

# WSDOT PAVEMENT ROUGHNESS (IRI) REPORT: 2010

*Network IRI information is taken from the 2010 WSDOT Condition survey.  
Report produced 1/10/2012*

## BACKGROUND

International Roughness Index (IRI) is a standardized pavement measurement indicating the overall smoothness of a roadway. It is expressed in terms of inches per mile (the lower the number, the smoother the pavement). Properly managing roadway smoothness is an essential facet of pavement management because it not only affects ride quality, but also vehicle costs of fuel and maintenance.

WSDOT uses IRI in two important ways to ensure smooth roads. First, IRI is measured for all Asphalt Concrete Pavement (ACP) contracts after work is completed. This helps to ensure quality construction for an end result of smooth roadway. Second, all WSDOT routes have IRI measured annually, which is used to report overall network smoothness and also locate rough areas of pavement needing rehabilitation.

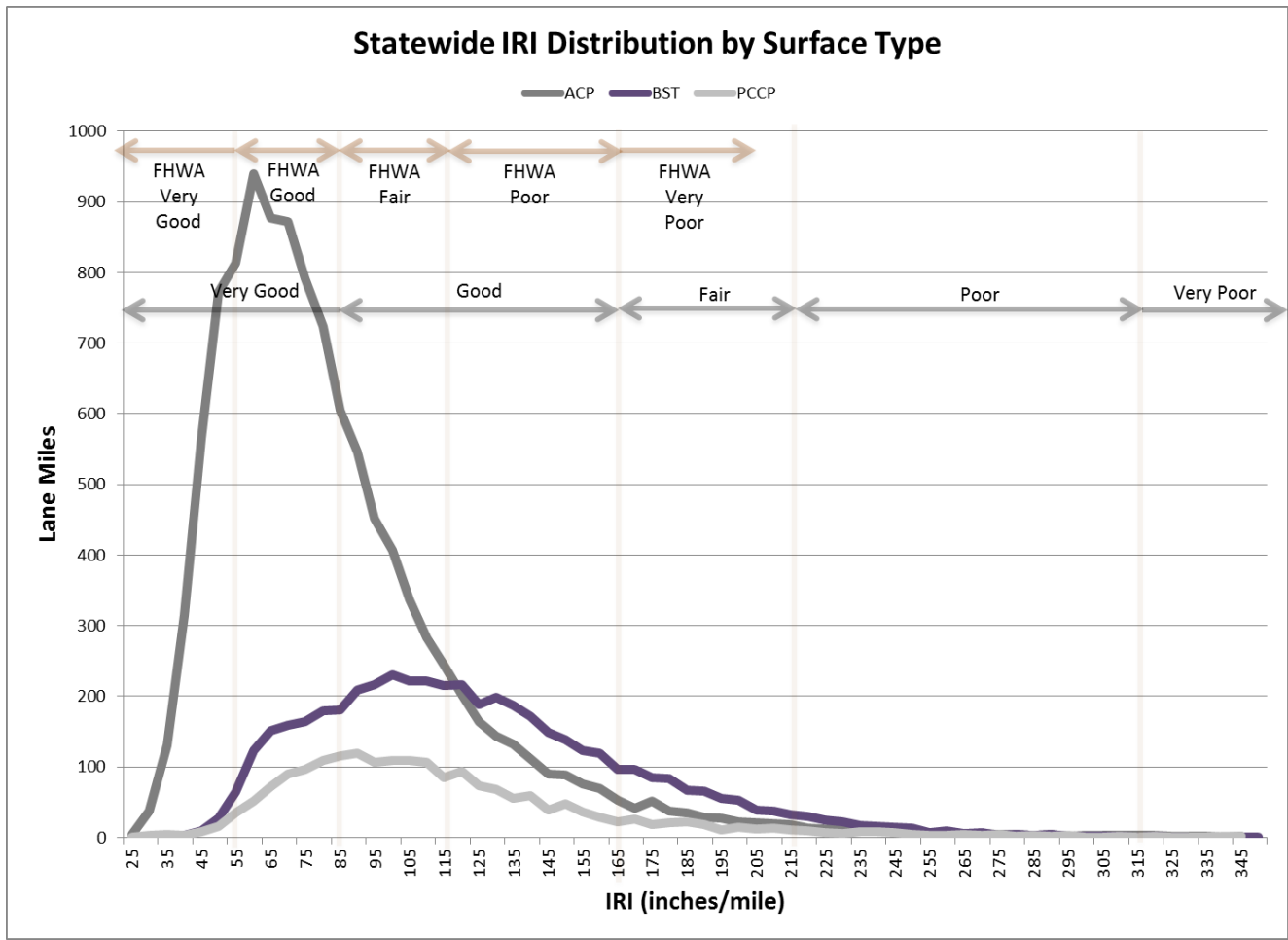
## IRI: NETWORK PERFORMANCE

The three major types of surfacing in Washington – Asphalt Concrete Pavement (ACP), Bituminous Surface Treatment (BST) and Portland Cement Concrete Pavement (PCCP) – each have a different distribution of IRI because of their different material characteristics. Therefore, when summarizing network information, it is useful to consider them separately.

IRI measurements are made using WSDOT's Pathway Class I profilometer, following AASHTO PP50 protocols. IRI measurements are made in each wheel path, then averaged and summarized every 1/10<sup>th</sup> mile. Technically speaking, this average of the left IRI and right IRI is termed the Mean Roughness Index (MRI), but is often generically referred to as IRI.

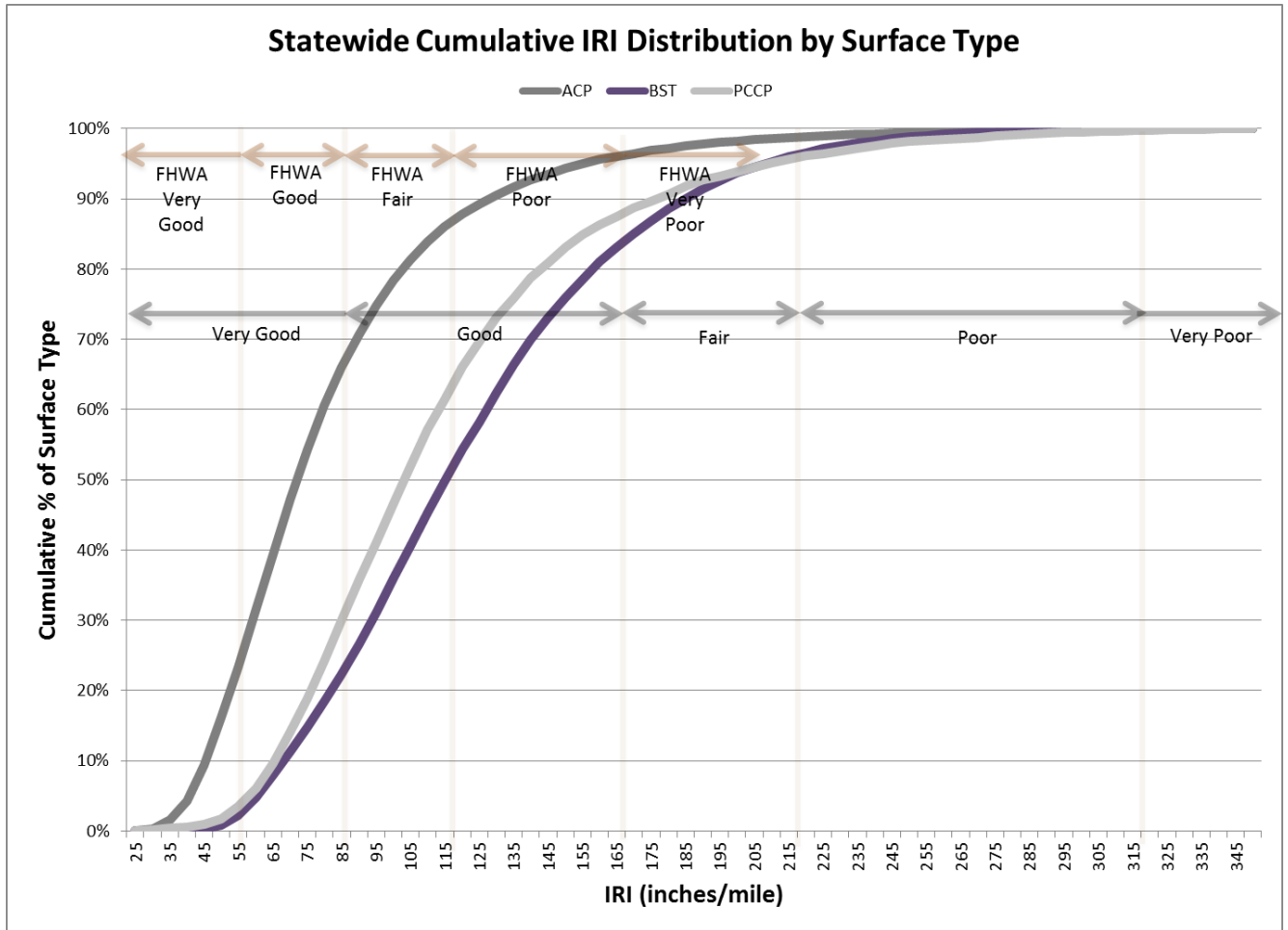
IRI Categories of Roughness		
	WSDOT	FHWA
<b>Very Good</b>	<= 95	<= 60
<b>Good</b>	96 - 170	61 - 95
<b>Fair</b>	171 - 220	96 - 120
<b>Poor</b>	221 - 320	121 - 170
<b>Very Poor</b>	> 320	> 170

Cells are not acceptable



WSDOT Category	Surface Material Type			
	ACP	BST	PCCP	All Pavements
<b>Very Good</b>	71.51%	27.51%	36.84%	56.03%
<b>Good</b>	24.55%	55.91%	50.71%	35.75%
<b>Fair</b>	2.63%	12.60%	7.99%	5.86%
<b>Poor</b>	1.13%	3.85%	4.03%	2.17%
<b>Very Poor</b>	0.18%	0.13%	0.43%	0.19%

FHWA Category	Surface Material Type			
	ACP	BST	PCCP	All Pavements
<b>Very Good</b>	25.16%	2.65%	3.87%	16.84%
<b>Good</b>	46.35%	24.85%	32.96%	39.18%
<b>Fair</b>	14.82%	23.36%	25.50%	18.27%
<b>Poor</b>	9.73%	32.55%	25.21%	17.48%
<b>Very Poor</b>	3.93%	16.59%	12.45%	8.22%



## COMPARING WSDOT AND FHWA STATISTICS

There is a difference between WSDOT IRI categories and the Federal Highway Administration (FHWA) categorization of IRI. This is because each uses IRI for a separate purpose. WSDOT uses its IRI measurement as a roughness index for the purposes of programming projects. WSDOT also uses a pavement cracking index and a rutting index to indicate when a road should be resurfaced. The vast majority of time a section of roadway will need rehabilitation based on cracking or rutting. Roughness is usually a “lagging” indicator that shows the road is rough after other problems (like cracking and rutting) have become severe. On the other hand, the FHWA categories of IRI were originally developed for Interstate Highways. FHWA uses IRI as a performance evaluation tool, especially for comparing relative performance state to state. Both the WSDOT and FHWA IRI Categorizations are scaled to fit their purpose.