Profile Index vs. International Roughness Index
From the website:
http://www.smoothpavements.com/content.aspx?id=7
Inertial Profiler
Used for Determining
Profile Index and International Roughness Index
Computer Algorithm to compute Profilograph Profile Index
Figure 6. Quarter car simulation used for IRI (Sayers and Karamihhas 1998).
**PI (0") and IRI Correlation**

**New Construction 2010**

\[ y = 0.0346x + 0.1784 \]
\[ R^2 = 0.9712 \]

STD Error = 0.05

\[ y = 0.0317x + 0.1727 \]
\[ R^2 = 0.8961 \]

STD Error = 0.08
• Both Indexes are mathematically determined from the profile collected by an inertial profiler.
• Both indexes are normally averaged over 0.1-mile segments.
• Both wheel paths results are normally averaged.

• Profile Index—Correct Bumps and Dips.
• IRI —Correct Localized Roughness.
• IRI is the measure used by most agency pavement management systems and the FHWA HPMS.

• More agencies will switch to IRI as the standard for the “true profile” becomes more available.

• The economics of smoothness testing are changing to where inertial profilers are/will be the most cost effective way for contractors to do the testing.
References:

Websites:
http://www.smoothpavements.com/
http://www.roadprofile.com/
http://www.rpug.org/
http://www.umtri.umich.edu/content/LittleBook98R.pdf
