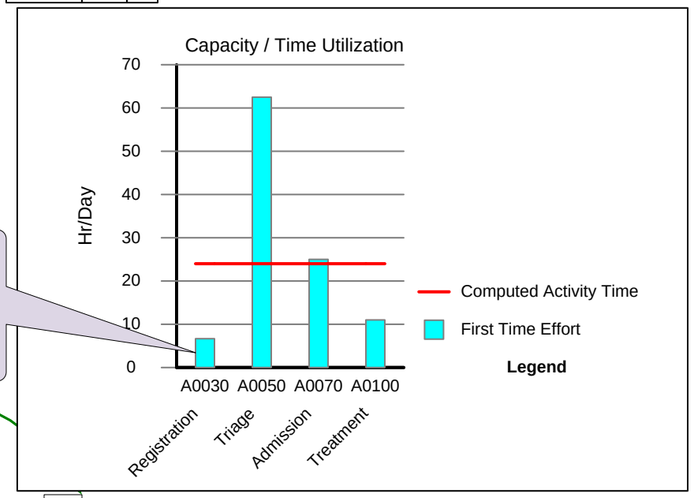
Wait	40	Min
Demand	120.0	Unit / Day

A0070 **Admission**

PT	25	Min
LT	35	Min
Demand	120.0	Unit / Day
Stations	2	Stn

A0080

Demand	120.0	Unit / Day
Demand %	80.00	%



The capacity chart shows that Registration has excess capacity

The 3 stations for Registration is creating excess capacity

A0090 **Fast Track Wait**

Wait	10	Min
Demand	30.0	Unit / Day

A0100 **Treatment**

PT	22	Min
LT	22	Min
Demand	30.0	Unit / Day
C&A	99	%

A0120

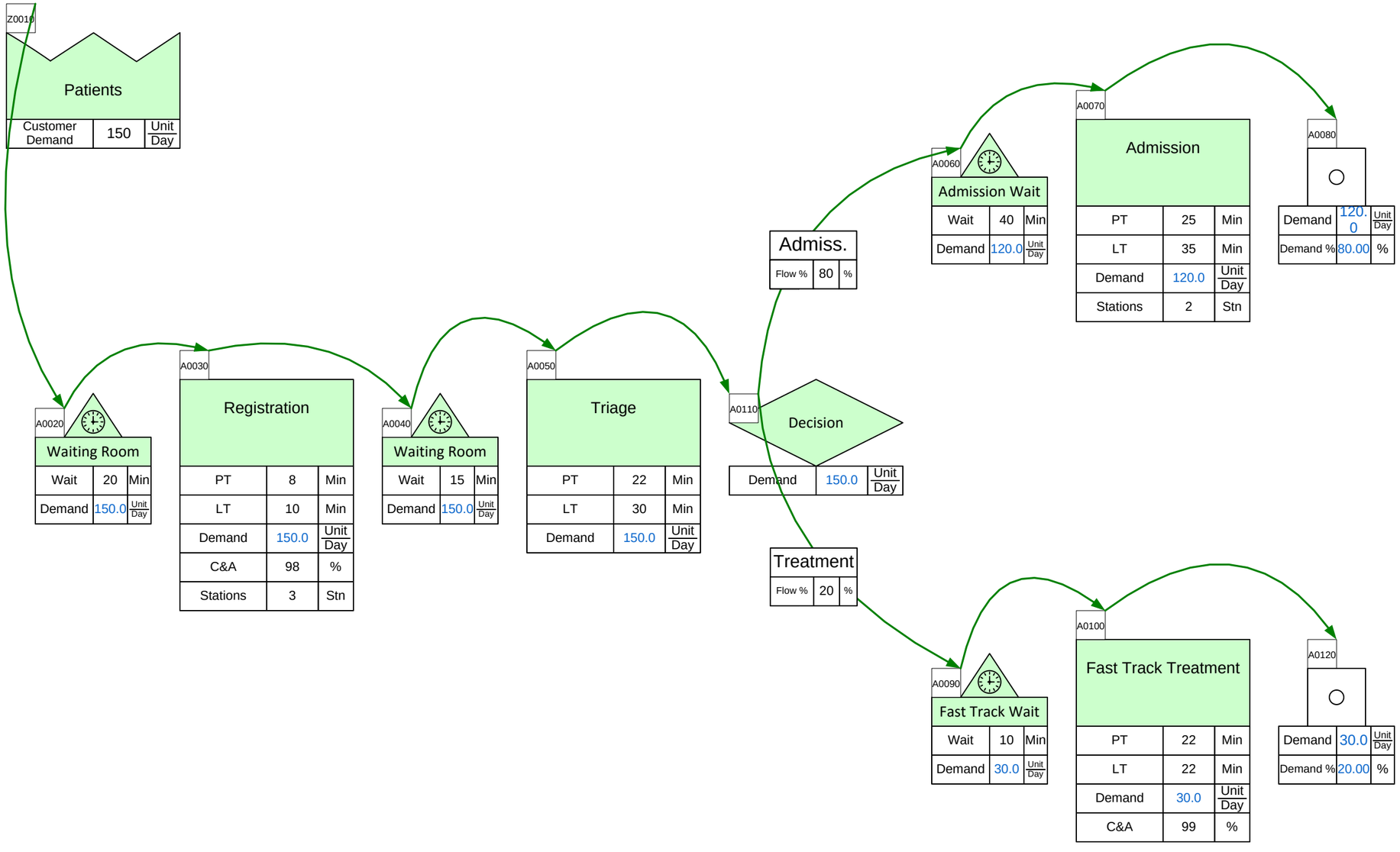
Demand	30.0	Unit / Day
Demand %	20.00	%

Capacity

Units	Day	Wk	Year
	24	5	52
	Hr	Day	Wk

Healthcare Problem: Resource Estimation

We are dealing with around 150 patients per day in ER 7x24. How many full-time nurses, administrators, and personal care assistants do we need per day?



Units	Day	Wk	Year
	24	5	52
	Hr	Day	Wk

Healthcare Solution: Resource Estimation

We are dealing with around 150 patients per day in ER 7x24. How many full-time nurses, administrators, and personal care assistants do we need per day?

The Resource Balance Chart shows that we need 30 hours of administrator time and 50 hours of PCA time per day. to be on duty at all times. The RN resource utilization is over 100% though so we should consider having an additional nurse on staff.

Z0010 **Patients**

Customer Demand	150	Unit/Day

A0130 **Administration**

Resource Quantity	3	RQ
Resource Time	8	Hr/Day
Resource Rate	15	$/Hr
Efficiency	85	%
Resource Utilization	147.1	%

Resource PT 12 Min/Unit

The required quantity shows how many of the resource is needed while the resource utilization shows how much available resource time is used

A0150 **PCA**

Resource PT 25 Min/Unit

Resource Quantity	6	RQ
Resource Time	8	Hr/Day
Resource Rate	15	$/Hr
Efficiency	85	%
Resource Utilization	122.5	%

A0070 **Admission**

PT	25	Min
LT	35	Min
Demand	120.0	Unit/Day
Stations		

A0080

Demand	120.0	Unit/Day
Demand %	80.00	%

A0060 **Admission Wait**

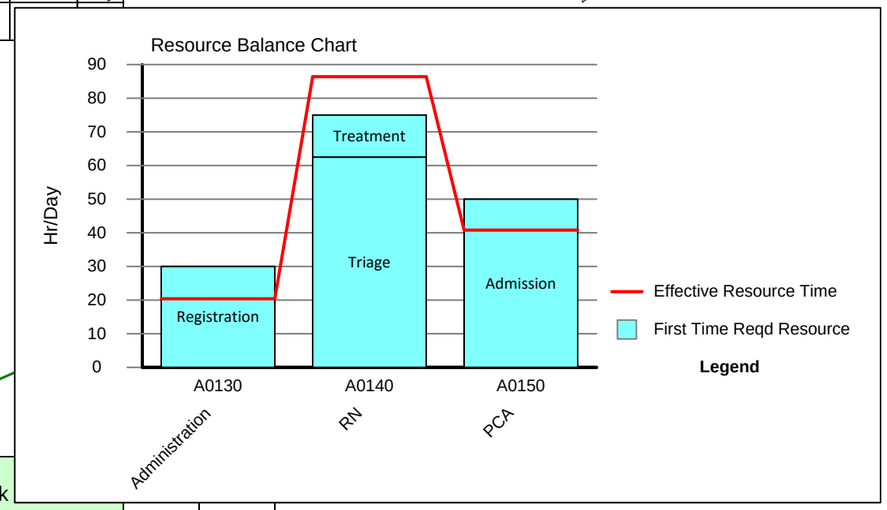
Wait	40	Min
Demand	120.0	Unit/Day

Admiss.

Flow %	80	%

The chart shows how long each resource is used in comparison to how many minutes each resource is effectively available

Resource Balance



A0020 **Waiting Room**

Wait	20	Min
Demand	150.0	Unit/Day

A0030 **Registration**

PT	8	Min
LT	10	Min
Demand	150.0	Unit/Day
Stations	3	Stn
C&A	98	%

A0040 **Waiting Room**

Wait	15	Min
Demand	150.0	Unit/Day

A0050 **Triage**

PT	22	Min
LT	30	Min
Demand	150.0	Unit/Day

A0110 **Decision**

Demand	150.0	Unit/Day

Treatment

Flow %	20	%

Resource PT 25 Min/Unit

Resource PT 25 Min/Unit

The resources assist with different processes and spend a certain amount of time with each process, shown by the arrows

A0140 **RN**

Resource Quantity	12	RQ
Resource Time	8	Hr/Day
Resource Rate	20	$/Hr
Efficiency	90	%
Resource Utilization	86.8	%

A0090 **Fast Track Wait**

Wait	10	Min
Demand	30.0	Unit/Day

A0100 **Fast Track**

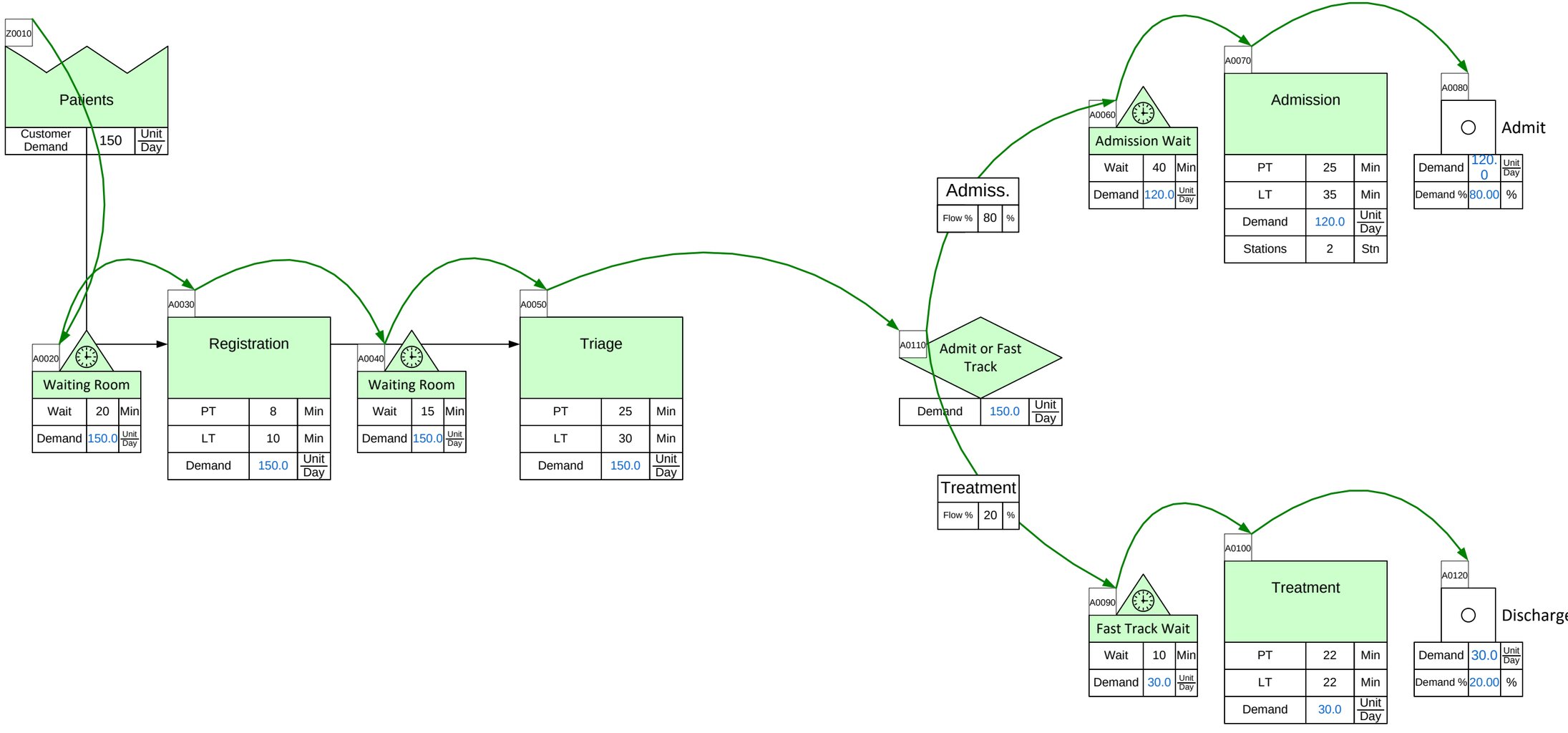
PT	22	Min
LT	22	Min
Demand	30.0	Unit/Day
C&A	99	%

Demand	30.0	Unit/Day
Demand %	20.00	%

Units	Day	Wk	Year
	24	5	52
	Hr	Day	Wk

Healthcare Problem: Handling Variation

There is a lot of variation in the number of patients per day and also in the Triage turnaround time. How can you handle this on a VSM?



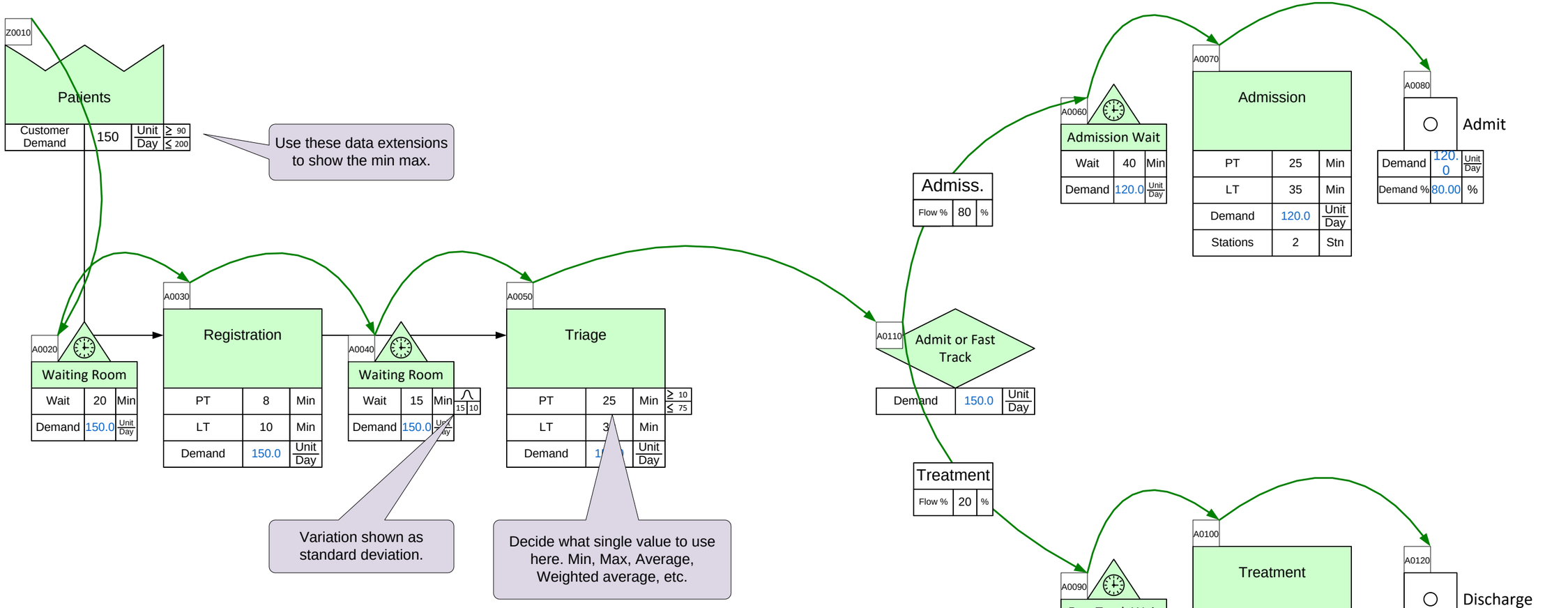
Units	Day	Wk	Year
	24	5	52
	Hr	Day	Wk

Healthcare Solution: Handling Variation

There is a lot of variation in the number of patients per day and also in the Triage turnaround time. How can you handle this on a VSM?

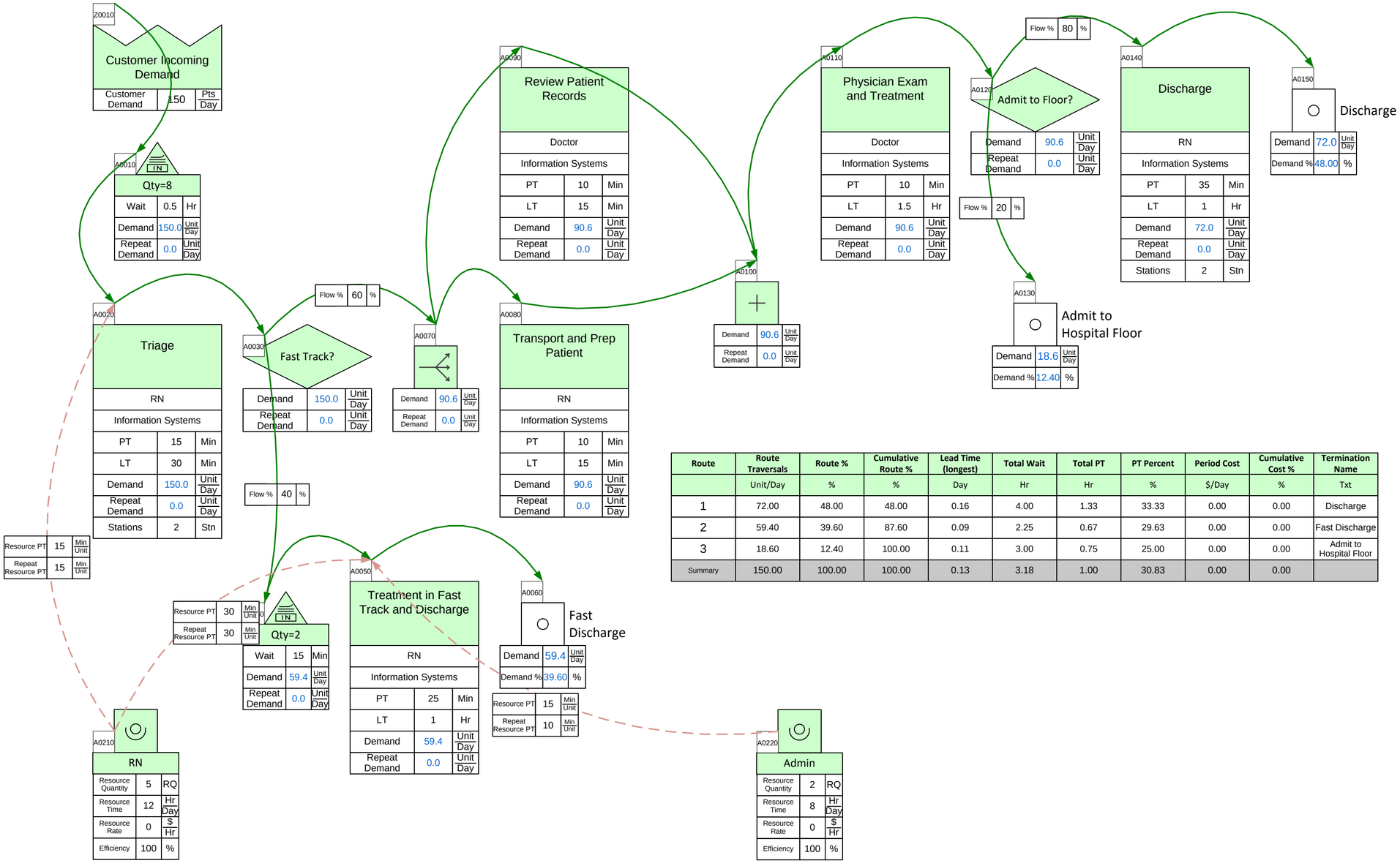
Variation is the root cause of most problems in value streams. Here, variation could be causing long wait times, staff stress, unnecessary costs, medical errors, etc. The first challenge is to make sure everyone concerned is aware of the variation the value stream has to deal with. This can be done as shown in the example.

Value stream mapping is normally a static analysis based on a single data value for each input. You may use min, max, average, weighted average, or some other value which best represents the data for the analysis you are doing.



Units	Day	Wk	Year
	24	5	52
	Hr	Day	Wk

Emergency Department



Route	Route Traversals	Route %	Cumulative Route %	Lead Time (longest)	Total Wait	Total PT	PT Percent	Period Cost	Cumulative Cost %	Termination Name
	Unit/Day	%	%	Day	Hr	Hr	%	$/Day	%	Txt
1	72.00	48.00	48.00	0.16	4.00	1.33	33.33	0.00	0.00	Discharge
2	59.40	39.60	87.60	0.09	2.25	0.67	29.63	0.00	0.00	Fast Discharge
3	18.60	12.40	100.00	0.11	3.00	0.75	25.00	0.00	0.00	Admit to Hospital Floor
Summary	150.00	100.00	100.00	0.13	3.18	1.00	30.83	0.00	0.00	

Units	Day	Wk	Year	Pts
	24	5	52	1
	Hr	Day	Wk	Unit