

DCP4300/URP6931. AI&BE

Lecture 06: Work Session, Application Perspectives, Review, and Survey

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Reminder: Use Zoom Video Recording

Outline

1

Python Lab 06

2

Application
Perspectives

3

Review Lec02-06

4

Survey

Part 1. Python Lab – Work Session

Part 2. Application Perspectives

Example Paper - “Gasoline consumption and cities: a comparison of US cities with a global survey”

Debate: What determines people’s gas consumption? a “soul-searching” question in urban **applications**

A: Socioeconomic factors. (e.g. income, price, etc.)

B: Built environment factors (e.g. density, diversity, design, etc.)

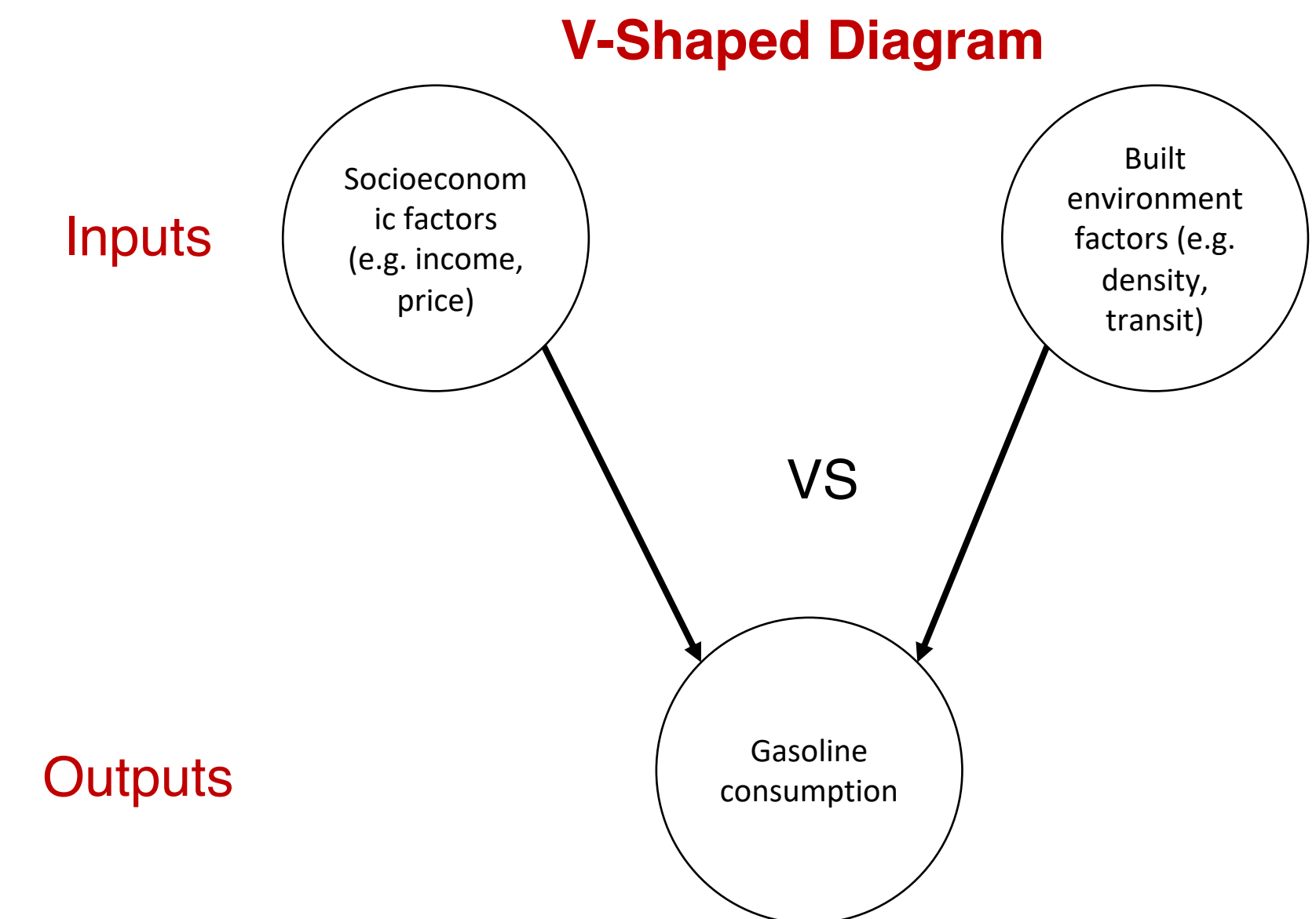
Who. Planners, city governments, etc.

(Partially) Resolving this debate using the knowledge from lec02-06

- Lec02-03. **Data** - viewing and description.
- Lec04-05. **Models** - correlation coefficients and linear regressions.

Q: What are the model inputs and outputs?

- **Output:** gas consumption
- **Inputs:** socioeconomic factors vs. built environment factors.
- **Solution:** Comparing correlation coefficients or regression coefficients to resolve this debate



Learning goals of Lecture 02-06 in the AI&BE course

Answering a simple research question by integrating **data**,
models, and an urban **application**

Let's answer a few debates together!

D1. What attract people to Florida?

D2. Does a new public transit line support economic development?

D3. Will people use the new energy-efficient vehicle?

D4. Do the existing zoning codes mitigate economic opportunities?

Debate 1. What attract people to Florida?

A: it is the beach.

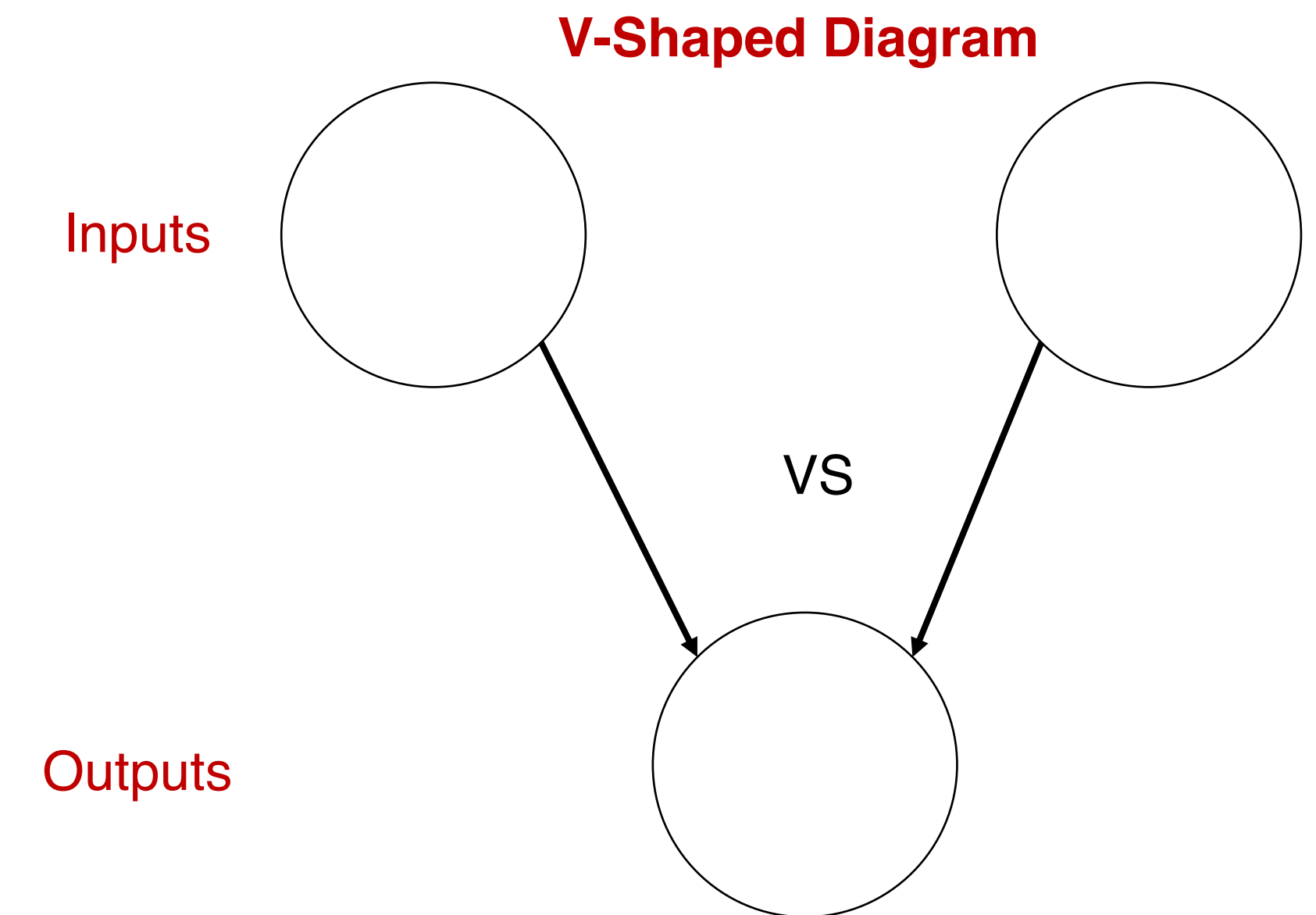
B: it is the job opportunity.

(Partially) Resolving this debate using the knowledge from lec02-06

- Lec02-03. **Data** - viewing and description.
- Lec04-05. **Models** - Correlation coefficients and linear regressions.

Q: What are the model inputs and outputs?

- **Output:**
- **Inputs:**
- **Solution:**



Debate 1. What attract people to Florida?

A: it is the beach.

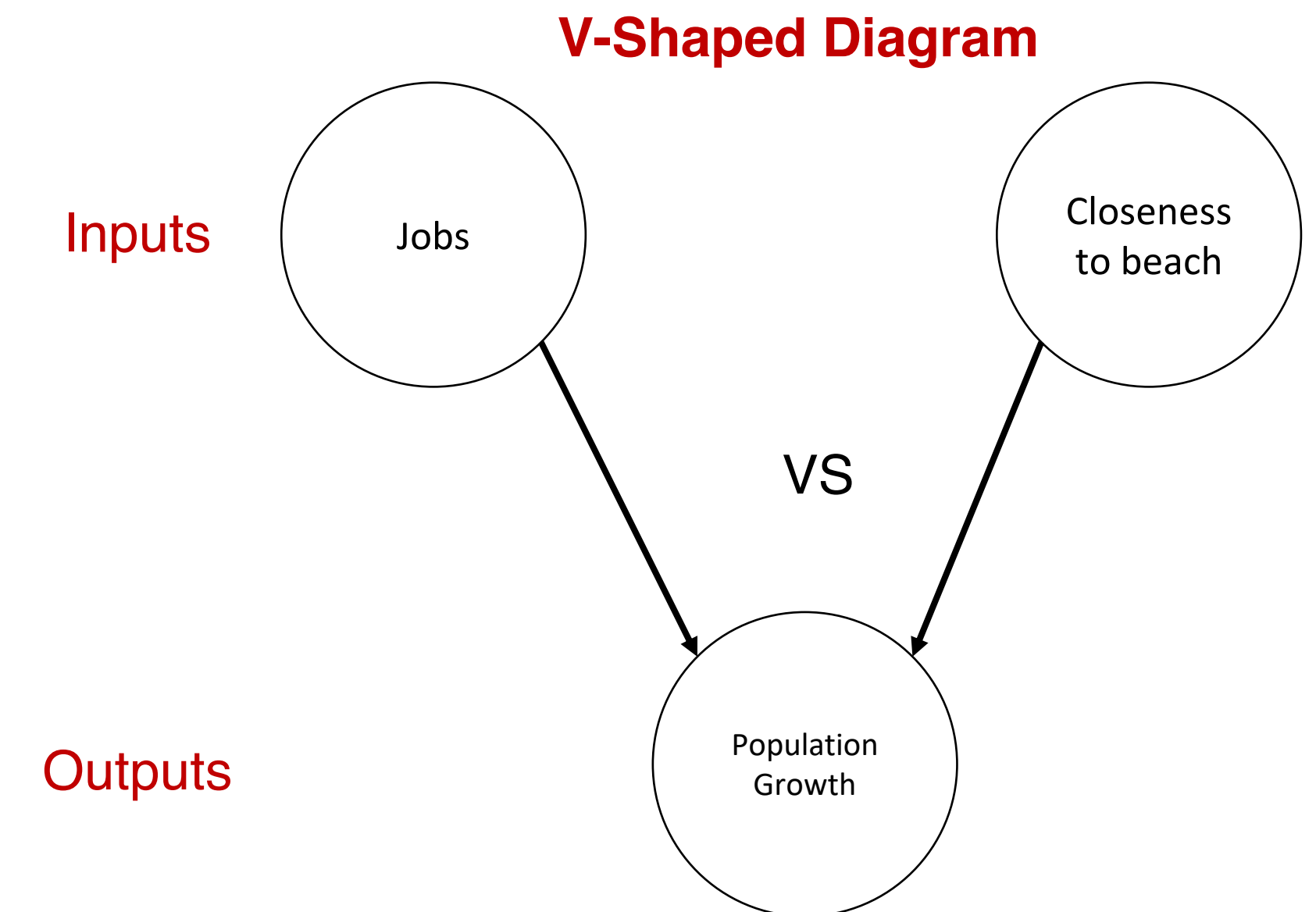
B: it is the job opportunity.

(Partially) Resolving this debate using the knowledge from lec02-06

- Lec02-03. **Data** - viewing and description.
- Lec04-05. **Models** - Correlation coefficients and linear regressions.

Q: What are the model inputs and outputs?

- **Output:** Population growth
- **Inputs:** Jobs vs. closeness to beaches
- **Solution:** Comparing correlation coefficients or regression coefficients to resolve this debate



Debate 2. Does a new public transit line support economic development?

A: PT can increase the economic welfare of the neighborhood.

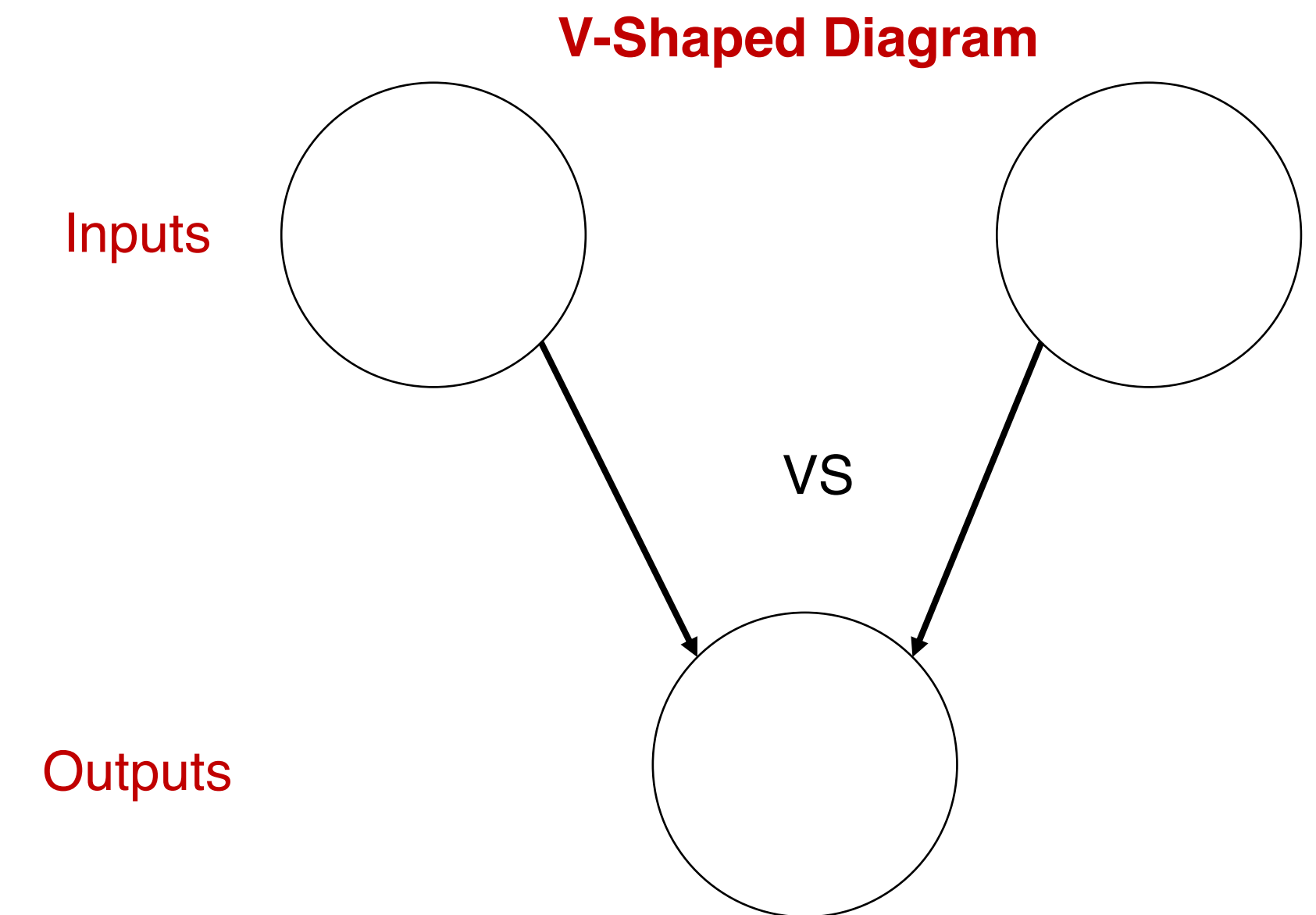
B: Probably not, because Florida is dominated by automobile.

(Partially) Resolving this debate using the knowledge from lec02-06

- Lec02-03. **Data** - viewing and description.
- Lec04-05. **Models** - Correlation coefficients and linear regressions.

Q: What are the model inputs and outputs?

- **Output:**
- **Inputs:**
- **Solution:**



Debate 2. What attract people to Florida?

A: PT can increase the economic welfare of the neighborhood.

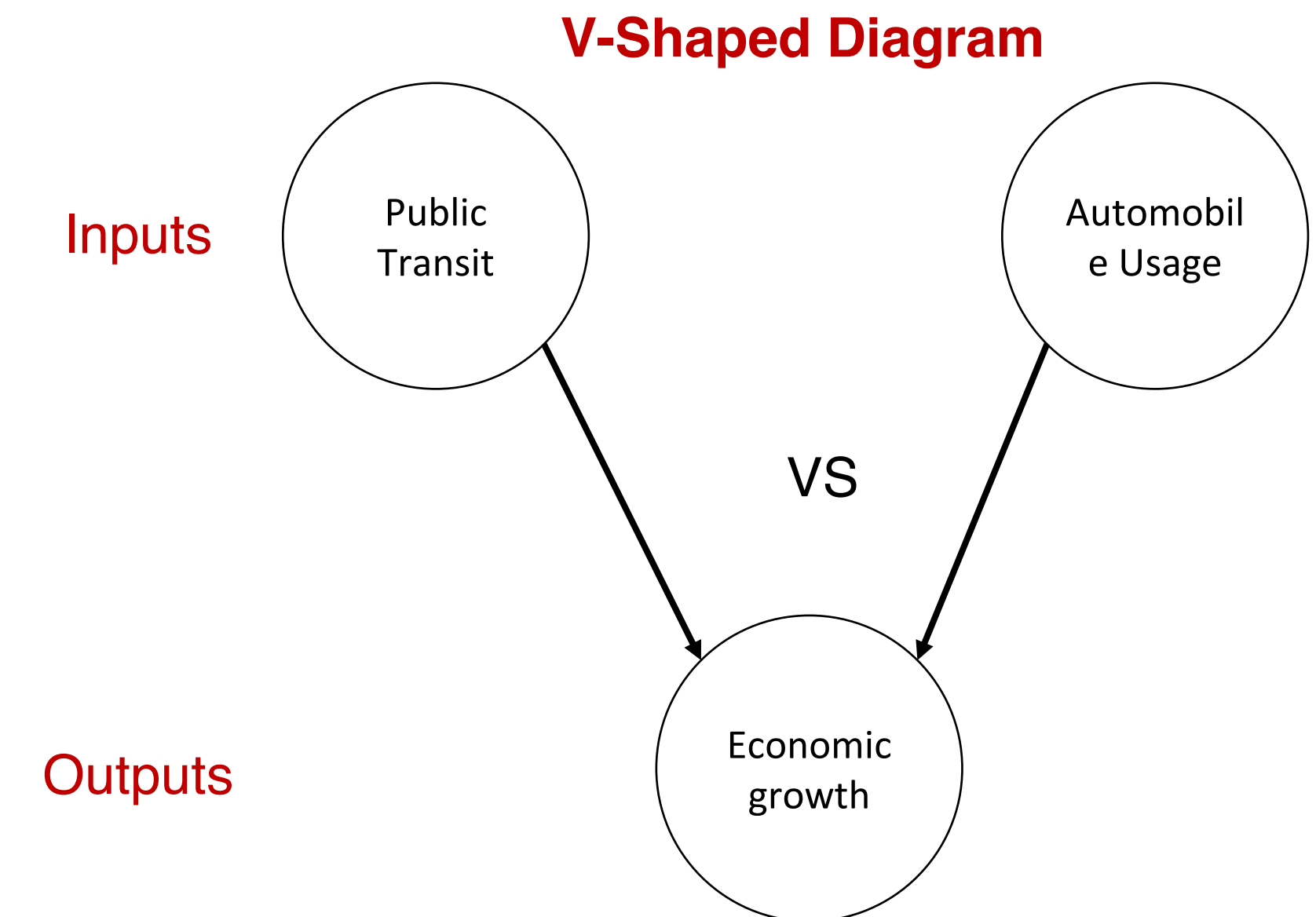
B: Probably not, because Florida is dominated by automobile.

(Partially) Resolving this debate using the knowledge from lec02-06

- Lec02-03. **Data** - viewing and description.
- Lec04-05. **Models** - Correlation coefficients and linear regressions.

Q: What are the model inputs and outputs?

- **Output:** Economic growth
- **Inputs:** Public transit vs. automobile
- **Solution:** Comparing correlation coefficients or regression coefficients to resolve this debate



Debate 3. Will people use the new energy-efficient vehicle?

A: It is highly likely because it saves the energy cost.

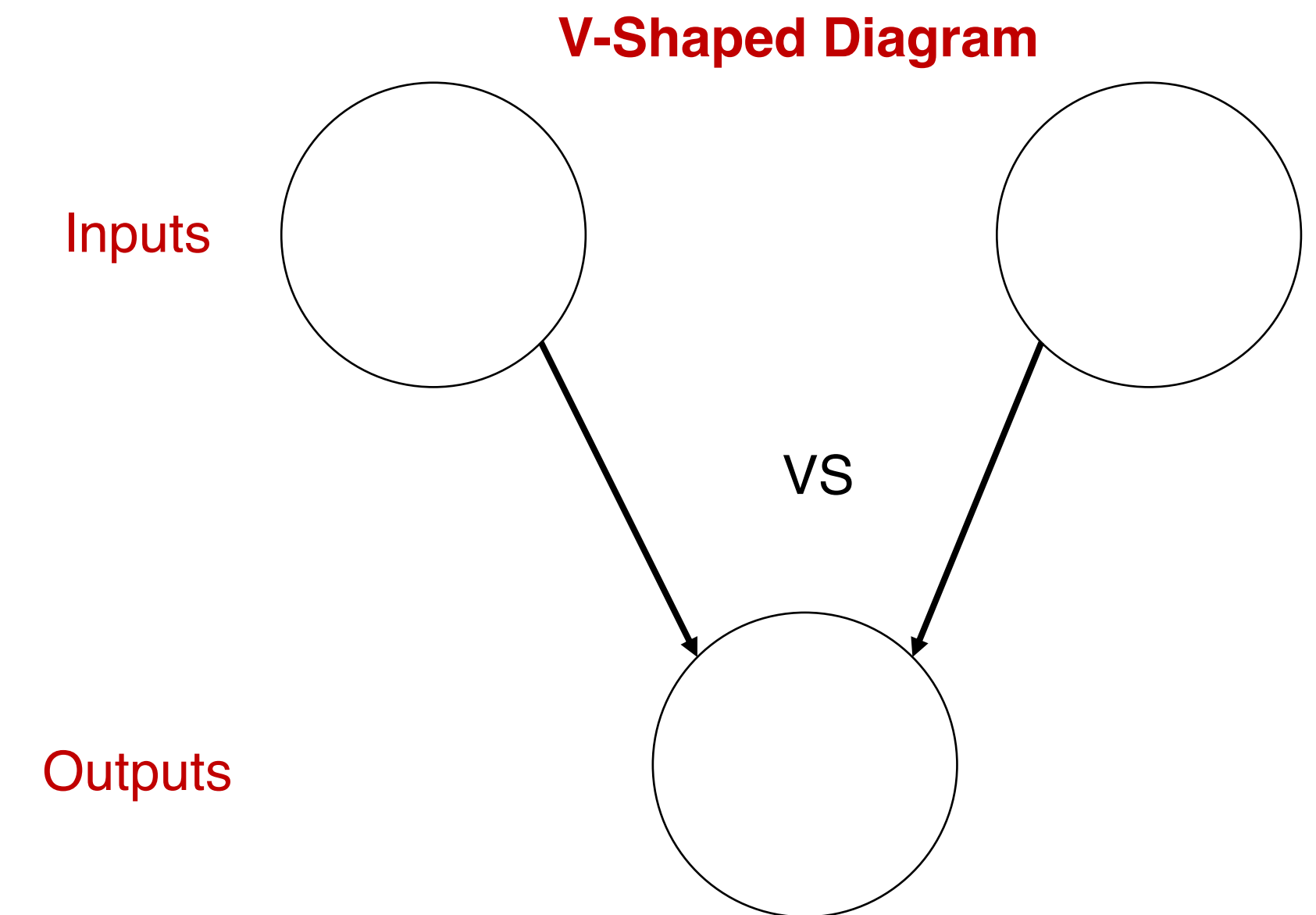
B: Probably not, because it is really expensive.

(Partially) Resolving this debate using the knowledge from lec02-06

- Lec02-03. **Data** - viewing and description.
- Lec04-05. **Models** - Correlation coefficients and linear regressions.

Q: What are the model inputs and outputs?

- **Output:**
- **Inputs:**
- **Solution:**



Debate 3. Will people use the new energy-efficient vehicle?

A: It is highly likely because it saves the energy cost.

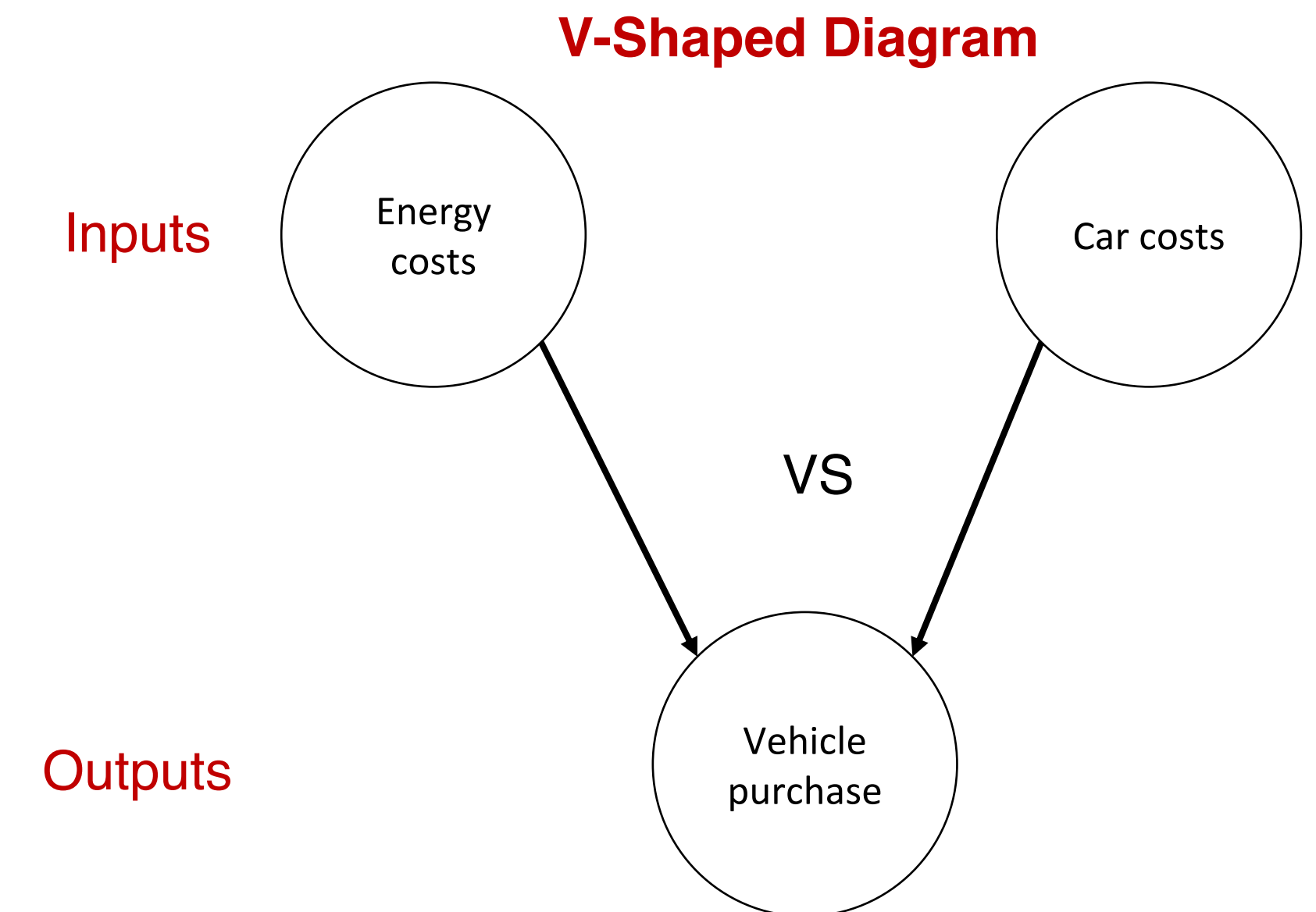
B: Probably not, because it is really expensive.

(Partially) Resolving this debate using the knowledge from lec02-06

- Lec02-03. **Data** - viewing and description.
- Lec04-05. **Models** - Correlation coefficients and linear regressions.

Q: What are the model inputs and outputs?

- **Output:** vehicle purchase/adoption
- **Inputs:** energy cost and car cost
- **Solution:** comparing correlation coefficients or regression coefficients to resolve this debate



Debate 4. Do the existing zoning codes mitigate economic opportunities?

A: The old-fashioned zoning codes limit the economic development

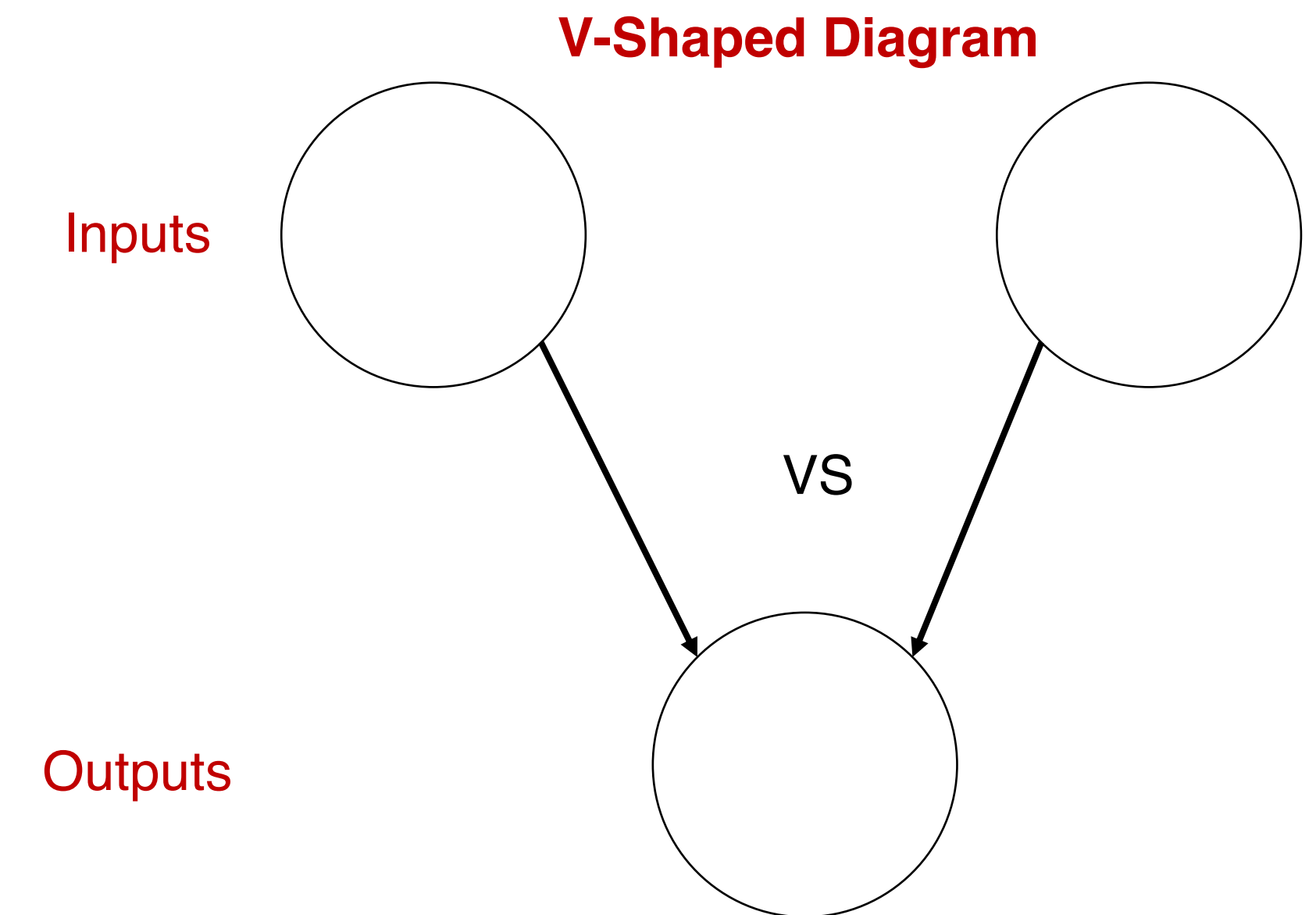
B: The zoning codes create positive externality and thus improve economic outcomes.

(Partially) Resolving this debate using the knowledge from lec02-06

- Lec02-03. **Data** - viewing and description.
- Lec04-05. **Models** - Correlation coefficients and linear regressions.

Q: What are the model inputs and outputs?

- **Output:**
- **Inputs:**
- **Solution:**



Debate 4. Do the existing zoning codes mitigate economic opportunities?

A: The old-fashioned zoning codes limit the economic development

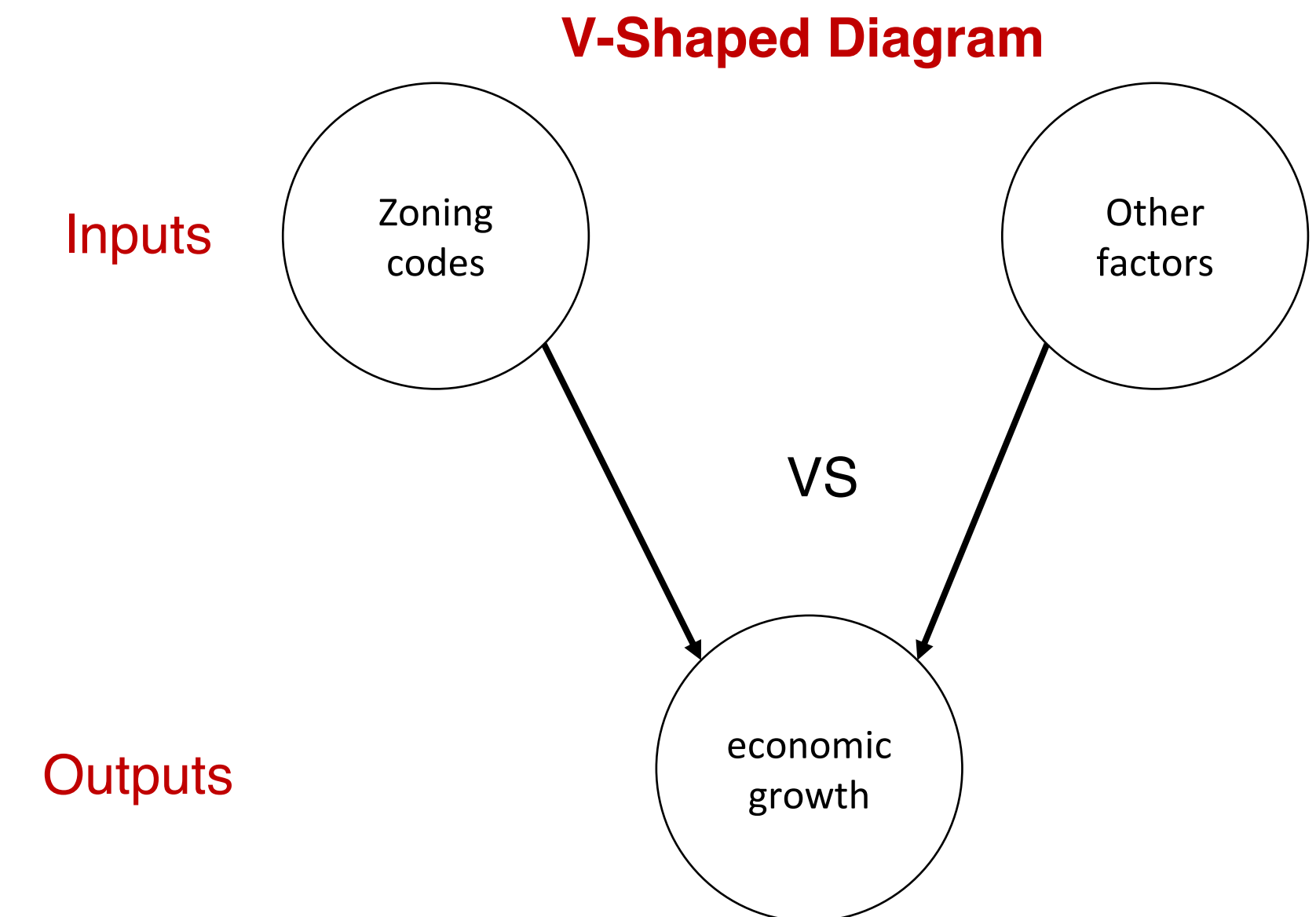
B: The zoning codes create positive externality and thus improve economic outcomes.

(Partially) Resolving this debate using the knowledge from lec02-06

- Lec02-03. **Data** - viewing and description.
- Lec04-05. **Models** - Correlation coefficients and linear regressions.

Q: What are the model inputs and outputs?

- **Output:** economic growth
- **Inputs:** zoning codes and others
- **Solution:** comparing correlation coefficients or regression coefficients to resolve this debate



Completing learning goals

Data + Model + Application – Resolving
debates

Part 3. Reviewing Lec02-06

Part 4. Survey - Any feedback is helpful!

Link: <https://forms.gle/vVLhRaNws99RYdsQ9>