

Performance Evaluation

Evaluation of performance indicators for medical
diagnostic laboratory in Alborz hospital, 1391

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Why Laboratory Evaluation should be done?

Efficiency in:

Paraclinics

Laboratory
Radiology

....

Clinics

Inpatient wards

Administrative affairs

Financial affairs

House keeping

...

Efficient
Medical
Centre

Efficient
Organization, Mi
nistry or
Country

The study aims to answer these questions:

1. What's the ratio of **income** to **direct** Cost?
2. What's the ratio of **income** to **total** Cost?
3. What's the ratio of **income** to **Personnel** Cost?
4. What's the ratio of the **number of tests** performed by each technical staff **in a shift** to organization's norms(standards)?
5. What's the average **cost of medical consumable goods** per prescription?
6. What's the proportion of **personnel** cost to the **direct** cost?
7. What's the proportion of medical consumable materials costs from the direct Cost?
8. What is the average number of tests in each prescription (Separation of outpatient, inpatient, and total)
9. What's the proportion of tests done in each specialized laboratory groups (such as biochemistry, hematology, etc.), from the total number of laboratory tests
10. What's the proportion of each test done (such as FBS, CBC, etc.) from total number of tests?

Direct costs include:

Personnel

Consumable materials

Energy (Electricity, Fuel, Water)

Repairs and Maintenance

Total costs: Direct + Overhead costs

Without: Depreciation costs

Laboratory levels :

L1) Automatic

Performing **15** prescriptions or **72** tests by each technical staff in a shift

L2) Semi-automatic

Performing **12.5** prescriptions or **60** tests by each technical staff in a shift

L3) Manual

Performing **10** prescriptions or **48** tests by each technical staff in a shift

**Preparing the software for data
gathering and measuring the indicators**

Table1) Characteristics

State management	Tehran
Medical Center	Hedayat Hospital
Medical Center's total approved budget (Thousand Rials)	
The number of employees working in the medical center	328
The average number of inpatient beds	82
Total area of medical center (m2)	8000
Total area of Laboratory (m2)	150
Grade (level) of Laboratory	1
Number of shifts	3

Table2) list of tests

biochemistry	Test name	FBS	BS2hpp	GTT	Urea	Uric acid	Cholestrol	HDL	LDL	VLDLc	TG	Creatin/ Creatinin	Iron (serum)	Calcium	Phosphoro
	Test code	82947	82950	82951	84520	84550	82465	83718	83721	83719	84478	82565	83540	82330	84100
	Test code in center														
	Price (Rial)														
	Number of tests	Shift 1													
Shift 2															
Shift 3															
Sum		.	.	.	.	.	.	.	.	.	.	.	.	.	.
منظور تعرفه اعمال شده در نرم افزار آزمایشگاه می باشد.															
hematology	Test name	CBC	Hct	Hb	HbF	Platlet count (PLT)	Blood Group (RH)	BT	CT	ESR	PT	PTT	LE-لول انبارد	Cross Match	FFP
	Test code	۸۵۰۲۲	۸۵۰۱۲	۸۵۰۱۸	۸۲۰۲۰۱	۸۵۵۹۰	۸۶۹۰۰	۸۵۰۰۲	۸۵۲۴۵	۸۵۶۵۱	۸۵۶۱۰	۸۵۷۲۰	۸۰۲۲۵	۸۶۹۰۴	۸۶۹۲۷
	Test code in center														
	Price (Rial)														
	Number of tests	Shift 1													
Shift 2															
Shift 3															
Sum		.	.	.	.	.	.	.	.	.	.	.	.	.	.

Table3) Performance and Revenue

Kind of Services	Number of Prescriptions				Number of tests				Total revenue (Thousand Riah)						
	SSO	Other Insurances	Free	Sum	SSO	Other Insurances	Free	Sum	SSO	Other Insurances	Free	Sum			
Laboratory	Total Outpatient	12,804	846	6,166	19,816	88,278	5,210	31,889	125,377	1,195,886	63,877	335,602	1,595,365		
	Total inpatient	15,198	2,396	137	17,731	47,567	7,380	483	55,430	444,495	64,489	5,873	514,857		
	Outpatient	Shift 1	12,059	756	5,968	18,783	86,916	5,091	31,604	123,611				0	
		Shift 2	461	51	152	664	841	64	210	1,115				0	
		Shift 3	266	39	46	351	521	55	75	651				0	
		Sum	12,786	846	6,166	19,798	88,278	5,210	31,889	125,377	0	0	0	0	
	inpatient	Shift 1				0				0				0	
		Shift 2				0				0				0	
		Shift 3				0				0				0	
		Sum	0	0	0	0	0	0	0	0	0	0	0	0	
	Sum	28,002	3,242	6,303	37,547	135,845	12,590	32,372	180,807	1,640,381	128,366	341,475	2,110,222		
	Pathology	Total Outpatient	721	18	14	753	729	19	15	763	23,964	1,015	907	25,886	
		Total inpatient	973	95	11	1,079	1,189	104	14	1,307	152,165	11,644	1,965	165,774	
		Outpatient	Shift 1	721	18	14	753	729	19	15	763				0
			Shift 2				0				0				0
Shift 3						0				0				0	
Sum			721	18	14	753	729	19	15	763	0	0	0	0	
inpatient		Shift 1	973	95	11	1,079	1,189	104	14	1,307				0	
		Shift 2				0				0				0	

Table4) Personnel costs

Row	Name	Degree	Organizational post	Employment Status	Sent from / to / overtime earners	period of activity During the six-month	Basic Fee	Total required work hours	total overtime	Total payments
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

Table5) Current costs

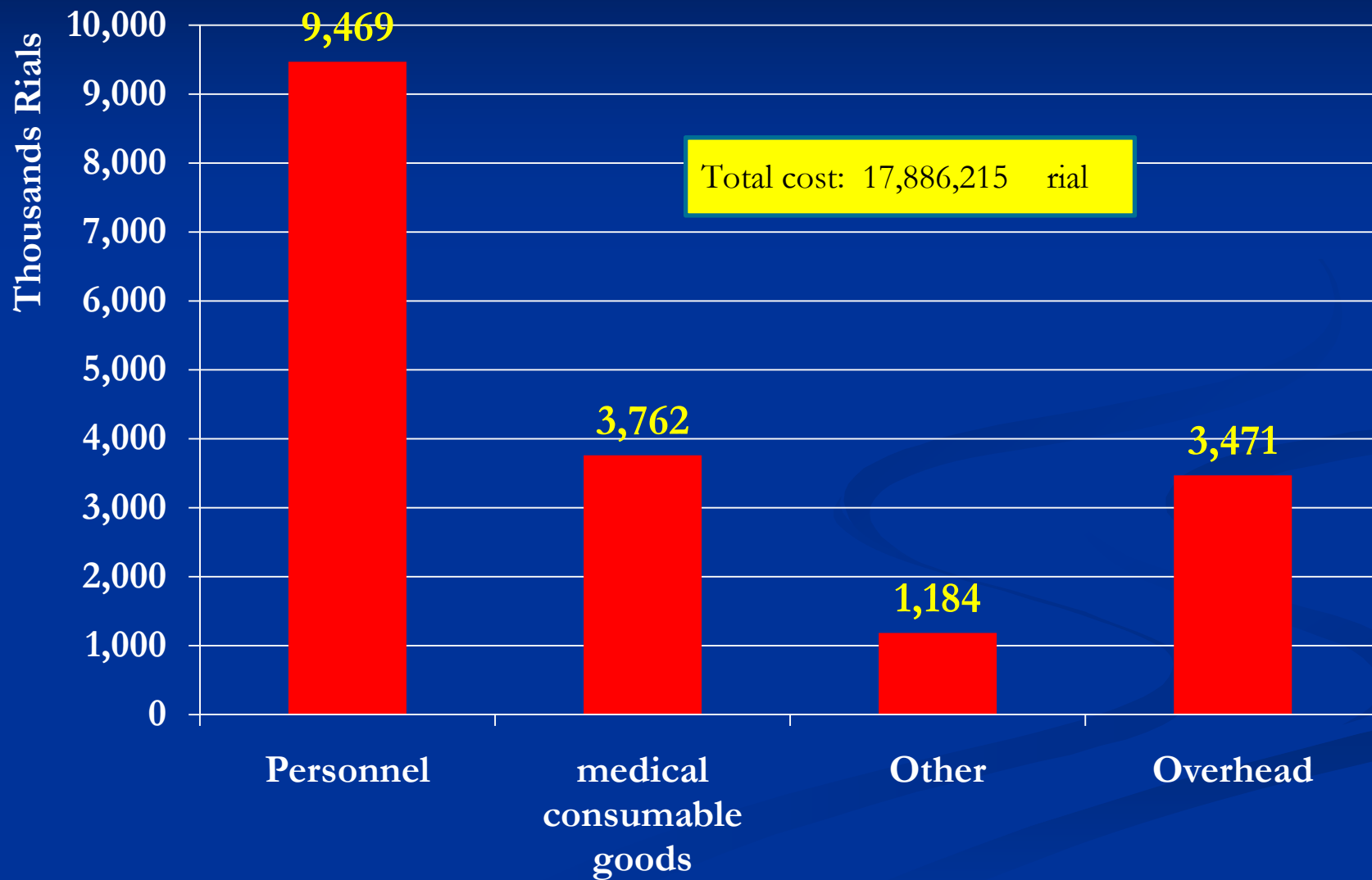
2	Current Costs (Rial)		
3		total personnel cost	1,375,291,197
4		The total cost of drugs and medical consumable appliances	754,886,343
5		total cost of non-medical consumables goods	19,829,076
6		total electricity bill of medical center	116,615,368
7		Laboratory share of the cost of electricity	2,186,538
8		total water bill of medical center	54,603,901
9		Laboratory share of the cost of water	1,023,823
10		total fuel bill of medical center	116,258,000
11		Laboratory share of the cost of fuel	2,179,838
12		total cost of the telephone	654,000
13		Total cost of Repairs and Maintenance	22,379,850
14		total current costs	2,178,430,665

Table6) Indicators

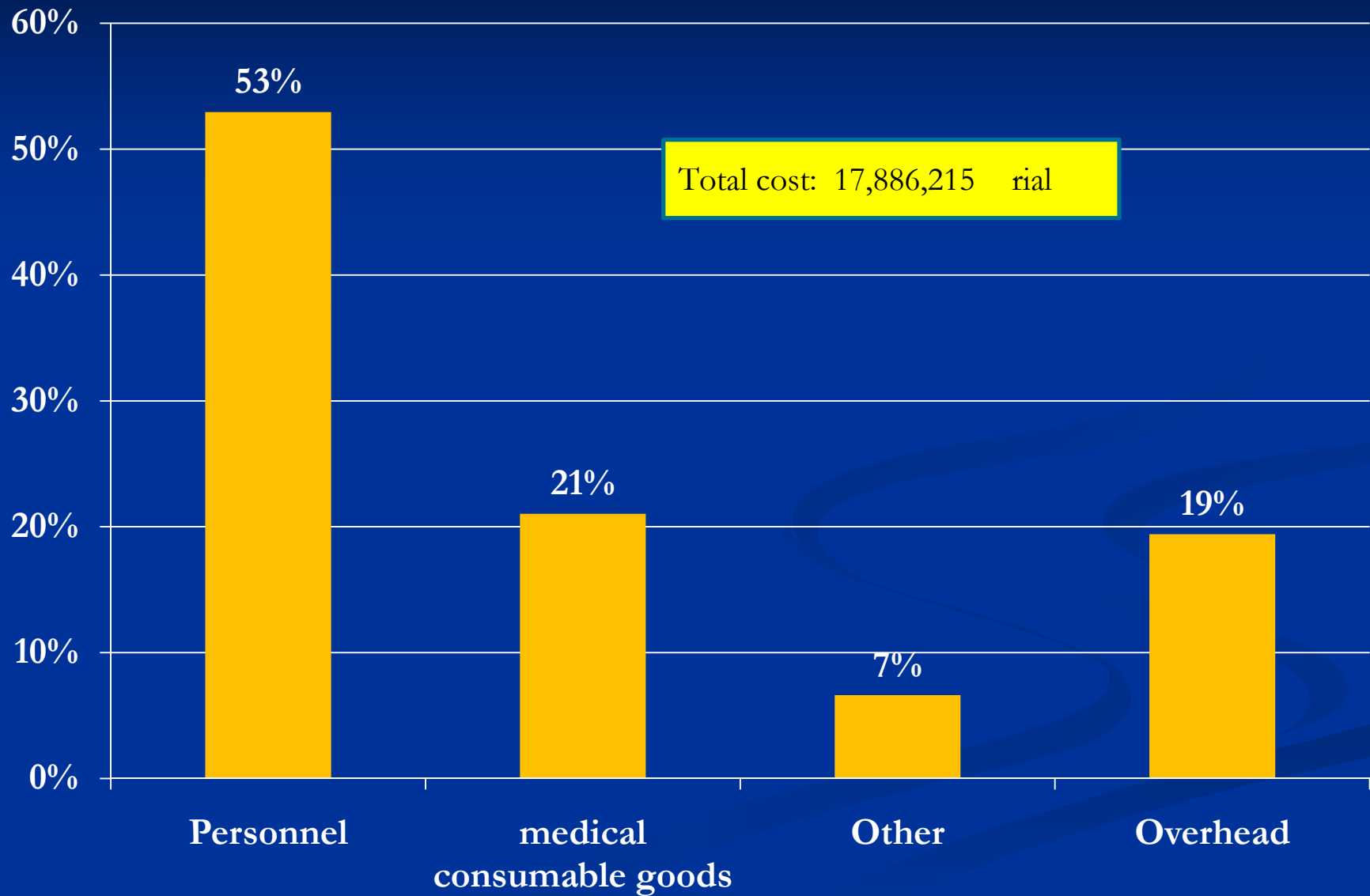
1	State Management: Tehran		Lab Level: 1
2	Performance Indicators In: Hedayat Hospital		
3	Indicator		Value
4	Current Costs (Thousand Rials)	Personnel	1,375,291
5		cost of drugs and medical consumable goods	754,886
6		Other	48,253
7		Sum	2,178,431
8	Total Revenue (Thousand Rials)	Laboratory	2,110,222
9		Pathology	191,660
10		Sum	2,301,882
11	Total required and overtime work hours		22,155
12	Total required and overtime work hours of Technical Staff		16,816
13	Ratio of income to current Cost		106%
14	Ratio of income to Personnel Cost		167%
15	Ratio of income to technical staff's Cost		0.2%
16	Number of prescriptions per hour of Technical Staff's required and overtime work		2.3
17	Number of tests per hour of Technical Staff's required and overtime work		10.9
18	Number of prescriptions per Shift (6.5 hours) of each Technical Staff's work		15.2
19	Number of tests per Shift (6.5 hours) of each Technical Staff's work		70.7
20	Number of approval prescriptions per Shift of each Technical Staff's work		-
21	Number of approval tests per Shift of each Technical Staff's work		-
22	Number of approval receivable prescriptions per 6.5-hour shift of reception and answering staffs work		73.3
23	Number of received prescriptions per 6.5-hour shift of reception and answering staffs work		79.0
24	Ratio of The number of prescriptions performed by each technical staff in a shift to organization's approved norms		1.01

Selected Results

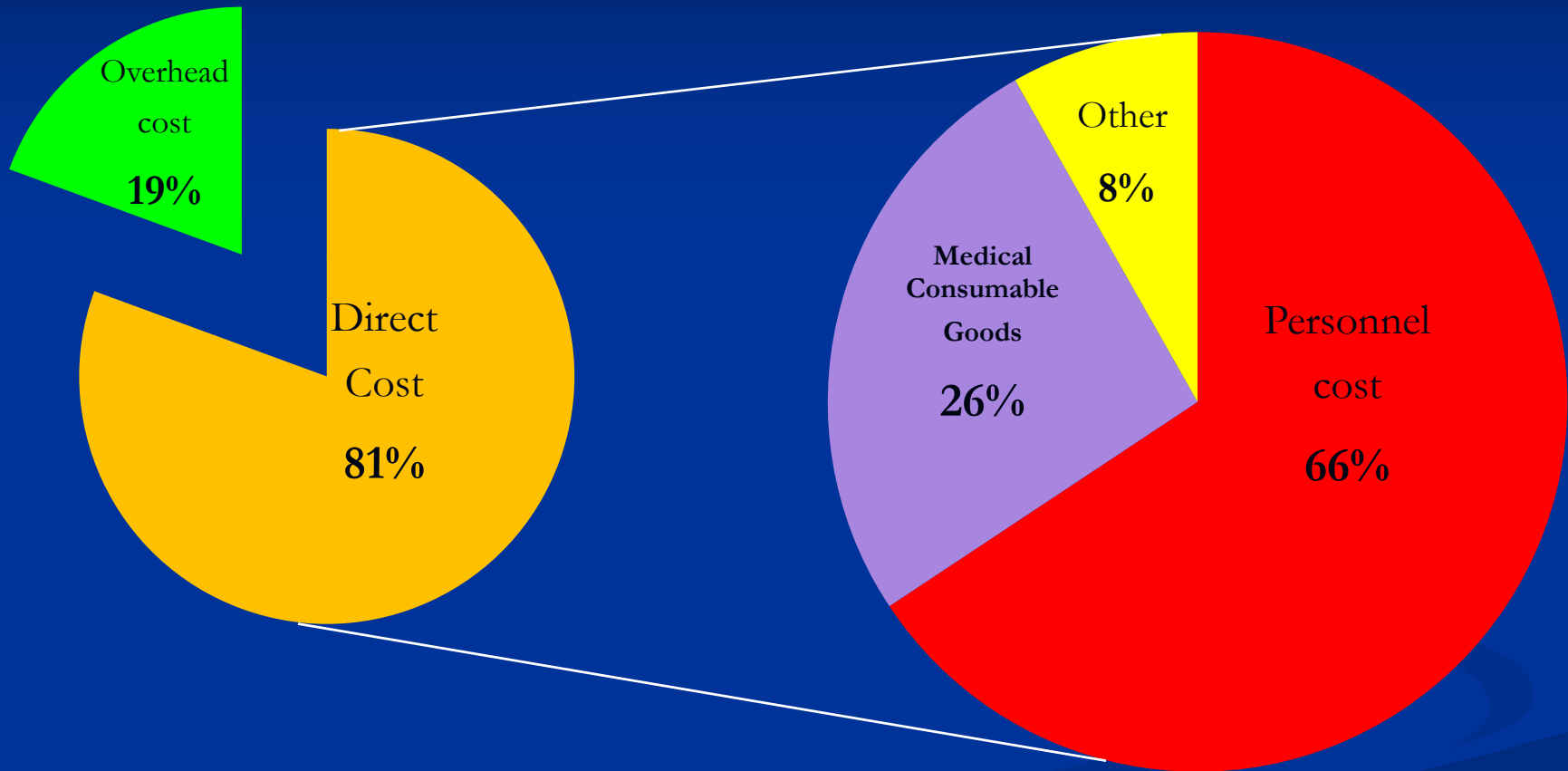
Expenditures of Alborz Laboratory



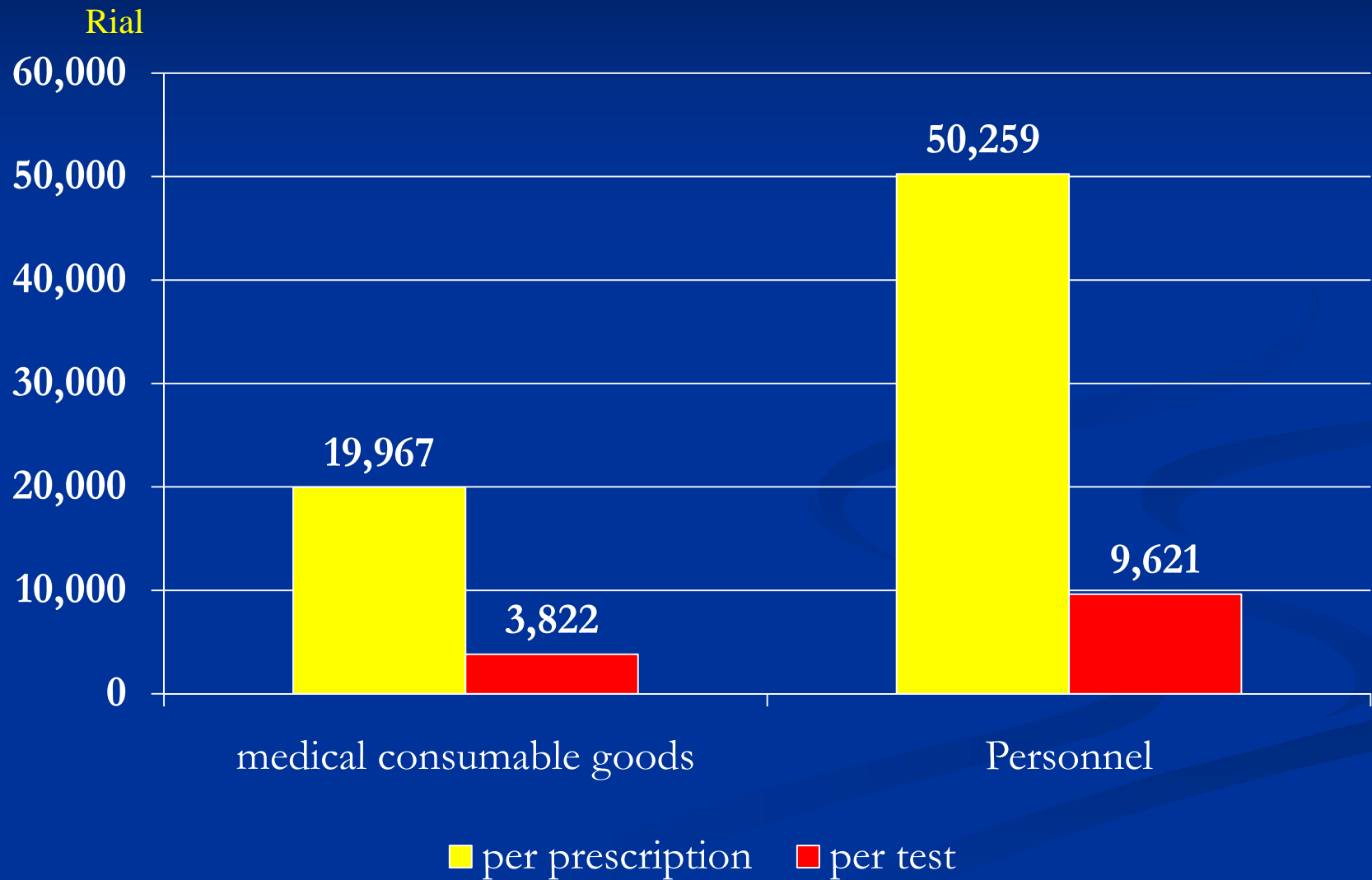
Expenditures of Alborz Laboratory



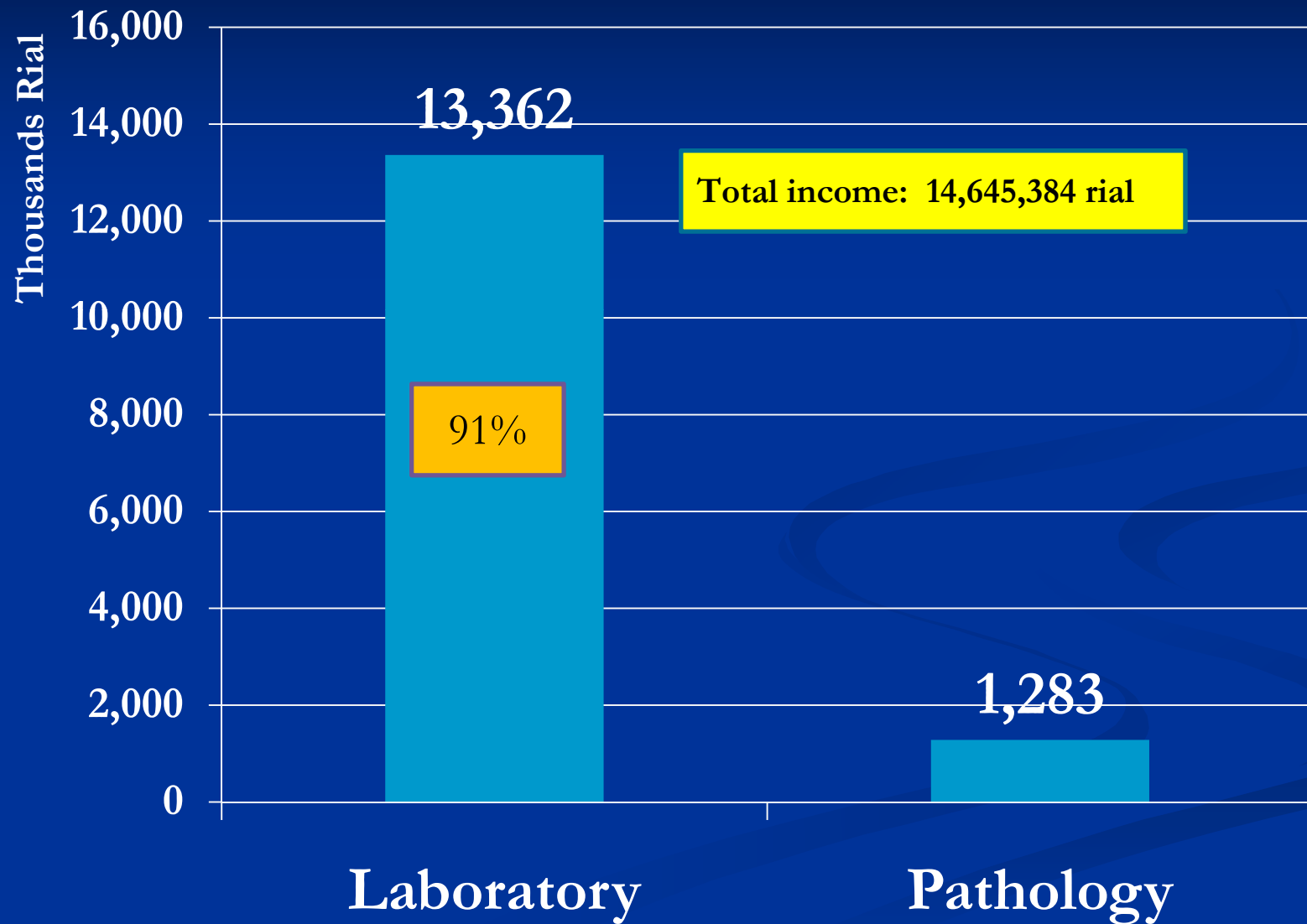
Expenditures Profile of Alborz's hospital Laboratory - 2013



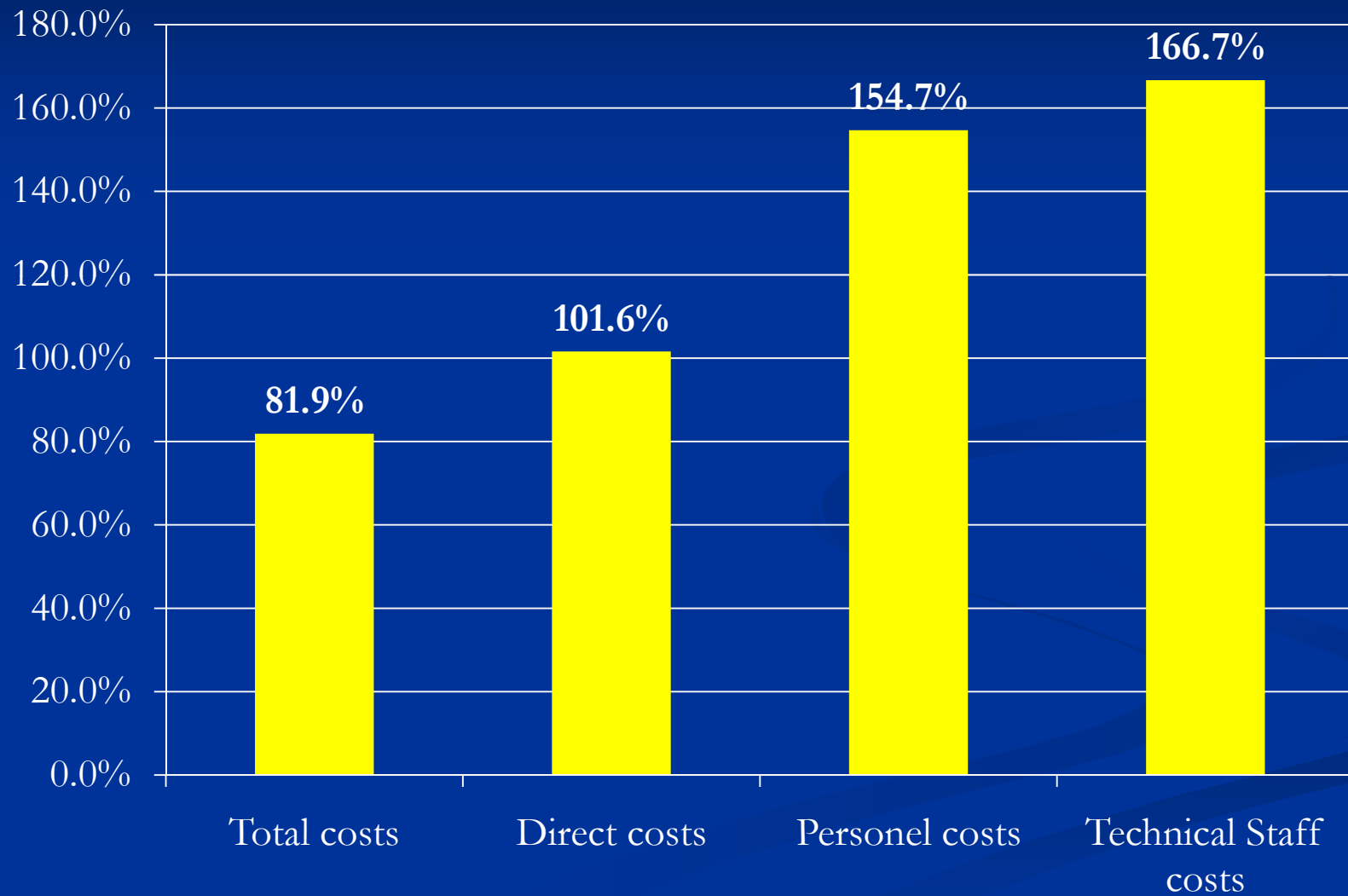
Average cost of medical consumable goods and personnel per prescription/test



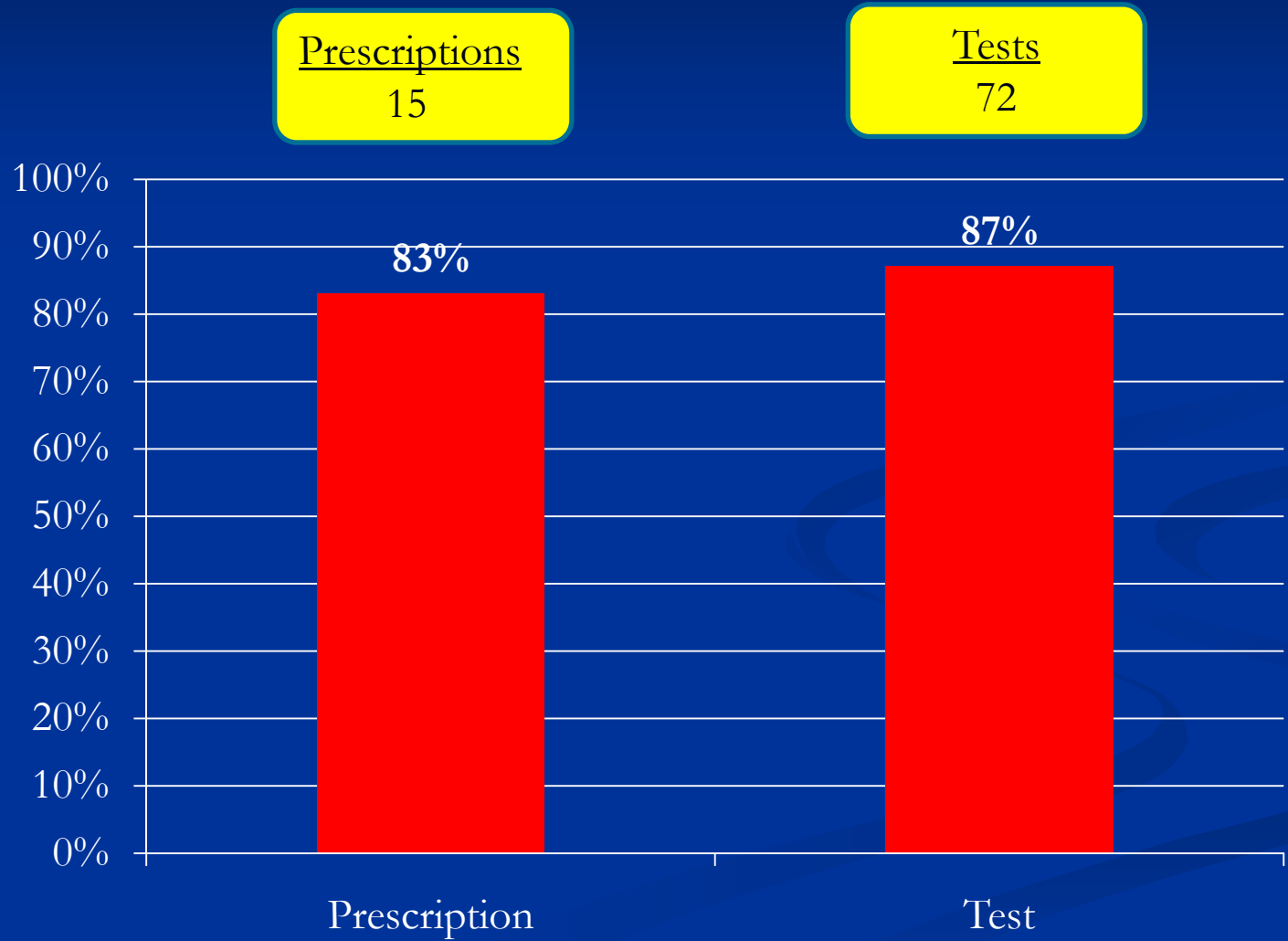
incomes of Alborz Laboratory



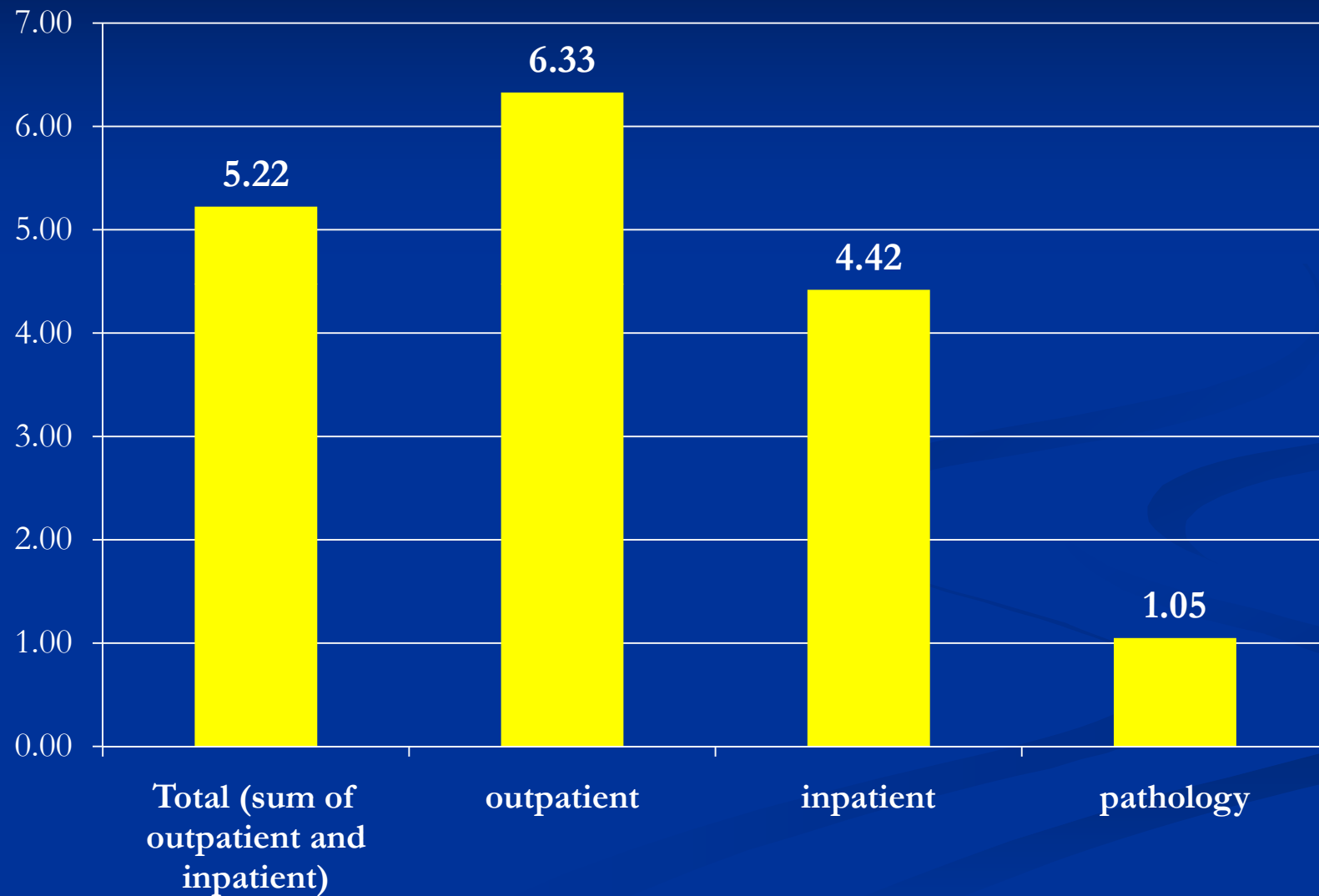
Ratio of income to Costs



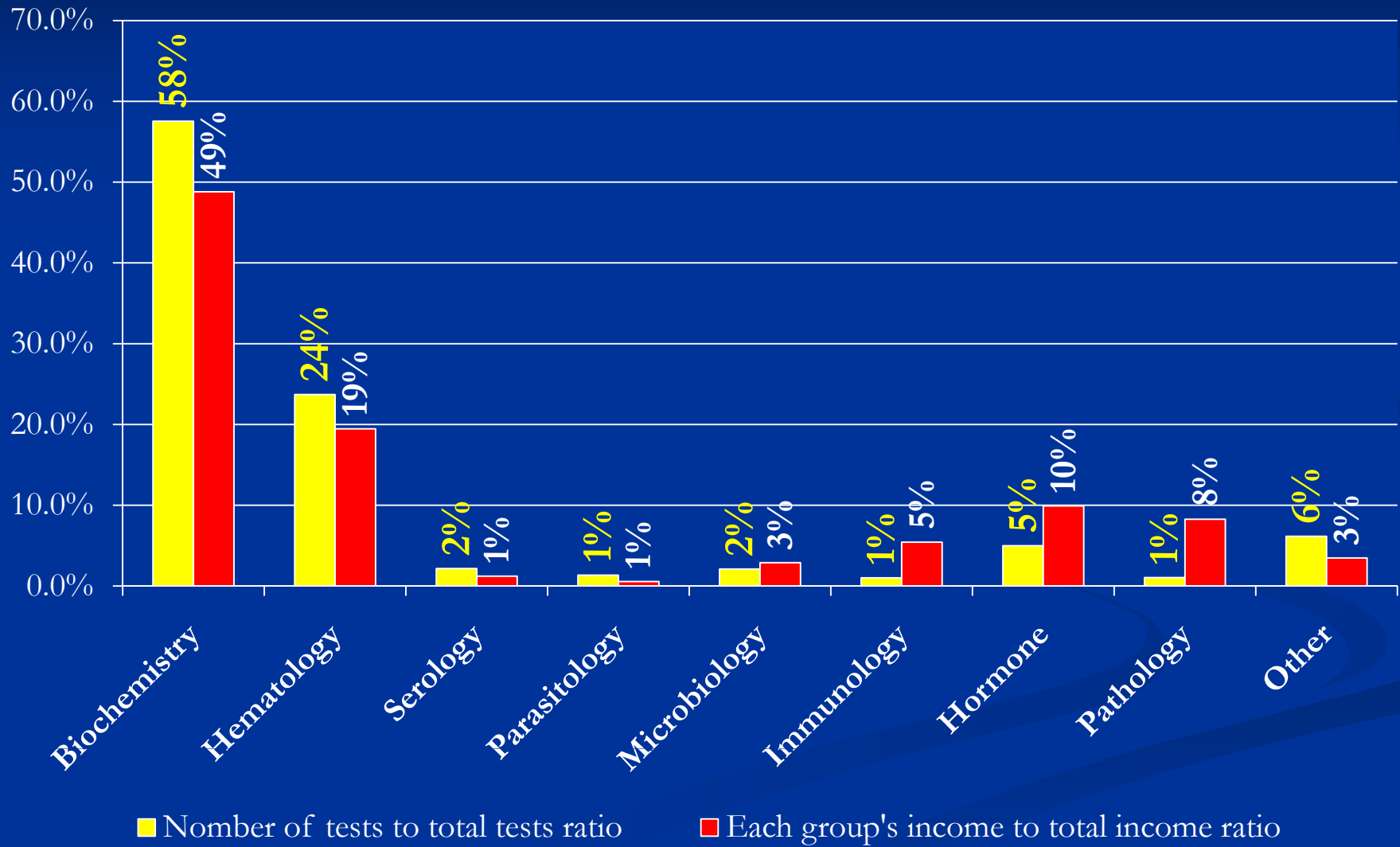
Proportion of number of prescriptions/tests done per shift (6.5 hours) by each technical staff to number of prescriptions/tests should be done



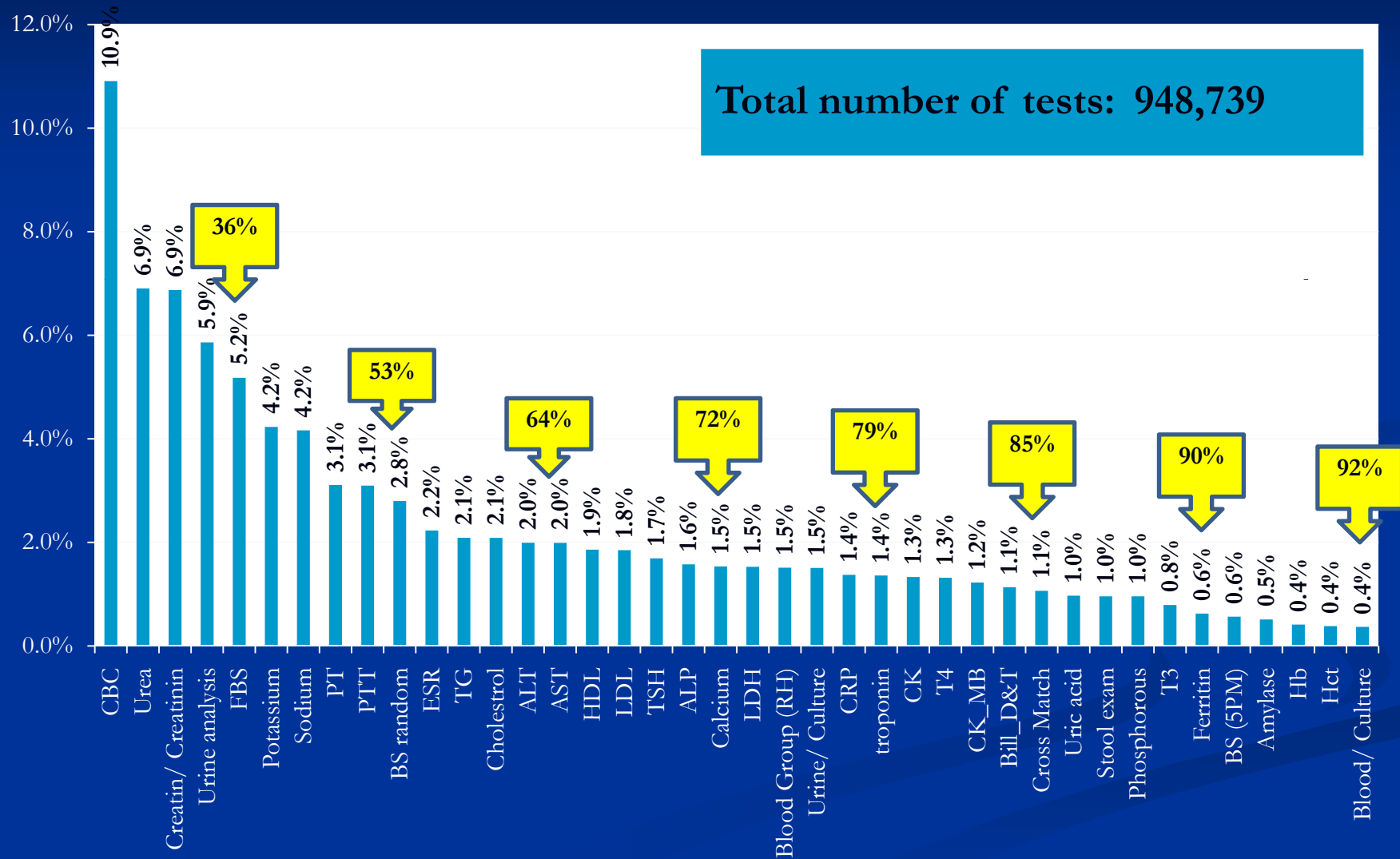
Average number of tests in each prescription



Ratio of tests/income done in each specialized laboratory groups to the total tests/income



A list of 40 laboratory tests that have encompassed 92% of total tests done



Results and Discussion:

1. More than **91%** of total direct costs have devoted to Personnel (65.7%), and medical consumable goods (26.1%)
2. In average, revenues of laboratory have covered about **81.9%** of total costs and **101.6%** of direct costs.
3. On average, each technical staff has done **12.5** prescriptions and **62.7** tests per shift. Norm of This indicators are **15** prescriptions and **72** tests per shift. Employment of reception staffs seems to be necessary.
4. On average each reception staff have received **250** prescriptions per shift. Norm of This indicator is **70** prescriptions per shift.
5. 40 laboratory tests have encompassed 92% of total tests done in Alborz laboratory

Discussion:

1. Inability to covering the current costs by incomes may occur because of low laboratory service prices (tariffs), low technical efficiency and....
2. The study showed inefficient utilization of resources (capital and labor).

Suggestions:

1. Strategies to improve performance, reduce costs, or a combination of them should be implemented.
2. Staff performance standards should be modified.
3. Periodic monitoring of laboratory performance should be done by designed software.
4. Defining similar indicators to evaluating performance of other clinical and paraclinical centers.
5. Modifying and improving hospital information system.

An aerial photograph of a wide waterfall cascading into a deep gorge. The surrounding landscape is a dense, vibrant green forest. In the distance, rolling hills are visible under a bright blue sky filled with scattered white clouds. The text 'THANK YOU' is superimposed in the center of the image in a yellow, serif font with a thin black outline.

THANK YOU