



Systemic Approaches to Highway Safety

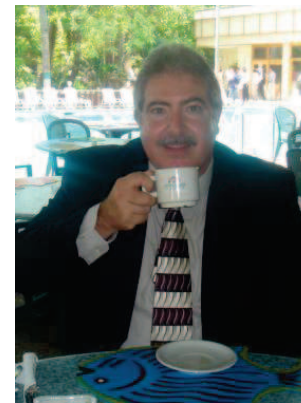
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Good Afternoon!



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Acknowledgements

- Eng. Daniel Camacho, FHWA-Puerto Rico Division
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- Mr. Fernando Rivera, Pavement Management Office - PRHTA

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Outline

- Introduction
- The Role of Puerto Rico LTAP (T²) in Highway Safety
- EDC is...
- What's SHSP?
- Others Innovative Initiatives to Promote Highway Safety Islandwide
- Decade of Action for Road Safety: 2011-2020
- The Future of Education and Awareness on Highway Safety

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Acronyms

AGC	Associated General Contractors of America
ARAN	Automatic Road ANalyzer
AASHTO	American Association of State Highway and Transportation Officials
ACAA	Automobile Accident Compensation Administration
ARTBA	American Road and Transportation Builders Association
APWA	American Public Works Association
CIAPR	College of Engineers and Surveyors of Puerto Rico
DMI	Distant Measuring Instrument
DTOP	Department of Transportation and Public Works
EDC	Every Day Counts
EMS	Enforcement and Emergency Medical Services
FHWA	Federal Highway Administration
HSIP	Highway Safety Improvement Program
IRI	International Roughness Index
ITE	Institute of Transportation Engineering
LTAP	Local Technical Assistance Program
MADD	Mothers Against Drunk Drivers
MASH	Manual for Assessing Safety Hardware
MUTCD	Manual on Uniform Traffic Control Devices

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Acronyms (Cont.)

NACE	National Association of County Engineers
NCHRP	National Cooperative Highway Research Program
NHS	National Highway System
PL	Public Law
PRHTA	Puerto Rico Highway and Transportation Authority
BR	Bridge Replacement
SAFETEA-LU	Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users
SHSP	Strategic Highway Safety Plan
STP	Surface Transportation Program
TEP	Transportation Enhancement Program
TRB	Transportation Research Board
TSC	Traffic Safety Commission
TTC	Temporary Traffic Control
TZD	Tower Zero Deaths
UPRM	University of Puerto Rico at Mayagüez
USC	United States Code
USVI	United States Virgin Islands

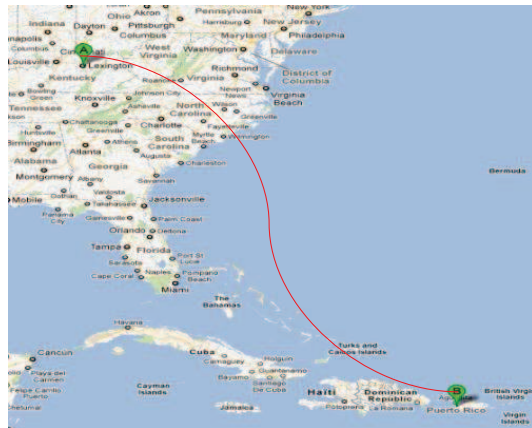
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Location of the Puerto Rico LTAP



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A: Lexington, KY
B: Mayaguez, PR

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Puerto Rico: Demographics, Facts and Highway Safety Statistics

- 78 municipalities
- Area: 3,500 mi²
(100 mi x 35 mi)
- Population: 3.8 millions
(2010 Census)
- Highway system: 15,000 km
- Crashes: 280,000/year
- 340 fatalities/year
- 32% of pedestrian fatalities
- 22% of motorcycle fatalities (2008)
- 40% fatalities alcohol related



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Typical Signs with Spanish Text in the Highway System: Commonwealth of Puerto Rico



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The Role of Puerto Rico LTAP (T²) in Highway Safety

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Puerto Rico LTAP (T²) Mission

- o Transferring the significant findings and innovations of research studies conducted in Puerto Rico, the United States and abroad to local and state agencies and USVI concise format.
- o Training personnel in highway-related areas.
- o Keeping local, municipal, and state officials current with new regulations and technology available.

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Puerto Rico LTAP (T²) Vision

- o "...to improve the quality and safety of the surface transportation system through interactive relationships and information exchange...driven by these relationships and known for our ability to enrich the knowledge base of our stakeholders".

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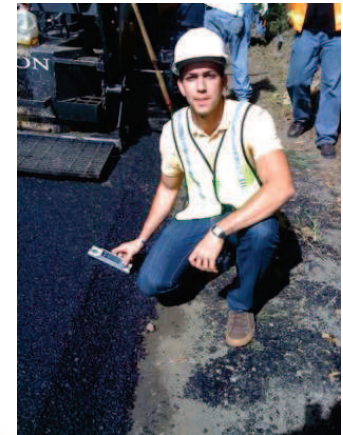


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EDC is ...

- o an FHWA national program designed to identify and deploy innovation in strategic areas aimed at:
 - o shortening project delivery,
 - o enhancing the safety of our roadways,
 - o and protecting the environment.



www.fhwa.dot.gov

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Strategic Highway Safety Plan (SHSP)



Definition

- o a major component and requirement of the HSIP
- o a statewide-coordinated safety plan that provides a comprehensive framework for reducing highway fatalities and serious injuries on all public roads
- o developed by the State DOT in a cooperative process with Local, State, Federal, and private sector safety stakeholders

Key for Success...

- o Must be data-driven
- o Establishing a four (4) to five (5) year comprehensive plan with:
 - o Statewide goals
 - o Objectives
 - o Key emphasis areas integrating the four E's:
 - o **Engineering**
 - o **Education**
 - o **Enforcement**
 - o **Emergency medical services (EMS)**

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Source: <http://safety.fhwa.dot.gov/hsip/shsp>

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Strategic Highway Safety Plan (SHSP) cont.



Purpose

- o to identify the State's key safety needs and guide investment decisions to achieve significant reductions in highway fatalities and serious injuries on all public roads

Benefits

- o allows all highway safety programs in the State to work together in an effort to align and leverage its resources
- o positions the State and it's safety partners to collectively address the State's safety challenges on all public roads

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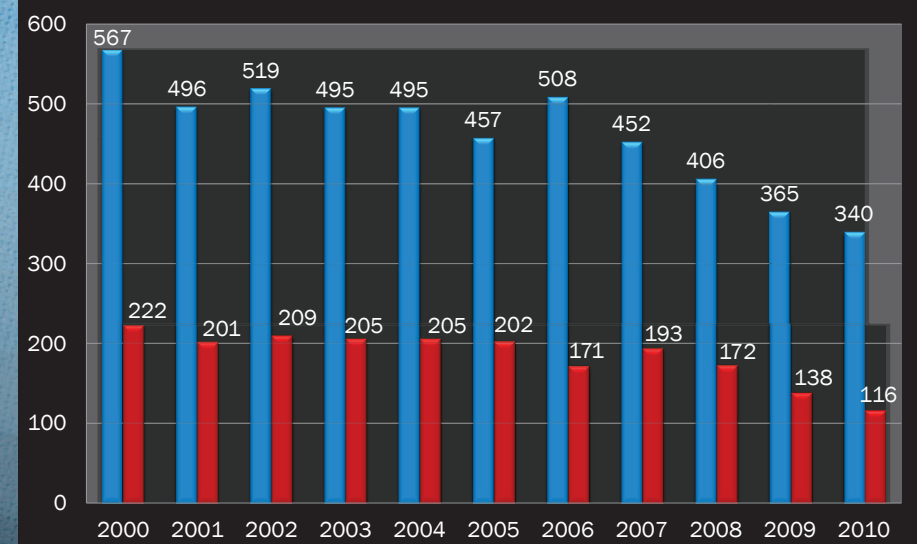


Highway Safety Statistics in Puerto Rico



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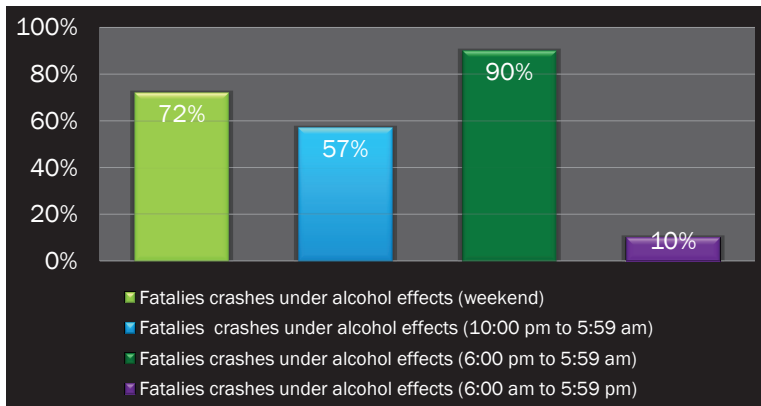
Total Fatalities Crashes in Puerto Rico 2000-2010



Source: Puerto Rico Traffic Safety Commission



Statistics on Highway Fatalities Associated with Alcohol Consuming at Different Periods of Time



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Source: Puerto Rico Traffic Safety Commission

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Pavement Roughness Data Collection

ARAN

- o Purchased in 2003
- o Model 4900 Roadware
- o Major components:
 - o Computer system
 - o Video system
 - o Length measuring system
 - o Roughness system
 - o Geometric system



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Source: Pavement Management Office (PRHTA)

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Pavement Roughness Data Collection (Cont.)

- o Data processing unit
- o Minimum speed of operation of 12 miles/hour
- o South Dakota Profile (SDP) system to measure pavement roughness
- o Digital system for video
- o Fiber optic gyroscopes for measuring geometric attributes system (0.05% precision)
- o "Optical Shaft Encoder" for DMI



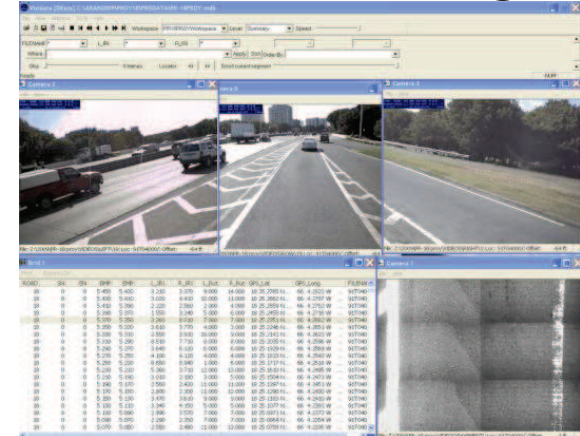
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Source: Pavement Management Office (PRHTA)

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ARAN VisiData Program



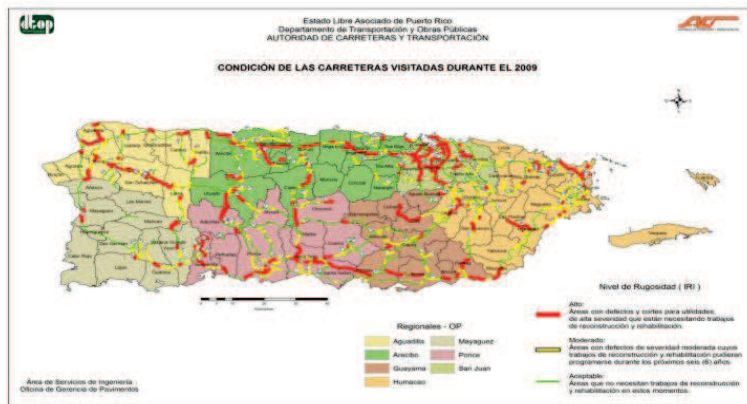
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Source: Pavement Management Office (PRHTA)

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International Roughness Index (IRI) in the Highway Pavement Network in PR



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Source: Office Pavement Management

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Falling Weight Deflectometer



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Source: Pavement Management Office (PRHTA)

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Systemic Approach to Highway Safety in Puerto Rico

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SAFETEA-LU (PL 109-59, August 10, 2005) Title I-Federal-Aid Highways

Section

- 1,113 – Surface Transportation Program (STP)
- 1,114 – Highway Bridge Program
- 1,120 – Puerto Rico Highway Program
- 1,401 – Highway Safety Improvement Program (HSIP)
- 1,404 – Safe Roads to School Program
- 1,405 – Roadway Safety Improvements for Older Drivers and Pedestrians
- 1,406 – Safety Incentives Grants for Use of Seat Belts
- 1,409 – Work Zone Safety Grants
- 1,411 – Roadway Safety
- 1,502 – Highways for LIFE

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SAFETEA-LU (PL 109-59, August 10, 2005) Applications of the Commonwealth of Puerto Rico

- Under title I-federal-aid highways, subtitle A-authorizations programs is section 1,120 entitled Puerto Rico Highway Program.
- Others sections are ear-marked.
- Puerto Rico does not receive funds title I, subtitle D-highway safety, section 1,401 HSIP.
- Eligible for highway safety improvements funds from section 1,120 are less restrictive than HSIP.

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Systemic Approach to Highway Safety in Puerto Rico

Mission

- To develop and implement a systematic prioritization process that includes **available crash data**
- To select and implement road safety improvement projects in the Commonwealth of Puerto Rico.

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Systemic Approach on Highway Safety in Puerto Rico

Safer Five (5) Main Programs for Improving Highway Safety

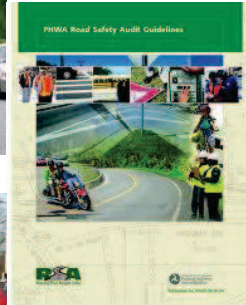
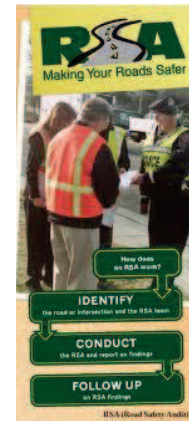
1. Road Safety Audit (RSA-DASVI)
2. School Zones
3. Islandwide Signing Improvement Program
4. NCHRP 350/MASH Deployment
5. Traffic Signals Improvements at Intersections and Corridors
6. Special Projects with Emphasis on Roadside Safety Countermeasures

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1. DASVI: The Road Safety Audit (RSA) Division within the Puerto Rico HTA



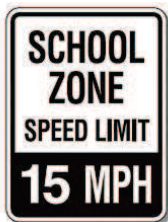
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2. School Zones

- Low-cost improvements to pavement markings and signs



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3. Islandwide Signing Improvements

- Currently focusing on installing km marker signs throughout all public roads in the commonwealth of Puerto Rico, to help improve crash/accident reporting data



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4. NCHRP-350

- Islandwide installation of crash cushions/end terminal sections & guardrail improvements



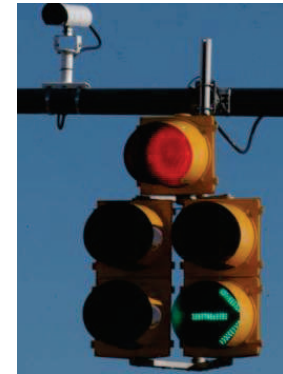
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5. Traffic Signals

- Upgrading traffic signal systems along major corridors in PR such as PR-2 and PR-3.



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6. Special Projects

- Focused on improving high crash/fatality rate segments
 - Including the implementation of all applicable and cost effective roadside safety countermeasures that have been adopted by PRHTA such as installation of guardrail/barriers, medians, rumble strips, signing, new signals, stripping, etc...



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Others Innovative Initiatives to Promote Highway Safety Islandwide

PRLTAP training program

- Training on MUTCD, December 2009 Edition
 - Temporary Traffic Control (TTC)
 - retroreflectivity minimum sign requirements
- EDC Safety Edge
- Road Safety Audit (RSA)

Partnerships

- Decade of Action for Road Safety: 2011-2020
- Partnership with MAPFRE Foundation
- PR-TSC
- ACAA
- Luis A. Señeriz Foundation
- MADD
- CIAPR
- ITE



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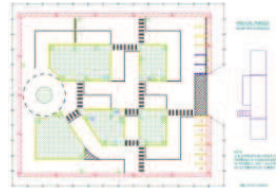


The Safety Village: Portable Miniature Urban City

Components

- o Traffic signs
- o Pavement markings
- o Crosswalk
- o Roundabout
- o Police officers
- o Go-karts
- o Bicycles
- o Safety Apparel

Educational van equipped with videos and digital equipment to train children 8 to 12 years old



Source: Highway Safety Institute, MAPFRE Foundation

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DECADE OF ACTION
FOR ROAD SAFETY 2011-2020

COMMITTED TO SAVING LIVES TODAY



Puerto Rico Transportation Technology Transfer Center



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I, name and last name, pledge to place my sand grain to save the lives of my people on our highways.

I pledge to:

- ☐ 1. No texting with cellphone while driving a motor vehicle
- ☐ 2. Pass the key if I am under the influence of alcohol
- ☐ 3. No distractions while driving a motor vehicle
- ☐ 4. I will share the road with pedestrians, cyclists and motorcyclists
- ☐ 5. I will always buckle my safety belt
- ☐ 6. I will always buckle my children with safety belt
- ☐ 7. I will require my vehicle occupants to always buckle the safety belt
- ☐ 8. I will comply with the speed limits
- ☐ 9. I will use the protective safety devices while riding on a motorcycle
- ☐ 10. I will use the protective safety devices while riding on a bicycle
- ☐ 11. I will use the protective safety devices while driving on a motor vehicle
- ☐ 12. I will obey the traffic laws applicable to pedestrians
- ☐ 13. I will obey the traffic laws applicable to drivers
- ☐ 14. I will obey the traffic laws applicable to vehicle occupants

Email:
City:
State:

Leave your footprint: upload your photo and be part of the history of moving towards a safety culture.

Photo of you:

All fields are required, except your photo.

Together
we can save
millions
of lives.



Walking together
we will save lives!

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Decade of Action for Road Safety: 2011-2020 Spokesperson for Puerto Rico



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Decade of Action for Road Safety: 2011-2020 Proclaim





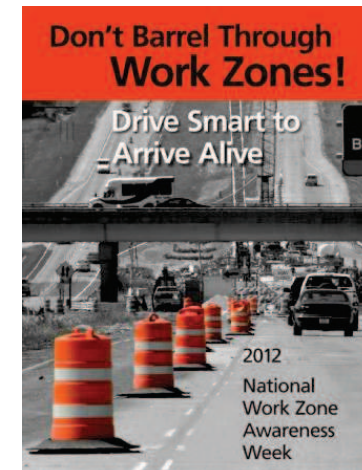
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National Work Zone Awareness Week



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Excellence in Successful Implementation of Systemic Approaches to Highway Safety

Excellence = 4E's + Everyone*
(NACE, NLTAPA)



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Excellence in Successful Implementation of Systemic Approaches to Highway Safety

Everyone* = Champions

- o AASHTO
- o AGC
- o All our stakeholders (road users...our people)
- o ARTBA
- o Decade of Action for Roads Safety
- o EDC Program
- o FHWA
- o NACE
- o NLTAPA
- o TRB
- o TZD



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Congratulations University of Kentucky Wildcats 2012 NCAA Champions!



Thank You for the Invitation

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