RON'S RUMINATIONS ON TRANSPORTATION PLANNING

Comments on the past, present and future

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TPB Travel Forecasting Subcommittee
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National Capital Region
Transportation Planning Board

Overview

- My early days in transportation
- The Long-Range Plan, December 1982
- Washington region's land activity trends
- VMT trends
- Ruminations on travel forecasting challenges ahead

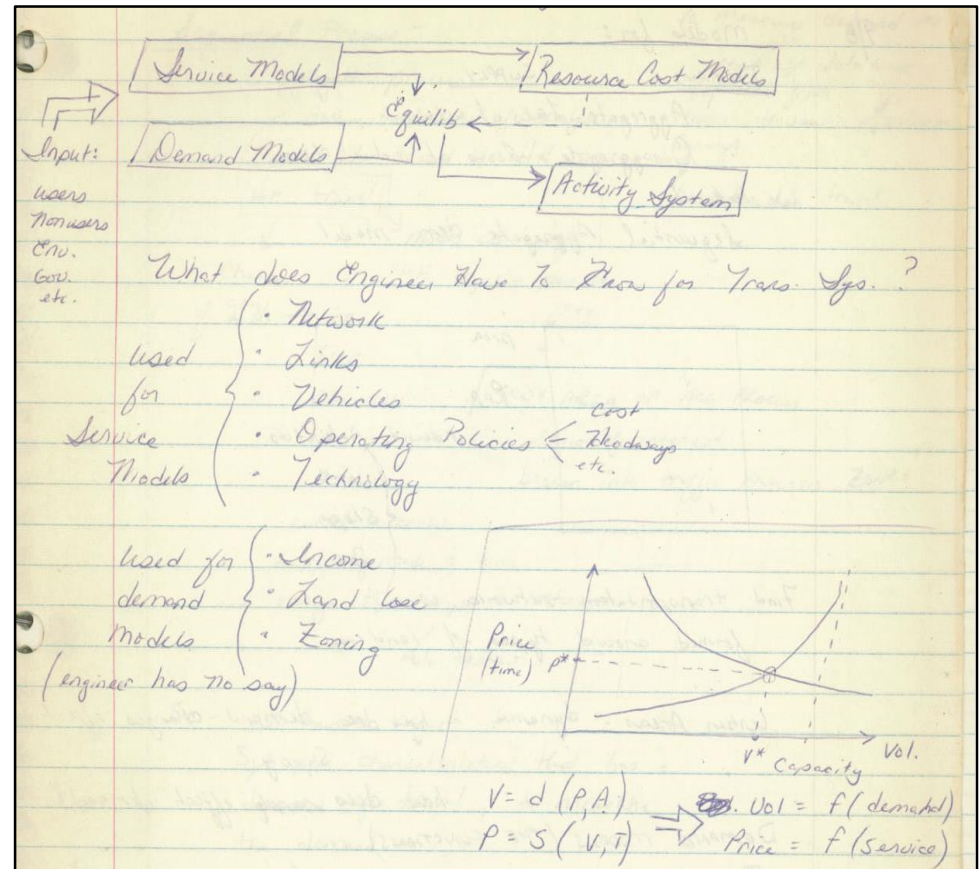The views and opinions expressed herein are solely that of the presenter

Graduate school memories

"**Transportation planning is the fastest growing highest paying area of civil engineering**. **You have to get into it!**"
… Robert Paaswell, Professor, SUNY Buffalo (ca. 1978)

Professors/grad students came from all over the world:

- Finland
- Poland
- Iran
- Egypt
- Nigeria

Grad school memories: Polish notes
"Don't read the words; just look at the equations"

How to connect trip Dist. & t. Gen.

(4.13)
(4.14)
(4.15)

p – work
N – educ.
1 – other

(4.16)

Po wprowadzeniu zasadniczego rozdziału podróży na związane i nie związane z domem można przedstawić — opierając się na przyjętej koncepcji modelowej — sposób obliczenia potencjałów ruchotwórczych dla dowolnych jednostek terytorialnych (rejon, makrorejon, miasto).

1. Obliczanie generacji rejonowych dla podróży związanych z domem G_j^{ZD} opiera się na generalnych założeniach metody analizy kategorii (wielkość ruchu jest iloczynem wskaźnika ruchliwości i liczności kategorii).

Przykładowo generacja ZD rejonu j dla podróży do pracy (DP) może być opisana wzorem:

HOME BASED
– After Work

$$G_j^{ZD,DP} = \sum_{i=1}^{n} N_i^{ZD,DP} \cdot L_{ij}$$

TRIP GEN. for ZONE j (4.20)

(4.17) $NZ = Non\ H-Based$

gdzie:

$N_i^{ZD,DP}$ — wskaźnik ruchliwości osoby kategorii i dla podróży do pracy,
L_{ij} — liczba osób kategorii i w rejonie j,
n — liczba kategorii osób.

(4.18)

Podobne wzory można napisać dla:
— innych motywacji podróży,
— dla podróży pieszych i niepieszych,
— dla różnych przedziałów w ciągu doby,

(4.19)

zmieniając jedynie, wyznaczone w czasie badania, wskaźniki ruchliwości N_i dla poszczególnych osób kategorii i.

2. Do obliczenia generacji rejonowych dla podróży nie związanych z domem G_j^{NZ} proponuje się zastosować metodę regresji liniowej na poziomie agregacji: *rejon komunikacyjny**. Na przykład generacja podróży nie związanych z domem, które powstały w rejonie j po podróży do pracy — $G_j^{NZ,GP}$ może być opisana następująco:

Grad school memories:
Doctoral theses used instead of text books:

STRUCTURE OF PASSENGER TRAVEL DEMAND MODELS

by

MOSHE EMANUAL BEN-AKIVA

B.Sc., Technion – Israel Institute of Technology
(1968)

S.M., Massachusetts Institute of Technology
(1971)

Submitted in partial fulfillment

of the requirements for the degree of

Doctor of Philosophy

at the

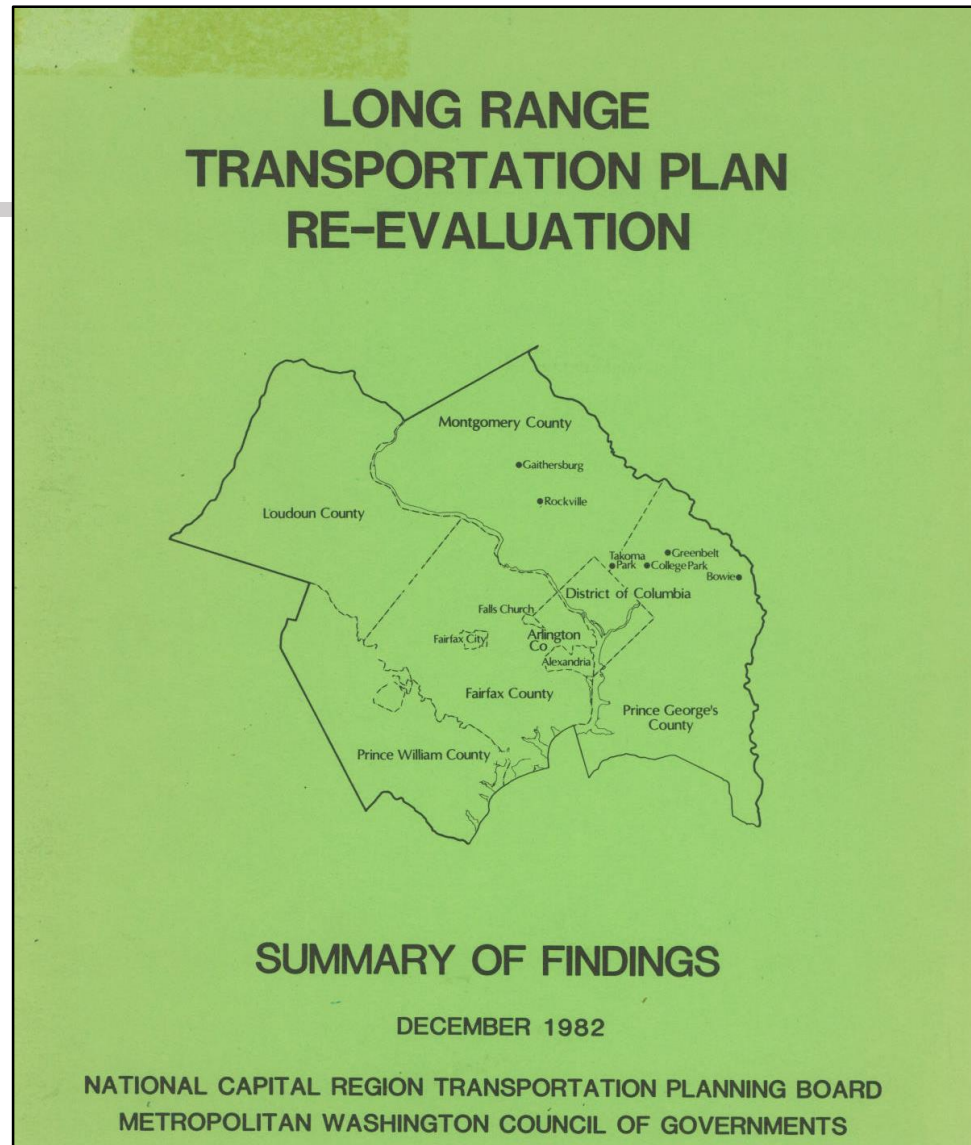Massachusetts Institute of Technology

June, 1973

My introduction to COG/TPB:

The 1982
Plan
Re-Evaluation

The document provides insights to the region's past planning issues and insights

LONG RANGE TRANSPORTATION PLAN RE-EVALUATION

SUMMARY OF FINDINGS

DECEMBER 1982

NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD
METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS

1982 LRP Evaluation - Background

- Round 2.0 Cooperative Forecasts
  - Low, medium and high LU scenarios produced

- Horizon Year: 2000

- A "Partial" and "Full" Plan analyzed

- Evaluation measures
  - Level-of-Service analysis
  - User satisfaction index (based on speed and distance)
  - Mobile emissions (HC)

1982 LRP featured elements

- Completion of the planned 101-mile Metrorail system

- Southeast freeway extension to Barney Circle

- ICC from I370 to US 301 (Study)

- Springfield Bypass (Study)

- Many bus priority lanes & HOV lane plans

- Highway expansions in selected corridors

COG/TPB travel modeling in 1982

- Calibrated to 1968 HTS

- Combination PLANPAC, UTPS & custom Fortran programs

- 1,478 TAZs/200 TADs

- 8 major jurisdictions modeled

- Combination TAD/TAZ level application

- Trip generation involved HBW *person* trip rates, and Non-work a*uto driver* rates used

- Mode choice applied for HBW purpose *only*

- Home-grown traffic assignment "Cap-Res" process used; 4 iterations; 1 daily trip table loaded
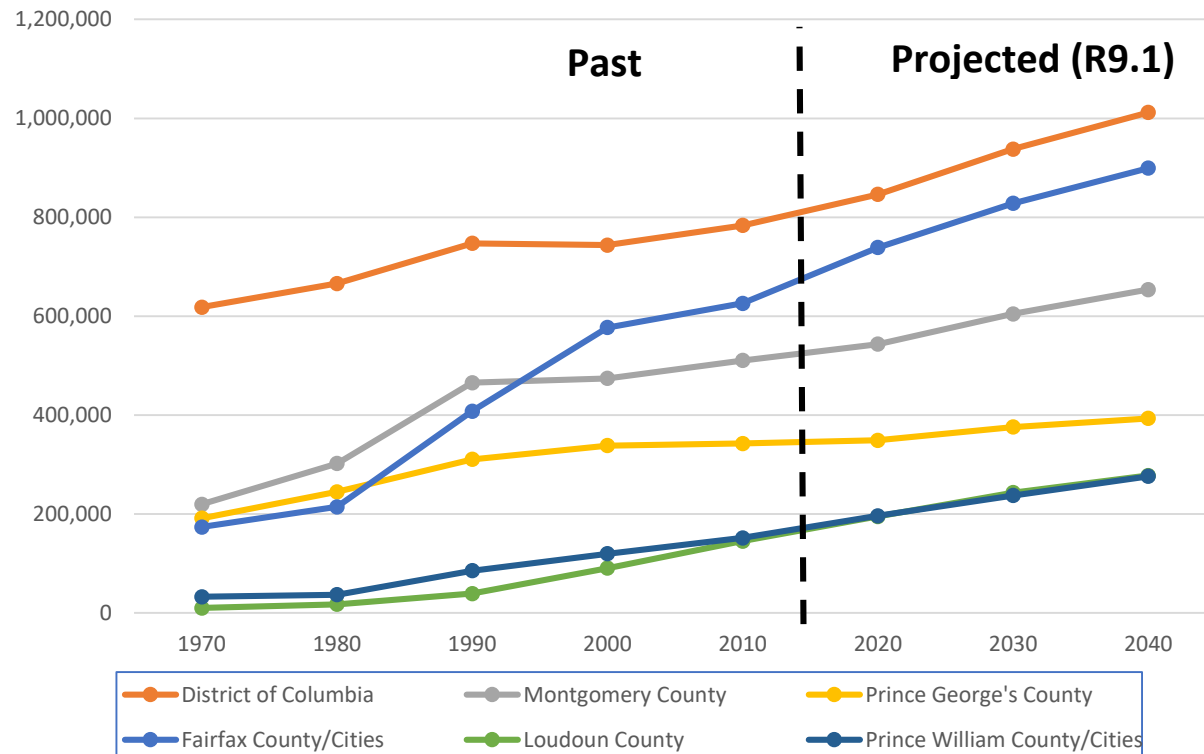
1982 LRP Evaluation: key findings

- "The region will experience increased congestion...even if the "Full" Plan is implemented"

- Year 2000 commuter trips will increase by 1 million trips, up from 2.3 million today. Nearly half of the new trips will begin and end in the inner suburbs

- The completion of the 101-mile Metrorail system will increase the transit share to the core, but the system will not meet the needs of intra-suburban commuters

- "...Having homes and employment opportunities in close proximity can greatly alleviate... congested travel conditions..."
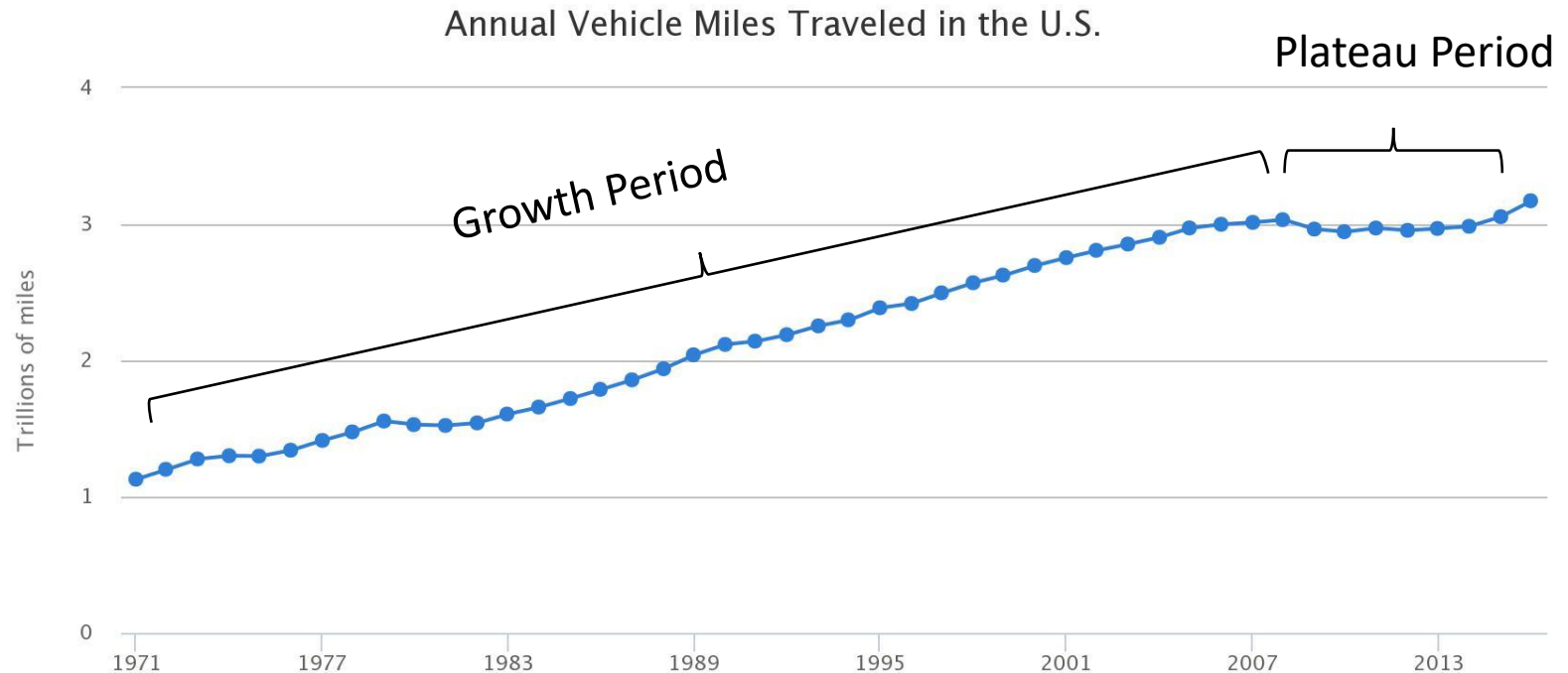
Past, Projected Population for Selected Jurisdictions (1940-2045)
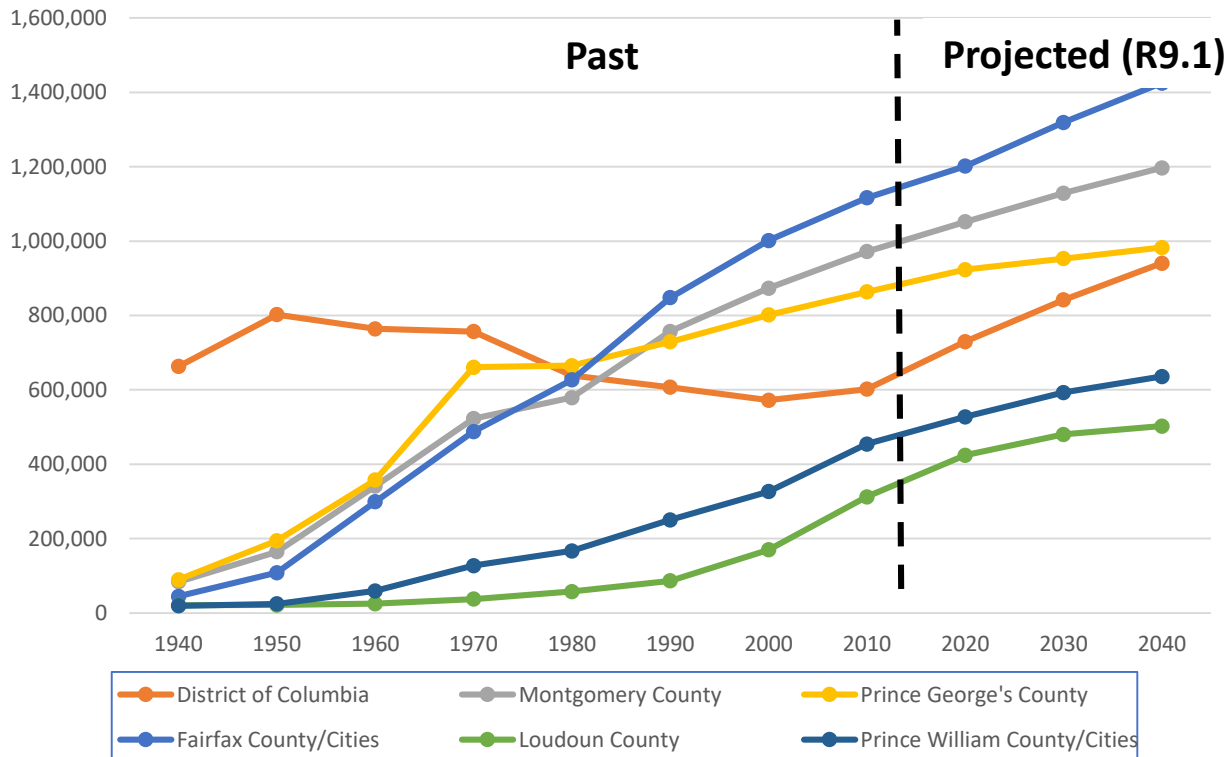
Past, Projected Employment Growth for Selected Jurisdictions (1970-2045)

Annual US VMT Trend

Annual Vehicle Miles Traveled in the U.S.

Source: U.S. Dept. of Energy
https://www.afdc.energy.gov/data/

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How transportation planning has evolved

- Vehicle throughput mindset has given way to person throughput

- Urban arterials have evolved into sustainable "complete streets"

- The link between transportation systems and public health has been recognized

- The link between transportation planning and land development has been formalized (Activity Centers)

- The advent of priced highway facilities has raised the consciousness of travelers about the "true" value of transportation service
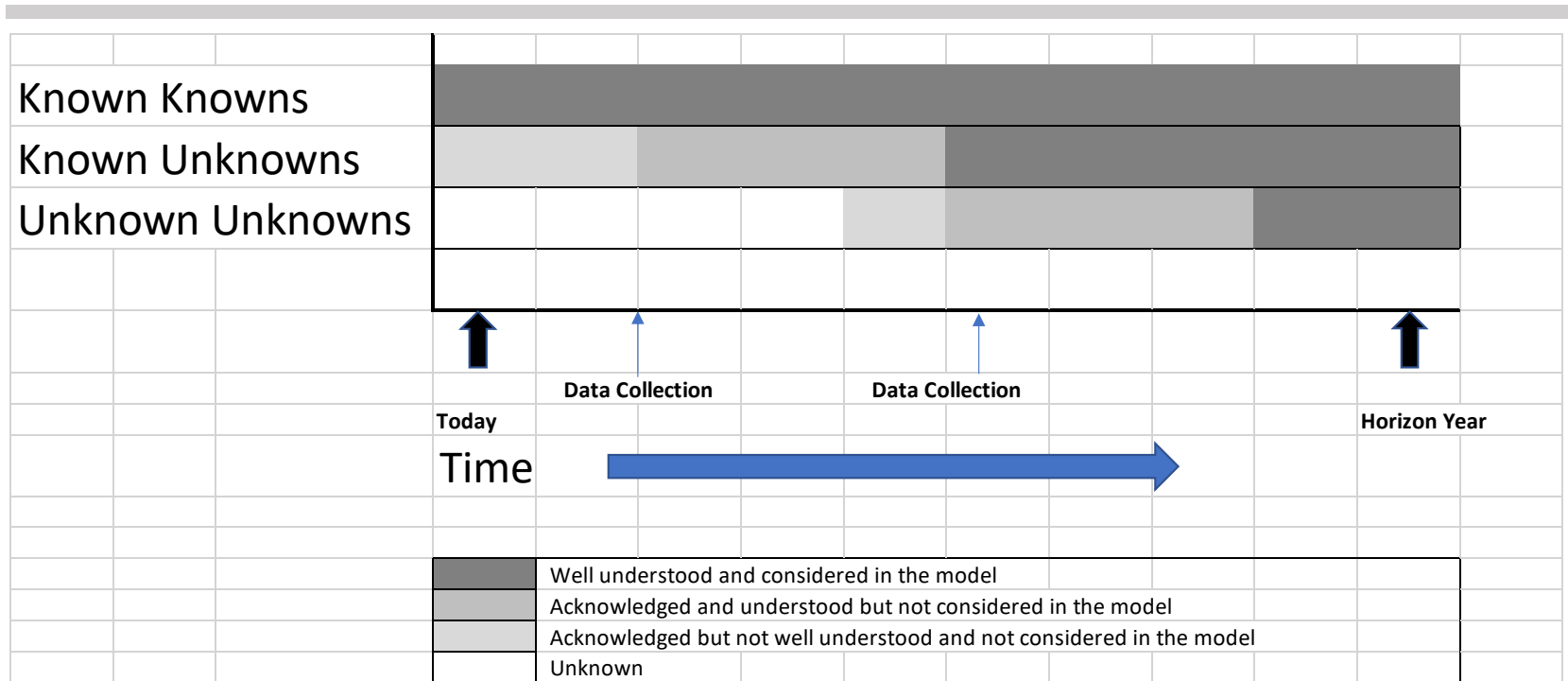
What are the success stories of the past 30 years?

- The region has grown and will continue to grow
- The growth and transformation of the District of Columbia
- The recognition of bicycles as a legitimate mode
- Air quality improvement due to alternative fuel and improved vehicle engine technologies
- Web assistance: Navigation systems
- Web assistance: Telecommuting, web conferencing
- Web assistance: Internet-based modes (TNCs, Capital Bikeshare)

Planning: "The receding fog"

Known Knowns			
Known Unknowns			
Unknown Unknowns			

Data Collection   **Data Collection**

Today   **Horizon Year**

Time

	Well understood and considered in the model
	Acknowledged and understood but not considered in the model
	Acknowledged but not well understood and not considered in the model
	Unknown

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